BEFORE THE STATE OF NEW JERSEY
BOARD OF PUBLIC UTILITIES

IN THE MATTER OF THE PETITION OF	**)**	
ATLANTIC CITY ELECTRIC COMPANY FOR	**)**	
APPROVAL OF A VOLUNTARY PROGRAM FOR	**)**	**BPU DOCKET NO.**
PLUG-IN VEHICLE CHARGING	**)**	**EO18020190**
	)	

DIRECT TESTIMONY OF EZRA D. HAUSMAN, PH.D.
ON BEHALF OF THE
STATE OF NEW JERSEY
DIVISION OF RATE COUNSEL

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I. Professional Qualifications and Purpose of Testimony

Q. Please state your name, occupation, and business address.

A. My name is Ezra D. Hausman, Ph.D. I am an independent consultant doing business as Ezra Hausman Consulting, operating from offices at 77 Kaposia Street, Auburndale, Massachusetts 02466.

Q. What is your educational and professional background?

A. I hold a BA in Psychology from Wesleyan University, an MS in Environmental Engineering from Tufts University, an SM in Applied Physics from Harvard University, and a PhD in Atmospheric Chemistry from Harvard University. I have been involved in analysis of both regulated and restructured electricity markets for over 20 years. I have provided a detailed resume as Exhibit EDH-1.

I have worked as an independent consultant and expert based on my expertise and experience in energy economics and environmental science since 2014. From 2005 until early 2014, I was employed at Synapse Energy Economics, Inc., a research and consulting company located in Cambridge, Massachusetts, where I served most recently as Vice President and Chief Operating Officer. At Synapse, and continuing as an independent consultant, I served as an analyst and expert in several areas related to my expertise and experience in energy economics. Specific areas include:

- State and regional energy, capacity, and transmission planning, including both utility resource planning and long-term (multi-decadal) climate-constrained resource planning
- Electricity, generating capacity, and demand-side resource market design and analysis

- Review and analysis of utility energy efficiency ("EE") program filings
- Electric system dispatch modeling
- Economic analysis of environmental and other regulations, including greenhouse gas regulation, in electricity markets
- Economic analysis, price forecasting, and asset valuation in electricity markets
- Quantification of the economic and environmental benefits of displaced emissions and market price impacts associated with energy efficiency and renewable energy
- Regulation and mitigation of greenhouse gas emissions from the supply and demand sides of the U.S. electricity sector.

I have provided testimony or appeared before public utility commissions and/or legislative committees in Arizona, Florida, Illinois, Idaho, Iowa, Kansas, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Missouri, North Carolina, New Hampshire, New Jersey, Nevada, Oregon, Pennsylvania, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, DC and Washington State, as well as at the federal level. I have provided expert representation for stakeholders at the PJM RTO, at the Midcontinent Independent System Operator, Inc. ("MISO"), and at the Federal Energy Regulatory Commission ("FERC").

From 1998 through 2004 I was employed as a Senior Associate at Tabors Caramanis and Associates ("TCA") of Cambridge, Massachusetts. In 2004, TCA was acquired by Charles River Associates ("CRA"), where I remained until I joined Synapse in 2005. At TCA/CRA, I performed a wide range of electricity market and economic analyses and price forecast modeling studies. These included asset valuation studies, market transition cost/benefit studies, market power analyses, and litigation support. I

have extensive experience with market simulation, production cost modeling, and resource planning methodologies and software.

Q. Have you previously testified before the New Jersey Board of Public Utilities ("BPU", or "Board")?

A. Yes. On September 2nd of this year I submitted prefiled written testimony on behalf of the New Jersey Division of Rate Counsel ("Rate Counsel") in response to the petition of Public Service Electric & Gas Company ("PSE&G") for approval of its proposed Clean Energy Future – Electric Vehicle and Energy Storage program.[1] I filed written testimony in the most recent energy efficiency program ("EE 2017") filing by PSE&G (BPU Docket No. EO17030196); in PSE&G's 2018 CEF-EE filing (BPU Docket No. GO18101112 & EO18101113); and in Rockland Electric's low income/energy efficiency filing (BPU Docket No. ER17080869). I have also participated in numerous Board-sponsored stakeholder processes on behalf of Rate Counsel, including the ongoing NJBPU Electric Vehicle Infrastructure Stakeholder Work Group, and I have supported Rate Counsel's review of several utility filings that were resolved through settlement prior to submittal of intervenor testimony.

[1] I/M/O the Petition of Public Service Electric and Gas Company for Approval of its Clean Energy Future – Electric Vehicle and Energy Storage ("CEF-EVES") Program on a Regulated Basis, BPU Docket No. EO18101111.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to address the proposal by Atlantic City Electric Company ("ACE") to implement thirteen programs to support Plug-In Vehicle ("PIV" or "EV")[2] ownership and charging infrastructure in its service territory, on a rate-regulated basis. In my testimony I review the Company's proposal in the context of recent clean energy legislation in New Jersey,[3] relevant Board orders,[4] the Energy Master Plan ("EMP"), and the EV straw proposal ("EV Straw Proposal") prepared by Board Staff.[5] I also review whether ACE's programs can reasonably be deemed energy efficiency programs suitable for ratepayer funding. I also address issues concerning equitable access and impact raised by the Company's proposal. Finally, I review the cost-benefit analysis prepared by ACE witness, Mark Warner. Rate Counsel witness David E. Peterson is providing companion testimony on behalf of Rate Counsel on issues related to rate design and cost allocation.

[2] The term "EV" generally refers to all-electric vehicles, while "PIV" can refer to plug-in hybrid gas-electric or all-electric vehicles. In general, I use the more general term "PIV" following the terminology in ACE's petition and the PIV Act (see footnote 3), but both terms appear in various relevant New Jersey legal and regulatory documents.
[3] "Clean Energy Act," P.L. 2018, c. 17, and the "Plug-In Electric Vehicles Act ("PIV Act")," P.L. 2019, c. 362, codified at N.J.S.A. 48:25-1 et seq.
[4] Among others, I/M/O Implementation of P.L. 2018, c. 17 Regarding the Establishment of Energy Efficiency and Peak Demand Reduction Programs, BPU Docket Nos. QO19010040, QO19060748 & QO17091044 (Order Directing the Utilities to Establish EE and Peak Demand Reduction Programs, June 10, 2020) ("CEA Order").
[5] I/M/O Straw Proposal on Electric Vehicle Infrastructure Build Out, BPU Docket No. QO20050357 (Straw Proposal, dated May 18, 2020). ("EV Straw Proposal"). Rate Counsel submitted comments on the Straw Proposal on June 17, 2020.

Q. What information have you reviewed in preparation of this testimony?

A. I have reviewed the Company's initial Petition dated February 22, 2018; its Amended Petition dated December 17, 2019; supporting testimony for both Petitions; and the workpapers provided by the Company. I have also reviewed ACE's responses to discovery questions propounded by Rate Counsel and other parties. I have reviewed numerous publicly available industry reports, including reports provided with or referenced in or the Company's petition and its discovery responses. I have also reviewed the direct testimony of Rate Counsel witness David E. Peterson.

II. Summary of Conclusions and Recommendations

Q. What are your conclusions and recommendations to the Board regarding the Company's overall proposal?

A. I recommend that the Board deny ACE's petition in its entirety at this time.

While I am not an attorney, I do not believe that the proposals offered by ACE are supported by its statutory obligation to provide safe, adequate, and proper service[6] at just and reasonable rates,[7] or that there is any mandate or authority to implement the Company's PIV proposals on a rate regulated basis in New Jersey. I find the proposals to be premature, as the Board has yet to issue a ruling on Staff's EV Straw Proposal or to issue a ruling under Docket No. QO20050357 establishing guidelines for utility involvement in the Electric Vehicle ecosystem pursuant to the Plug-In Electric Vehicles

[6] N.J.S.A. 48:2-23 and N.J.A.C. 14:3-3.1.
[7] N.J.S.A. 48:2-21

Act.[8] I further find that the Company's proposals raise significant equity and free ridership issues that have not been addressed by the Company. While there are elements of the Company's PIV proposals that may provide benefits for New Jersey and New Jerseyans, I recommend that the Board reject these offerings at this time.

If the Board chooses not to reject the Company's petition outright, I recommend that the Board approve offering 13 as proposed; reject offerings 3, 5, 6, 7, 8, 10, 11, and 12; and approve offerings 1, 2, 4, and 9 in part or with modifications as detailed herein.

Whatever PIV-related offerings the Commission decides to approve in this or a later proceeding, I recommend that the Company be directed to establish PIV-specific Residential and commercial and industrial ("C&I") rate classes for electricity used for the purpose of charging electric vehicles, and that the specific costs associated with support for PIV charging infrastructure be allocated to this class, consistent with the ratemaking principle of allocating costs based on causation. Rate Counsel witness Mr. Peterson addresses this in more detail in his testimony.

Q. What are your conclusions regarding the Company's cost-benefit Analyses?

A: As part of its December 2019 Amended Petition, ACE provided the testimony of Mr. Mark Warner of Gabel & Associates, presenting the results of Cost Benefit Analyses ("CBA"). These included an overall Societal Cost Test ("SCT") comparing the benefits

[8] P.L. 2019, c. 362, codified at N.J.S.A. 48:25-1 et seq.; hereinafter "PIV Act".

and costs of EV adoption in New Jersey, and a series of "Merit Tests" focusing on several of the Company's proposed offerings.

I find that that the Company's primary CBA, applying a variant of the Societal Cost Test ("SCT") to a projected number of PIVs in New Jersey, is inapplicable to the proposed program because it is based on a projection of PIV adoption in ACE' service territory that is unrelated to the Company's proposal. The result of this test should be given no weight by the Board.

Mr. Warner's merit tests, unlike his SCT, are designed to analyze several of the Company's proposed offerings. However, among other shortcoming, his failure to consider free ridership renders his projected benefits far higher than could reasonably be attributed to the Company's offerings. Mr. Warner's test results are also predicated on numerous crucial speculative and unproven assumptions, among which is the assumption that the Company's proposed programs are necessary to foster growth in PIV adoption in New Jersey. This assumption is contradicted by Mr. Warner's own projection of very high adoption rates underlying his SCT test.[9] Mr. Warner's merit tests also claim benefits that go far beyond what could reasonably be attributed to the Company's proposed offerings, including an unrealistically high valuation of avoided peak load harm for some of the offerings.

Finally, Mr. Warner's merit test results rely on a very high valuation of avoided emissions, applied to emissions reductions that once again are not limited to the actual

[9] Warner direct, page 4 at 1-13.

impact of the Company's proposed offerings. Mr. Warner also provides a sensitivity version of each test that omits consideration of these environmental benefits.

III. Regulatory Framework

Q. Please briefly describe the current regulatory framework for electric vehicles in New Jersey.

A. The regulatory framework for PIVs has evolved rapidly in the last two years. The centerpiece is New Jersey's PIV Act, enacted in January 2020, which sets forth the State's goal of 300,000 light duty PIVs registered in the state by the end of 2025, as well as a goal of 2 million registered light duty PIVs by 2035, and that 85% of all light duty vehicles sold or leased in the state be PIVs by the end of 2040.[10] The PIV Act further set numerical and locational standards for installation of public chargers in the state by 2025 and 2030, including goals for location and quantity of DC Fast Chargers ("DCFC") and public Level 2 chargers,[11] and sets increasing goals over time for the percentage of multi-unit dwellings and overnight lodging facilities to host PIV chargers.[12]

Moreover, the PIV Act also sets forth a mechanism for PIV purchase rebates and rebates for the installation of PIV charging equipment. Specifically, N.J.S.A. 48:25-4 establishes an "EV Incentive Rebate Program" which "shall take the form of a one-time payment to the purchaser or lessee of an eligible vehicle."[13] Section 6 states that "[t]he

[10] N.J.S.A. 48:25-3(a) (1)-(3).
[11] N.J.S.A. 48:25-3(a)(4)-(5).
[12] N.J.S.A. 48:25-3(a)(6)-(7).
[13] N.J.S.A. 48:25-4.

Board of Public Utilities may establish and implement a program to provide incentives for the purchase and installation of in-home electric vehicle service equipment"[14] which "shall not exceed $500 per person."[15] Section 7 establishes a Plug-in Electric Vehicle Incentive Fund, to be administered by the Board and funded from the Societal Benefits Charge ("SBC") at a level of $30 million per anum.[16]

The Board is in the process of establishing its policies pursuant to the PIV Act under Docket No. QO20050357.

Other New Jersey initiatives address PIV policies and objectives in general, but do not set forth a specific mechanism to promote PIV ownership. In June 2019, Governor Murphy established the New Jersey "Partnership to Plug In" and established a goal of having no fewer than 300,000 registered Zero-Emissions Vehicles in the State by 2025. This partnership was memorialized in a Memorandum of Understanding among the New Jersey Department of Environmental Protection ("DEP"), the New Jersey Board of Public Utilities ("Board") and the New Jersey Economic Development Authority ("EDA").[17] In January 2020, the State released its updated Energy Master Plan ("EMP")[18] a policy document which includes a "strategy" to "Reduce Energy Consumption and Emissions from the Transportation Sector." This strategy included a number of sub-strategies, but

[14] N.J.S.A. 48:25-6(a).
[15] N.J.S.A. 48:25-6(c)(2).
[16] N.J.S.A. 48:25-7.
[17] http://liberty.state.nj.us/governor/news/news/562019/approved/20190603b.shtml.
[18] State of New Jersey, "2019 New Jersey Energy Master Plan, Pathway to 2050," available at https://www.nj.gov/emp/docs/ (viewed 8/31/20).

again no specific mechanisms, that included expansion of PIV ownership, charging infrastructure, and clean transportation options, including to low-income communities, vehicle fleets, NJ TRANSIT, and medium- and heavy-duty vehicles.

The primary policy initiative identified in the EMP to encourage purchase of light-duty vehicles is cash rebates, consistent with the approach established in the PIV Act. The EMP also noted the need "to create a comprehensive 'EV Ecosystem' that provides consumers with easy access to charging infrastructure for EVs."[19] Among the policy directions identified in the EMP to promote increased charging infrastructure was a " 'shared responsibility' model for EV infrastructure that promotes appropriate roles for both the utility and for private investors."[20] The EMP also identified rate reform as an important part of the State's strategy, to address the risk that demand charges would make charging at low-utilization locations prohibitively expensive, "particularly in multi-family dwellings or at small-to-medium size commercial businesses."[21] The EMP did not address the conflict between application of the cost causation principle in utility ratemaking and reduction of demand charges that are designed to reflect this cost causation principle.

The PIV Act was signed into law in January 2020, shortly after the final EMP was released. On May 18, 2020, Board Staff distributed its EV Straw Proposal for review and

[19] EMP, page 64-65.
[20] EMP, page 66.
[21] *Id.*

comment proposing how the Board would implement the PIV Act.[22] In this proposal, Staff elaborated on its interpretation of the concept of a " 'Shared Responsibility' business model for Ownership, Maintenance and Advertising of EV Infrastructure."[23] Staff's view of this model was that Electric Distribution Companies ("EDC") "…invest in (and earn on) the wiring and backbone infrastructure necessary to enable a robust EV Ecosystem and the private sector owns, operates and advertises" Electric Vehicle Service Equipment ("EVSE").[24] Staff recommended that EDC ownership of charging infrastructure be limited to a role as "party of last resort",[25] investing in EVSE only where necessary when the private sector has failed to do so. The EV Straw Proposal does not specify how such situations are to be identified, but it is clear that the private sector is to be given the first opportunity to meet public charging needs before a utility would step in.[26] The EV Straw Proposal specifically limited the role of utilities in owning or investing in EVSE beyond "charger-ready" infrastructure due, in part, to the risk of charging technology becoming obsolete:

> *…the portions of the EV Ecosystem that are likely to become obsolete the fastest are the EVSE. Staff expects that as technology changes and various standards*

[22] I/M/O Straw Proposal on Electric Vehicle Infrastructure Build Out, BPU Docket No. QO20050357 (Straw Proposal, dated May 18, 2020). ("EV Straw Proposal"). Rate Counsel submitted comments on the Straw Proposal on June 17, 2020.
[23] Straw Proposal, page 7.
[24] *Ibid.*
[25] *Ibid.*
[26] EV Straw Proposal ¶ V(A): "Staff proposes that charging station infrastructure, or EVSE, costs will be generally borne by private investors, with no recourse to ratepayer funds, except where the EDC acts as the party of last resort, where investment in EVSE is not occurring, or is not occurring in specific geographic areas."

> *come and fade away, there is significant risk associated with this rapid pace of technological change, particularly with respect to networking hardware and payment systems, and the software tied to this equipment. Further, EDCs have no particular expertise in siting, maintaining, marketing or operating EVSE, whereas EVSE Infrastructure Companies specialize in providing these services.*[27]

Q. Has Staff's EV Straw Proposal been accepted as policy guidance by the Board as of this writing?

A. No. The Board has not yet issued a ruling on the EV Straw Proposal, nor has it established specific rules or roles for utilities and other entities in building out the PIV ecosystem in New Jersey. This process is ongoing.

Q. Do the goals set forth in the New Jersey Energy Master Plan have the force of law?

A. To my understanding it does not.

Q. When did ACE file its PIV program, relative to the events described above?

A. ACE initially filed a petition requesting Board approval of its proposed program in February 2018, predating all of the developments described above. It filed an amended and expanded petition in December 2019, which followed the Governor's establishment of the "Partnership to Plug In," but predated release of the final 2019 EMP, the PIV Act, and Staff's Straw Proposal. In its amended petition, ACE increased its proposed budget, from roughly $15 million to $42 million, and added new offerings. It also added a

[27] EV Straw Proposal, page 8.

"demand charge set-point" concept to some of its offerings to address the issue of high per-charge costs for low-utilization EVSE identified in the EMP.[28]

Q. In your opinion, are ACE's program offerings necessary and well-designed to meet the goals and requirements set forth above?

A. No. The offerings proposed by the Company are heavily weighted toward subsidizing PIV charging equipment for a few individuals and corporate entities at the expense of all ACE ratepayers. Further, many elements of the Company's proposal seem inconsistent with the "Shared Responsibility" model espoused by the EMP and echoed in Staff's EV Straw Proposal for implementation of the PIV Act, and seem likely to do little if anything to promote additional PIV ownership.

Q. Has ACE acknowledged the inconsistency between its proposals and the "Shared Responsibility" model?

A. Yes. In response to Rate Counsel Discovery Request RCR-10, ACE stated that "the Company believes that the shared responsibility model is unduly limiting" and that "[t]he Company maintains that preclusion of utility ownership and operation of EV charging infrastructure (save for instances of "last resort," as detailed in the EV Straw Proposal) may result in the further stagnation of the deployment of necessary EV charging infrastructure where private capital has proven unmotivated to enter the market."[29]

[28] Amended Petition, ¶ 39.
[29] Response to Data Request RCR-10.

Q. What is your response?

A. Although the "Shared Responsibility" model proposed by Staff has yet to be endorsed by the Board, the Company's claim that it is "unduly limiting" would more appropriately be evaluated in the proceeding concerning that proposal,[30] rather than just assuming away Staff's proposal in its current filing. Further, the "last resort" proposal from Staff is designed precisely to address "deployment of necessary EV charging infrastructure where private capital has proven unmotivated to enter the market."[31]

Q. Has ACE provided any other justifications for departing from the "Party of Last Resort" role proposed by Staff for EDCs?

A. Yes. In response to BPU Staff date request S-API-DCE-7, ACE stated that "the definition of a 'last resort' is in itself subjective and dynamic, changing constantly over time with the ebb and flow of the market conditions."[32]

Q. Do you agree?

A. No. Staff's proposal is for utilities to assume this role "where investment in EVSE is not occurring, or is not occurring in specific geographic areas."[33] ACE is attempting to blur the definition of "last resort" by making it forward looking, but the language of the EV

[30] BPU Docket No. QO20050357, In the Matter of Straw Proposal on Electric Vehicle Infrastructure Build Out.
[31] EV Straw Proposal, page 7: "Staff proposes that charging station infrastructure, or EVSE, costs will be generally borne by private investors, with no recourse to ratepayer funds, except where the EDC acts as the party of last resort, where investment in EVSE is not occurring, or is not occurring in specific geographic areas."
[32] Response to Staff Data Request S-API-DCE-7.
[33] EV Straw Proposal, page 7.

Straw Proposal clearly calls for an assessment of whether the private market *has* failed, not whether it is likely to fail. Utility involvement is limited to a last resort for good reasons, including that it could harm free-market competition, and could limit the flexibility of the market to respond to the very "dynamic" market conditions ACE describes. This includes the flexibility to regularly update charging infrastructure as technology and market conditions evolve. Staff's use of "last resort" is explicit and unambiguous: utility involvement should be invoked only if nothing else works.

IV. Proposed Program Offerings

Q. What are the offerings proposed by ACE in its amended filing?

A. Table 1 lists each of the proposed offerings, deployment goals, and budgets.[34]

[34] As described in the direct testimony of Mark Warner, Figure 1.

TABLE 1. ACE PROPOSED PIV OFFERINGS AND BUDGET

Offering No.	Description	Deployment Goals	Budget
1	Whole House TOU	Unlimited, 300 assumed for budget	$120,000
2	Off-Peak Incentive	300 customers	$192,023
3	Managed Charging (Charger and install rebate)	1,500 L2 EVSE	$3,395,749
4	Multi-Family L2 (Charger and install rebate)	200 L2 EVSE, ~67 locations	$1,804,969
5	Workplace L2 (Charger rebate, demand charge incentive)	150 L2 EVSE, ~30 locations	$806,395
6	Fleet L2 (Charger rebate, demand charge incentive)	150 L2 EVSE, ~30 locations	$806,395
7	Utility-Owned Public DCFC[35]	45 DCFC Chargers, ~15 locations	$4,576,200
8	Utility-Owned Public L2	200 L2 Chargers, ~65 locations	$7,336,200
9	Privately-Owned Public DCFC	30 DCFC locations available for public use	$4,070,779
10	Innovation Fund	TBD	$2,000,000
11	Electric School Buses	20 electric school buses and chargers	$5,500,000
12	NJ Transit	1 depot location, partially electrified	$2,500,000
13	Green Adder	N/A	$0
	IT, Admin., Marketing	N/A	$8,998,700
		Total Cost:	***$42,107,410***

[35] A "DCFC" is a direct current fast charger.

Q. How does ACE propose to recover the costs of its programs?

A. ACE's proposal for cost recovery is discussed in detail in the testimony of Rate Counsel witness, David Peterson. Briefly, ACE proposes to place all capital related to each of its programs into rate base as it is placed into service, to be recovered in its future rate case proceedings.[36] It further proposes to place all non-capital costs and revenues into a new regulatory asset (the "PIV Program Regulatory Asset") which it proposes to amortize over a five-year period, earning a return at its rate base return on equity ("ROE").[37] Under ACE's proposal, the costs of recovering and earning on this regulatory asset will be allocated on a rate class basis, such that costs associated with residential programs will be allocated to all residential customers, and costs associated with non-residential programs will be allocated to all non-residential customers.[38]

Q. Does this raise concerns for you?

A. Yes. I raised earlier my general concern that funding PIV infrastructure, beyond that required for the provision of reliable electric service, is beyond the scope of an electric utility's franchise in New Jersey. Further, even if the costs of PIV infrastructure were to be incurred by a utility and recovered in rates, these costs should be borne by those who charge and drive PIVs, and not socialized to other ratepayers who do not own, and cannot

[36] Filing, ¶57.
[37] Filing ¶58-¶59.
[38] Verbal response of ACE on discovery call, August 17, 2020. This is consistent with the allocations shown in the workbook "RCR-RD-2, Attachment 1.xlsx" provided in response to Rate Counsel Discovery Request RCR-RD-2.

afford, these premium products. As Rate Counsel noted in its comments on the Straw Proposal, "[r]equiring ratepayers as a whole, many of whom may never be able to afford these luxury vehicles, to subsidize those who can afford them, is wholly inequitable, and is not made up for by the fact that there may be system benefits several decades from now."[39]

ACE witness Mark Warner's testimony in this case shows that the greatest benefit from PIV ownership and operation in New Jersey accrues to the PIV owners themselves.[40] In applying the Societal Cost Test to "market-wide" PIV ownership in its service territory (*i.e.*, beyond the impact of its own proposed offerings), Mr. Warner finds that fully 2/3 of the overall benefits are captured by the owner in reduced operating and maintenance expenses.[41] Another large "benefit" is the federal tax incentive for PIV purchases, which also accrues to the owner. Because today's PIVs (and those for the foreseeable future) are luxury vehicles, these benefits are likely to be overwhelmingly captured by the higher-income customers who can afford such cars. It is hard to fathom why the costs of the utility's offerings should be socialized to all customers in a class, including low- and moderate-income customers who are unlikely to be early-adopters of such vehicles.

[39] Rate Counsel Comments on Straw Proposal, June 17, 2020, page 3.
[40] Warner Direct, Figures 7 and 8 on pages 41 and 42, respectively.
[41] Warner direct, Figure 7 on page 41.

Q. Are the Company's proposed offerings "energy efficiency" programs, in the sense envisioned in the New Jersey Law?

A. I am not an attorney, but a plain reading of the 2007 "RGGI Act" suggests that it is not. P.L.2007, c.112 C.48:3-98.1(13)(d) defines "Energy efficiency and conservation program" as:

> *…any regulated program, including customer and community education and outreach, approved by the board pursuant to this section for the purpose of conserving energy or making the use of electricity or natural gas more efficient by New Jersey consumers, whether residential, commercial, industrial, or governmental agencies.*

The Company's proposals do not make the use of electricity or natural gas more efficient by New Jersey consumers; in fact, if anything they would lead to the purchase and consumption of *more* electricity by the Company's customers.[42] In this sense, the proposed programs may be viewed more as a market development initiative for ACE, clearly an inappropriate use of ratepayer funds, than as an energy efficiency program. In addition, and in contrast to all approved energy efficiency programs that I am aware of, there is no requirement that the customer selects a more efficient device (in this case a PIV) from among all PIVs available on the market to qualify for an incentive – merely that it be powered by electricity.

[42] The modeling in support of the EMP suggests that fully electrifying the transportation and building industries in New Jersey will increase the use of electricity by as much as 2.3 times by 2050. EMP, p.176.

Further, in its recent order on implementation of utility energy efficiency programs under the Clean Energy Act, the Board placed a strong emphasis on ensuring that each utility's EE programs be available to the full socioeconomic spectrum of its customers, stating that "The utilities should also develop programs that, where possible… include design elements that promote the participation of all customers, regardless of income, annual usage, or other demographic characteristics."[43] This certainly does not describe ACE's proposed PIV offerings, which would only be useful to a small subset of its more affluent customers.

V. Cost-Benefit Analysis

Q. Did ACE provide a cost-benefit analysis of its programs with its filing in this matter?

A. Yes. The cost-benefit analysis ("CBA") was presented in the direct testimony of ACE witness Mr. Mark Warner of Gabel Associates, included with its amended petition.

Q. Have you reviewed the analysis underlying Mr. Warner's CBA results?

A. Yes, to the extent possible. Mr. Warner's workpapers were not provided by the Company with its amended filing, and were produced only with a significant delay after a series of requests by Rate Counsel. ACE finally produced Mr. Warner's confidential workpaper, consisting of a customized, proprietary spreadsheet model, on September 10, 2020, eight calendar days prior to the extended filing deadline for intervenor testimony in this matter.

[43] BPU Order in Docket Nos. QO1901040, QO19060748 & QO17091004, June 10, 2020.

[Begin Confidential] [redacted] **[End Confidential]** Finally, given the late filing of the workpaper, there has been no opportunity for discovery so that intervenors could probe Mr. Warner's underlying assumptions and methods.

In short, I have had an opportunity to review Mr. Warner's workpaper and I believe I have a good understanding of his approach based on this review and my extensive experience reviewing cost-benefit analyses produced by Gabel & Associates (Mr. Warner's firm) and others. However, I cannot say that I have had an opportunity to fully vet and validate the workpaper, aided by discovery, as I would under ordinary circumstances.

Q. Please describe the results presented by Mr. Warner.

A. Mr. Warner presented the results of two sets of cost benefit analyses. First, Mr. Warner presented a Societal Cost Test ("SCT") analysis based on a forecast of PIV adoption in ACE's service territory, taken from a previous Gabel Associates study commissioned by ChargEVC.[44] As Mr. Warner describes it, "[t]he projection accounts for growth of the

[44] "Electric Vehicles in New Jersey: Costs and Benefits – The Opportunities, Impacts, and Market Barriers to Widespread Vehicle Electrification in New Jersey," Prepared for ChargEVC by Gabel Associates. January 26, 2018. Available at http://www.chargevc.org/wp-

PIV fleet through new sales, as well as vehicle retirements, in both Battery Electric Vehicles ("BEVs") and Plug-in Hybrid Vehicles ("PIHVs") segments... [T]he vehicle adoption projection blends an extrapolation of historical sales in the short term with transition to the adoption trajectory needed to meet the State's goal of 330,000 PIVs on the road by 2025."[45] Mr. Warner describes this as a "Market-Wide SCT", and he presents results for both a "natural" charging case, along with a "managed" case in which charging is managed through incentives for users to charge during off-peak hours.[46]

Second, Mr. Warner produced what he describes as a "merit test" for each of the Company's proposed offerings, and for the portfolio of offerings as a whole.

Q. What is a "merit test", and how did Mr. Warner apply them?

A. As Mr. Warner uses the term, a merit test is a "customized" CBA, reflecting the specific attributes of each proposed offering and the fact that "each proposed utility Offering impacts the market in different ways."[47] Specifically, the "benefits" side of the equation reflects the specific benefits the Company claims as a system-wide impact of each offering – generally related to reducing peak-period usage, a "dilution" effect on per-kWh costs, and avoided environmental damages. I discuss these in greater detail later in my testimony. Mr. Warner presents results of his merit test for each of the Company's

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content/uploads/2018/03/ChargEVC-New-Jersey-Study.pdf. Mr. Warner is a co-founder of ChargEVC as well as a Vice President of Gabel Associates.

[45] Warner Direct, page 4 at 9-18.

[46] Warner Direct, Figures 7 and 8 present SCT results for "natural" charging, while Figures 9 and 10 show analogous results for "managed" charging.

[47] Warner Direct, page 3 at 2-7.

offerings 1 through 9, and he also produced a sensitivity merit test for offerings 4-9, in which he removed the value he had assigned to environmental benefits for each of these offerings.[48]

Q. What is the relevance of the "market-wide" SCT to the Company's proposed offerings?

A. It does not seem to have any relevance to the Company's specific proposals, except to suggest that electric vehicles overall provide societal benefits, primarily to the PIV owner but also to society as whole, that exceed their costs. However, I do derive two insights from the results of Mr. Warner's SCT results.

First, I note that of the $1.87 billion in savings benefits market-wide alleged by Mr. Warner, $1.26 billion – or about 2/3 - are identified as "PEV OpEx", or vehicle operating expense savings.[49] These projected savings are more than twice the incremental cost of the vehicles.[50] This is even before consideration of the federal and state tax incentives that also accrue to the vehicle owner. Mr. Warner includes the federal tax incentive as a benefit in his test, but not the state rebate – presumably because the state incentive is a direct cost to New Jersey, which on a "societal" basis cancels out the benefit. However, the state rebate is yet another way in which PIV purchasers receive extra benefits at the expense of other New Jerseyans.

[48] Warner Direct. The results of the merit tests are summarized in Figures 5 and 6 of Mr. Warner's testimony, and presented in more detail in Figures 11 through 40. Mr. Warner also presents portfolio-level merit test results in Figures 41 through 44.
[49] Warner Direct, Figure 7 on Page 41.
[50] *Id.*

Those who purchase PIVs are amply rewarded with purchase incentives and cost savings over the life of the vehicle, such that no additional utility charging incentive is required to make the economics attractive. If any economic obstacle does exist for consumers, it is likely to be the up-front cost of the vehicle itself, which is more effectively addressed through the existing state and federal tax incentives and rebates, or by financing or leasing programs from the vehicle dealer or manufacturer, and ultimately by cost reductions that may occur as the technology matures.

Second, I note that the market-wide net benefit, based on Gabel Associates vehicle adoption projections developed independent of the utility's offerings, is almost 13 times the net benefit of ACE's combined offerings 1-9 in the "natural" charging case, and over 20 times higher in the "managed" charging case.[51] This raises the question of exactly what the Company's offerings are intended or expected to produce. The report cited by Mr. Warner in support of his growth projections,[52] prepared by Gabel Associates on behalf of ChargEVC, projects a much higher level of vehicle adoption in New Jersey but nowhere predicates this growth rate on the offerings proposed by ACE.[53] In other

[51] Warner Direct, Figure 5 on page 39.
[52] Projections of Electric Vehicle Adoption in New Jersey, Gabel Associates, Inc. (September 2019). Provided in response to Discovery Request RCR-8, Attachment 3. Mr. Warner is identified as the lead author of the report.
[53] The only mention of utility programs in the report is midway through a long list of existing "New Jersey Market Conditions," noting that two utilities, including ACE, have proposed incentive programs that "…if approved, would provide substantial incentives that could grow EV adoption and use, including (among other efforts) expanded availability of public charging, help for new EV buyers that need a charger at home (including multi-family settings), and incentives to encourage off-peak charging.". *Id.*, page 9.

words, Mr. Warner's own research nowhere suggests that a lack of utility incentives for charging infrastructure is the critical element limiting PIV adoption in New Jersey.

Q, Has ACE provided any evidence or analysis to suggest that its programs will increase PIV ownership or utilization in New Jersey?

A. No. Rate Counsel asked for any such evidence in Data Requests RCR-1 (for ACE offering #1); RCR-2 (for ACE offering #2); RCR-3 (for ACE offering #3); RCR-4 (for ACE offerings #s 4, 5, and 6); RCR-5 (for ACE offerings #s 7 and 8); and RCR-6 (for ACE offerings #9). In each case the Company provided or referenced documents that reiterated its projections of vehicle sales in its territory, but in no case did it offer any analytical or other relationship between these projections and the Company's proposed offerings.

Q. If PIV adoption in New Jersey is not currently dependent on utility programs such as those proposed by ACE, what does that suggest about the impact of such programs?

A. It suggests that, if these owners and potential owners were to participate in the Company's rebate programs, many or most of them would be "free riders" on the program – that is, they would get the benefit of ratepayer-subsidized incentives for behavior that they would have done in the absence of the subsidy, so the incentive itself generates no societal benefit.

Q. What insights may be gained from Mr. Warner's customized, offering-specific CBA analyses?

A. Based on Mr. Warner's direct testimony and the limited opportunity I have had to review his workpapers, I can make several observations, each of which I address below:[54]

- For offerings 1 through 3, the benefit identified by Mr. Warner is so-called "avoided peaking cost harm" – that is, "the avoided harm associated with increased capacity and transmission costs."[55]
- For offerings 4 through 9, much of the savings are predicated on a so-called "dilution effect", whereby average electricity rates are projected to decrease due to additional electric sales – that is, due to spreading the fixed cost of the system infrastructure, such as distribution lines, over a larger number of kWh sold. Although Mr. Warner acknowledges that increases in electricity and capacity requirements will tend to increase costs, he describes the dilution effect as the "strongest" impact on electricity costs, leading to an overall net decrease in per-kWh costs.[56]
- Mr. Warner further calculates a monetized "pull-through of environmental benefits" as a benefit of offerings 4 through 9. For his sensitivity cases, he also considers offerings 4 through 9 without consideration of these environmental benefits.[57]
- For offerings 7 and 8, another benefit identified by Mr. Warner is the revenue earned by utility-owned EVSE, to be credited to ratepayers.[58]

[54] The benefits and costs considered for each offering are also summarized in Figure 4 on page 37 of Mr. Warner's Direct testimony.
[55] Warner Direct, page 29 at 4-5 and 25-26; page 30 at 20-21.
[56] Warner Direct, pages 7-8.
[57] Warner Direct, page 38 at 9-10.
[58] Warner Direct page 34 at 3-5 and 23-24.

Q. Do you have any comments on Mr. Warner's assessment of avoided peaking cost harm for offerings 1-3?

A. Yes. This benefit is attributed to the impact of getting customers to charge their vehicles during off-peak hours, thereby reducing whatever additional contribution to peak load that these vehicles would otherwise present. Mr. Warner explains that "[a] 'success factor' is included to capture the fraction of kWhs that are actually shifted to off-peak times, and this factor was developed based on the success rates exhibited by similar programs in other territories."[59] This approach appears to significantly overstate the impact of the Company's proposed offerings, and the resulting projected benefits are not credible.

Q. What was this "success factor," and how was it derived?

A. The "success factor" was not explained in Mr. Warner's testimony, but it was provided in his confidential CBA workpaper. **[Begin Confidential]** [redacted] **[End Confidential]**

[59] Warner Direct page 29 at 5-7.

The Company explained that its "success factors" were based on its experience with its sister utility, Baltimore Gas and Electric in Maryland,[60] and referred to the data it provided as an attachment to Staff Data Request S-PIV-31. I have reviewed this data response, but I have not been able to recreate whatever calculations Mr. Warner may have relied upon to support these values.

Q. Does Mr. Warner's use of a "success factor" raise concerns for you?

A. Yes. First of all, if this "success factor" truly represents the **[Begin Confidential]** [redacted] **[End Confidential]**

But regardless of the calculation details, the result simply fails to pass the test of reasonableness. For example, the Offering 1 calculation is based on an assumption of 300 customers,[61] with a total claimed avoided peaking cost benefit[62] of $445,065. Based on Mr. Warner's workpapers, this benefit comes to an average of **[Begin Confidential]** [redacted] **[End Confidential]** per participant-year. For Offering 2, the off-peak incentive is limited to 300 customers with a claimed total avoided peaking cost benefits of $1,405,935, respectively.[63] This pencils out in the workpaper to an average of **[Begin**

[60] Warner Direct, page 29 at 5-7; Response to Staff Data Request S-APIV-31.
[61] Warner Direct, Figure 1.
[62] Warner Direct, Figure 11.
[63] Warner Direct, Figure 13.

Confidential] [redacted] **[End Confidential].** For Offering 3, designed to provide 1,500 L2 chargers, the claimed total avoided peaking cost benefits is $5,389,533.[64] This pencils out to **[Begin Confidential]** [redacted] **[End Confidential].** For comparison, the sample residential electric bill posted by ACE for July 2020,[65] a peak usage month, has a total distribution charge of about $44. It is simply inconceivable that whatever small quantity of electricity consumption would be moved from on-peak to off-peak hours as a result of each of these programs could yield annual per-participant "avoided peaking cost harm" of the magnitudes claimed by Mr. Warner.

ACE has provided no explanation or support for this unlikely result, and I recommend that the Board find it to be spurious and accord it no weight.

Q. Do you have any comments on Mr. Warner's assessment of dilution effect (also called "electricity cost reductions") for offerings 4-9?

A. Yes. The dilution effect is predicated on the idea that selling additional kWh, whether on-peak or off-peak, results in *no additional costs* other than the electricity itself, so all of the utility's fixed costs are "diluted" over a larger number of kWh. The premise is that the utility would not have to invest in additional infrastructure in order to meet the additional demand. This may be the case with very small additions to load, but it is obviously not the case with very large additions – such as the level of PIV additions

[64] Warner Direct, Figure 15.
[65] https://www.atlanticcityelectric.com/Documents/ACE%20NJ.pdf

mandated by the PIV Act. Without detailed analysis, it is impossible to know how much additional infrastructure investment would be required to support each of the Company's proposed offerings. I am very skeptical that the answer is none, though this appears to be Mr. Warner's assumption, at least for his "managed charging" case.

Q. Did Mr. Warner address this issue in his testimony and in his analysis?

A. Yes. Mr. Warner acknowledges that "[o]nce the PIV population exceeds the number of single-phase transformers, distribution loading issues will become more common since that condition begins to guarantee multiple vehicle charging loads on a given residential transformer. Past that point, more proactive grid reinforcement would be prudent to ensure responsible support for increased loading related to PIV charging."[66]

Mr. Warner quantifies this effect by stating that "…in the case where natural charging is dominant, more systemic impacts will begin to emerge once the number of PIVs exceeds approximately 0.75 times the number of single-phase transformers. By comparison, in the case where managed charging is dominant, more system impacts are estimated to emerge when the number of PIVs exceeds approximately 2.7 times the number of single-phase transformers."[67] **[Begin Confidential]** [redacted]

[66] Warner Direct, page 18 at 10-14.
[67] *Id.* at 19-23.

[redacted] **[End Confidential]** I cannot prove this assumption to be in error, but it is far from the outcome that I would expect, and seems to rely upon an unrealistic projection of the effectiveness of ACE's proposed managed charging initiatives.

Q. Mr. Warner states that "[t]his [dilution] effect is the reverse of the dynamic associated with EE programs that decrease overall consumption volume and lead to increased ratepayer unit costs, but in this case is strongly beneficial."[68] How do you respond?

A. I agree that the reverse of the effect proposed by Mr. Warner is real and is an important consideration for energy efficiency ("EE") programs – that is, decreased usage by some customers means that a utility's existing fixed costs must be spread over a smaller number of kWh sold, which tends to increase per-kWh rates for all customers. Over time, EE programs can help the utility avoid additional distribution expenses, which tends to mitigate this effect, but utility fixed costs don't decrease in the short run because they represent undepreciated physical assets that are still "used and useful," even if their level of utilization decreases somewhat.

It is a stretch to simply reverse this phenomenon and assume that the same fixed costs can be spread over an arbitrary number of additional kWh sold, as Mr. Warner appears to have done. In the case of an increase in load such as would result from

[68] Warner Direct, page 23 at 21-23.

widespread PIV adoption, the utility will be required to make additional investments as necessary to accommodate the load. There are limits to the capacity of the company's distribution assets; utilities such as ACE ultimately must invest in additional infrastructure to accommodate increases in load.

Q. Do you have any other concerns about Mr. Warner's calculation of the "dilution" effect?

A. Yes. When calculating benefits associated with energy efficiency programs, it is common to consider a "DRIPE" effect,[69] whereby energy and capacity prices decrease due to a reduction in demand, at least until the market re-equilibrates. This a matter of basic market economics, whereby higher demand is related to higher prices, all else being equal. This effect does operate in both directions. In fact, the increase in prices can be more pronounced as load increases, given the convex shape of a typical supply curve for electric energy or capacity. Mr. Warner does not seem to have considered this likely impact of increased load on energy and capacity prices to serve ACE's customers, but it would tend to drive costs in the opposite direction from his "dilution" effect.[70]

[69] Demand Reduction Induced Price Effect. For a discussion see Chernick, P and J. Plunkett, "Price Effects as a Benefit of Energy-Efficiency Programs," ACEEE, 2014. Available at https://www.aceee.org/files/proceedings/2014/data/papers/5-1047.pdf.
[70] Because ACE did not provide Mr. Warner's workpapers, his approach cannot be fully vetted or verified.

Q. Earlier you raised the issue of free ridership, that is, customers who receive the incentive offered by ACE for behavior they would have engaged in in the absence of the incentive. Was this issue considered by Mr. Warner?

A. No.

Q. Is this a concern regarding Mr. Warner's calculation of the "dilution effect"?

A. Yes. The failure to consider free ridership is a significant omission in Mr. Warner's analysis. Even taken at face value, Mr. Warner's "merit tests" consider the impact of all PIV-owners and chargers that participate in the Company's programs. If many or most of these customers would have purchased and charged a PIV in any case, then the benefits of these PIVs – such as the additional kWh sold by the utility that drive the "dilution effect" - cannot be attributed to the Company's offerings. Thus even if all of Mr. Warner's other assumptions were reasonable, the "benefit" shown in his analysis would be far higher than the actual benefits attributable to each subprogram, while the costs would still represent the actual subprogram costs.

Q. In general, why is the free ridership question important in evaluating the CBA results presented by Mr. Warner?

A. In the current case, the question before the Board is *not* the benefits of increased PIV ownership in New Jersey or in ACE's service territory in general – it is (beyond the general question of a utility's role in supporting charging infrastructure) whether the specific offerings proposed by ACE provide benefits that justify their cost.

If many of the customers who would participate in ACE's offerings and receive rebates and other incentives would have purchased and driven electric vehicles even in the absence of these incentives, then the benefit of these vehicles and miles cannot reasonably be attributed to ACE's program. I believe this is the case, given the existing robust growth in electric vehicle sales in New Jersey reported and projected in Mr. Warner's own report.[71] The Company presents no evidence that there is a large cohort of New Jerseyans who are deferring their purchase of EVs because of the cost of at-home charging infrastructure, for example. Nor has it provided any evidence of whether or to what extent its specific program offerings would actually increase the number of EVs purchased by customers in its service territory.

Q. Did Rate Counsel propound discovery requests regarding the Company's expectations of the impact of its programs on PIV ownership, that might shed light on the question of free ridership?

A. Yes. As noted earlier, Rate Counsel propounded a series of discovery requests specifically requesting analyses and forecasts prepared by or for the Company on how its offerings would impact, among other things, PIV ownership levels and PIV miles driven.[72] In each case, the Company responded by referencing its response to Staff discovery request S-PIV-23. However, the referenced discovery response provides no such information, instead referencing what it describes as a "New Jersey Department of

[71] See footnote 52.
[72] Rate Counsel Discovery Requests RCR-1 through RCR-6.

Environmental Protection on of [*sic*] PIV registrations by ZIP code in ACE's service territory as of the year ending 2019."[73]

Rate Counsel further attempted to probe this issue by requesting any analysis performed by the Company of the projected need for EVSE infrastructure in its service territory to support future PIV adoption. In response, ACE stated that "The Company has not performed an analysis of the anticipated need for the EVSE in its service territory that it is prepared to share at this time."[74]

Q. Do you have any comments regarding Mr. Warner's treatment of monetized environmental cost savings?

A. I do not doubt that there are significant and important health and greenhouse gas benefits associated with increased PIV adoption in general. However, the environmental benefits projected for the Company's proposed offerings by Mr. Warner are predicated on his assumptions regarding the impact of these proposed offerings on vehicle ownership levels and miles driven, and crucially must take the question of free ridership into account. Because Mr. Warner did not consider this factor in his analysis, his results do not provide a meaningful projection of the environmental benefits specifically attributable to the Company's proposed offerings.

[73] Response to Staff Discovery Request S-PIV-23.
[74] Response to Rate Counsel Discovery Request RCR-26

Q. Do you have any comments on Mr. Warner's assessment of charging revenue benefit associated offerings 7 and 8?

A. My only comment is that ACE is proposing to earn its previously authorized base rate of return on its investment in utility-owned charging infrastructure, while passing on all revenue risk to its customers. This is a profoundly anticompetitive proposal and it is hard to see how it accrues as a "benefit" to anyone other than ACE's shareholders.

VI. Recommendations on Specific Proposed Offerings

Q. Do you have specific recommendations for the Board regarding each of the Company's proposed offerings?

A. Yes. As noted in my general summary of recommendations, I recommend that the Board deny ACE's petition in its entirety at this time pending establishment of clear policy guidelines and utility filings that are responsive to those guidelines. However, if the Board elects to approve any elements of the proposal, I do provide offering-specific recommendations below.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #1, Whole-House Time-of-Use Residential Rates, and its Offering #2, Off-Peak, Off-Bill Incentive for Residential Customers with Existing, Installed EVSE?

A. Offering #1 would permit customers with PIV chargers to participate in the Company's Time-of-Use ("TOU") rate schedule RS-PIV. This rate would be applicable to the customers entire electric bill (no second meter would be required) and would bill at a

lower rate during off-peak periods.[75] Offering #2 would be available to up to 300 customers and would provide them with a 5 cent/kWh rebate for charging that occurs during off-peak hours. Although this rebate would only apply to vehicle charging usage, no second meter would be required because the customers would have to agree to install a mobile device into their vehicle to tracking charging activity.[76]

These proposed offerings appear to be worthwhile subprograms that could provide benefits for participants and nonparticipants alike, although as discussed in detail above, I find Mr. Warner's cost-benefit analysis unconvincing. I further believe that these proposed offerings are consistent with the utility role set forth in the Staff's EV Straw Proposal. These offerings would also provide the Company and the Board with New Jersey-specific data on customer behavior under two alternative incentive rate structures. However, these offerings do come at a cost, which should be borne by PIV owners and providers of PIV charging services, rather than by all residential ratepayers. If the Board chooses to move forward with the Company's petition, I recommend that these offerings be approved subject to a tariff revision that allocates PIV-specific costs to this class of customers.

[75] Petition, ¶ 31.
[76] Petition, ¶ 32.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #3, Level 2 EVSE and Installation Rebates for Residential Customers without Existing Chargers, Plus Off-Peak Incentive?

A. Under this offering the Company proposes to subsidize installation up to 1500 L2 PIV chargers with rebates to cover 50% of the charger and installation costs *in addition to* a five cents per kWh incentive for off-peak charging.[77] I believe this is a classic example of a program that transfers money from all ratepayers, including low- and middle-income ratepayers, to subsidize transportation costs for higher-income ratepayers. I also believe participating customers could "game" this incentive by only charging at home at night, but charging elsewhere, such as at work, during the day. (This may also occur under Offering #2, but it is a much smaller subprogram cost and will provide data to the utility to help determine if this sort of dynamic is taking place.) I do not believe the rebates under this subprogram are supported by the PIV Act, nor are they consistent with the "Shared Responsibility" model as proposed by Staff. I recommend that this offering be rejected, whether or not the Board moves forward with the Company's petition as a whole.

[77] Warner Direct, page 30 at 7-12.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #4, Rebates for Level 2 EVSE and Installation, and Demand Charge Offset Incentive for MDUs with dedicated on-site parking, currently without existing EVSE?

A. This offering is responsive to the "State goal" enumerated in Section 3 of the PIV Act that a significant and increasing share of multi-unit dwellings be outfitted with chargers over the next ten years.[78] The Company has proposed a rebate for 50% of the cost of a "smart" Level 2 charger, in addition to installation costs of up to $10,000. The Company also proposes to provide a fixed demand charge rebate "calculated as 50% of the EVSE nameplate capacity, multiplied by the customer's demand charge from the customer's applicable rate schedule."[79] The demand charge rebate is intended to address the demand charge barrier for these locations where the initial utilization may be quite low, such that the cost of charging for the first few vehicle owners could be prohibitive.

However, as with Offering #3, the rebates for charger and installation costs proposed under this offering are inconsistent with the "Shared Responsibility" model that is currently under consideration by the Board, and should be rejected.

The demand charge offset is more consistent with the utility role set forth in the EMP[80] and in the Straw Proposal.[81] However, the demand charge portion of C&I rates

[78] N.J.S.A. 48:25-3(a)(6)(a).
[79] Petition ¶ 34. An example calculation of the demand charge rebate is shown in footnote 18 of the petition.
[80] EMP, page 66.

represents a real cost to the system. As this cost is directly related to serving PIV customers, it should not be borne by the majority of customers who do not own EVs.

For these reasons, I recommend that the Board (should it elect to move forward with the Company's petition) reject the rebate portion of offering #4. If the Company wishes to implement the demand charge portion without the rebates and the Board so approves, the costs of this program should be recovered through the Company's PIV tariff, and not socialized to all residential ratepayers.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #5, Rebates for Level 2 EVSE for Workplaces, Plus Demand Charge Offset Incentive?

A. My recommendation is that the Board reject this offering, whether or not it elects to proceed with the Company's petition as a whole. The proposed rebate of 50% of the cost of a "smart" Level 2 charger[82] is unnecessary because workplace charging is an attractive market for competitive providers and a valuable, low-cost perk that employers can offer their employees. I would expect the proposed program to have a very high level of free-ridership from workplaces that would have installed charging infrastructure even without the incentive. This proposed offering is also inconsistent with the "Shared Responsibility" model under consideration by the Board. Finally, the fixed demand charge offering Company also proposes is also inappropriate in this case. While the risk

[81] Straw Proposal, pages 12-13.
[82] Petition ¶ 35. The Company proposes that a participant could obtain rebates for up to six EVSE installations located at up to three different sites.

of high demand charges when utilization is low could be significant, this also represents an opportunity for private sector solutions, such as on-site storage. Disguising this cost with a fixed rebate, as the Company has proposed, would both compromise this market signal and impose these costs on other ratepayers. Providers of workplace charging services should have an incentive to design their systems to have high utilization, and their costs should reflect the fact that much of the charging is likely to occur during on-peak daytime hours when the demand charges reflect real costs to the system.

However, if the Board elects to approve this offering, the costs should be recovered through a C&I PIV tariff, and not socialized to all commercial and industrial ratepayers.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #6, Rebates for Level 2 EVSE for Electric Vehicle Fleets, Plus Demand Charge Offset Incentive?

A. Under offering #6, ACE proposes to provide the same incentives as under Offering #5, but targeted toward vehicle fleet owners and operators.[83] As Mr. Warner notes, "fleet owners are strongly attracted to the operating cost advantages of PIVs."[84] It seems unlikely that fleet owners and operators are dissuaded from adopting PIV technology because of the cost of L2 chargers, or that offering rebates on L2 chargers will make a significant difference in this purchase decision. In fact, providing PIV charging services

[83] Petition, ¶ 36.
[84] Warner Direct, page 32 at 28.

for fleets has been identified as an attractive private sector opportunity, estimated in a recent report from McKinsey as worth up to a $15 billion per year in the United States.[85] Thus I recommend that the Board reject this proposed offering, whether or not it elects to proceed with the Company's petition as a whole. However, if the Board elects to approve this offering, the costs should be recovered through a C&I PIV tariff, and not socialized to all commercial and industrial ratepayers.

Q. What is your recommendation for the Board regarding ACE's proposed Offerings #7, Public Charging – Utility-Owned and Operated DCFCs, and Offering #8, Public Charging – Utility-Owned Level 2 EVSEs?

A. Under Offering #7 ACE proposes to install up to 45 publicly-available DCFC, owned and maintained by the Company, at an estimated 15 transportation corridor locations in an effort to address "range anxiety", and also to provide charging infrastructure for PIV owners that do not have at-home charging capability.[86] The Company states that it "intends to target underserved areas in ACE's service territory under this Offering, such as LMI [low and moderate income] and EJ [environmental justice] communities." And would use electricity sourced from "100% renewable sources."[87] Offering 8 is substantially similar except that ACE would provide up to 200 Level 2 chargers at an

[85] McKinsey & Company, "Charging electric-vehicle fleets: How to seize the emerging opportunity." March 10, 2020. Available at https://www.mckinsey.com/business-functions/sustainability/our-insights/charging-electric-vehicle-fleets-how-to-seize-the-emerging-opportunity.
[86] Petition ¶ 37.
[87] *Ibid.*

estimated 65 "neighborhood locations," also owned and maintained by the Company.[88] As with Offering #7, the Company "intends to target underserved areas of the State for the Level 2 chargers under Offering 8, such as LMI and EJ communities," and would "provide electricity from 100% renewable energy sources through the embedded Green Adder."[89]

The Board should reject proposed Offerings #7 and #8 at this time, whether or not it elects to proceed with the Company's petition as a whole. The Company cannot demonstrate that the areas it has identified would not otherwise be served by the private sector; nor has the Board yet established procedures for identifying such locations, or defined the "party of last resort" role for utilities suggested in Staff's Straw Proposal.[90] In my opinion, ACE's proposals are likely to be inconsistent with New Jersey's policy regarding utility ownership of charging infrastructure, and would impose undue interference on developing a competitive marketplace for EVSE.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #9, Demand Charge Incentive and "Make Ready" Work Incentives for Non-Utility Owned Public DCFCs?

A. Under this offering, ACE proposes two components to support privately-owned DCFC installations. First, the Company would provide an off-bill "demand charge incentive" to address the risk of high average per-kWh costs under conditions of low-utilization. This

[88] Petition, ¶ 38.
[89] *Ibid.*
[90] Straw Proposal, page 7.

incentive would be structured using a "set point" of 20 cents per kWh, such that the average cost of charging after the rebate over a period of time[91] would not exceed this level.[92]

Second, the Company would provide make-ready work, wherein it would "develop the electric infrastructure required to install a DCFC, up to the point of the charger connection, all at no direct cost to the participating non-utility owner/operator DCFC.[93]

The provision of make-ready work represents a reasonable utility role in support of private charging investment, and is consistent with Staff's "Shared Responsibility" model. If the Board chooses to move forward with the Company's petition, this element could be approved. The demand charge rebate proposal is also consistent with the recommendations of the Straw Proposal currently under consideration by the Board.[94] However, in my opinion, this approach would have distorting effects on market incentives that cannot be ignored. As noted by Rate Counsel in comments on the Straw Proposal:

> EVSE providers should be incentivized to concentrate charging in off-peak hours, or to implement other solutions to mitigate on-peak loads such as on-site battery storage. Therefore, Rate Counsel does not support the complete elimination of demand charges or the economic signal they represent. Instead,

[91] The Company did not specify over what period of time this average would be calculated.
[92] Petition, ¶ 39.
[93] *Ibid.*
[94] Straw Proposal, pages 12-13.

> Rate Counsel recommends that demand charges be reduced for EVSE during off-peak time, but not during on-peak times. Users who insist on charging during peak times should pay a premium to reflect the burden they are imposing on the system, and should not be given an effective subsidy for this practice by other ratepayers. Separate EV-only charging tariffs, discussed below, could permit some degree of flexibility to address the structure of demand charges as compared to a typical commercial rate tariff.[95]

Given the very real costs that demand charges are designed to reflect, private DCFC owners should have an appropriate incentive to mitigate these costs themselves through marketing and operational strategies, or through technical solutions such as on-site battery storage. Providing this service also represents an opportunity for private sector solutions. Muting this market signal would compromise this opportunity, and at the same time impose these costs on other ratepayers. For this reason, I recommend that the Commission reject the demand charge incentive proposed by the Company for Offering #9, whether or not the Board elects to move forward with the Company's petition as a whole. I further recommend that if the Board approves any part of this offering, any costs should be recovered through the Company's Residential and C&I PIV tariffs, and not socialized to all ratepayers.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #10, the Innovation Fund?

A. Under this offering, ACE would create an "Innovation Fund" whereby "interested persons or groups could seek funding from the Company to support innovative projects

[95] Rate Counsel comments on EV Straw Proposal, June 17, 2020, page 19

designed to further PIV charging in the State and support electrification of the transportation sector."[96] The Company provided a few examples of possible project types and notes that "Projects designed to serve underserved and/or LMI and EJ communities would be desired and encouraged."[97] This poorly-defined R&D program is not supported by either the PIV Act or the EV Straw Proposal, and should not be funded by New Jersey ratepayers. I recommend that it be rejected by the Board, whether or not the Board elects to move forward with the Company's petition as a whole.

Q. What is your recommendation for the Board regarding ACE's proposed Offerings #11, Electric School Bus Fund, and Offering #12, New Jersey Transit Bus Electrification?

A. Under Offering #11, ACE proposes to spend $5.5 million in ratepayer funding "to school districts to cover the incremental cost of up to 20 electric school buses over traditional diesel-fueled school buses" along with charging infrastructure.[98] Under Offering #12, the Company proposes "to provide charging infrastructure for a New Jersey Transit bus depot in ACE's service territory" at a cost of $2.5 million to ratepayers.[99]

As Rate Counsel noted in its comments on the Straw Proposal:

> New Jersey public utility law has developed safeguards for the respective property rights and obligations of ratepayers and public utility companies. An EDC may recover only the fair value of prudent investments in utility property

[96] Petition ¶ 40.
[97] *Ibid.*
[98] Petition ¶ 41.
[99] Petition ¶ 42.

> that is used and useful in providing public utility service. Public utility service must be safe, adequate and proper. Utility rates must be "just and reasonable." A related principle is that costs should be allocated to the party who causes the utility to incur them, i.e., the "cost causation" principle. In other words, a party that wants and will benefit from a public utility investment or service should pay for it…The provision of electric transportation equipment is not a public utility function… An EDC certainly may not use ratepayer funds to purchase an electric school bus and donate it to a school district or their transportation contractor, nor donate to the school or contractor the incremental cost of an electric school bus. Such equipment would not be used and useful in providing public utility service. The same principles prohibit using ratepayer funds to purchase electrically powered motor vehicles or other equipment to be owned and used by a port authority, transportation agency or other entity.[100]

Regardless of the societal benefits, proposed offerings 11 and 12 are wholly inappropriate uses of ratepayer funding and should be rejected, whether or not the Board elects to move forward with the Company's petition as a whole.

Q. What is your recommendation for the Board regarding ACE's proposed Offering #13, the Green Adder?

A. This offering will allow PIV owners, at their own election expense, to select and promote incremental zero-emission energy sources. If the Board chooses to move forward with the Company's petition, I recommend that this offering be approved by the Board.

[100] Rate Counsel Comments on EV Straw Proposal, June 17, 2020, pages 7-8.

VII. Overall Recommendations

Q. What are your recommendations in this matter?

A. I recommend that the Board deny ACE's petition in its entirety at this time. The Company has not established that its proposed offerings are in harmony with New Jersey law, that they are necessary or appropriate for meeting the goals set forth in applicable legislation, or that they are required by or even consistent with its statutory obligation to provide reliable electric service at just and reasonable rates.

If the Board chooses not to reject the Company's petition outright, I recommend that the Board approve offering 13 as proposed; reject offerings 3, 5, 6, 7, 8, 10, 11, and 12; and approve offerings 1, 2, 4, and 9 in part or with modifications as detailed herein.

Whatever PIV-related offerings the Board decides to approve in this or a later proceeding, I recommend that the Company be directed to establish PIV-specific Residential and C&I rate classes for electricity used for the purpose of charging electric vehicles, and that the specific costs associated with support for PIV charging infrastructure be allocated to this class, consistent with the ratemaking principle of allocating costs based on causation.

Q. Does this conclude your testimony?

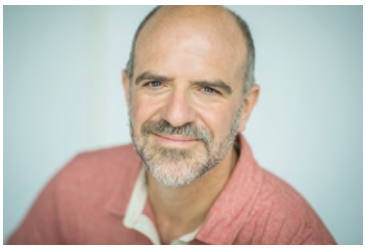
A. Yes, it does at this time. Rate Counsel reserves its right to present supplemental testimony based on any updated and/or new information.

Attachment

Exhibit EDH-1 Resume of Ezra D. Hausman, Ph.D.

Ezra D. Hausman, Ph.D.

Curriculum Vitae



I am an independent consultant in energy and environmental economics.

I have worked for over two decades as an energy market expert with a focus on market design and market restructuring, planning and ratemaking, energy efficiency programs, environmental regulation, and pricing of energy, capacity, transmission, losses and other electricity-related services. I have performed market analysis, provided expert testimony, led workshops and working groups, and provided other support in both regulated and restructured electricity markets for clients including federal and state agencies, offices of consumer advocate, legislative bodies, cities and towns, non-governmental organizations, foundations, industry associations, and resource developers.

I hold a Ph.D. in atmospheric science from Harvard University, an S.M. in applied physics from Harvard University, an M.S. in water resource engineering from Tufts University, and a B.A. in psychology from Wesleyan University.

PROFESSIONAL EXPERIENCE

Ezra Hausman Consulting, Newton, MA. President, March 2014 – Present.
I provide research, analysis, expert testimony, and policy support services in regulatory, litigation, and stakeholder processes covering a wide range of electric sector and electriciuty market issues. The focus of my consulting work includes:

- Ratemaking and regulatory proceedings
- Wholesale market design and analysis for electricity, generating capacity, and related services
- Demand-side management/energy efficiency program design and cost/benefit analysis
- Utility role in developing electric vehicles infrastructure
- Interaction of air quality and environmental regulations with electricity markets
- Analysis and implementation of greenhouse gas rules
- Clean Air Act enforcement support
- Long-term electric power system planning
- Consumer and environmental protection
- Market power and market concentration analysis in electricity markets.

Synapse Energy Economics Inc., Cambridge, MA.
Chief Operating Officer, March 2011 – February 2014;
Vice President, July 2009 – February 2014;
Senior Associate, 2005-2009.

- Conducted research, wrote reports, and presented expert testimony pertaining to consumer, environmental, and public policy implications of electricity industry regulation. Provided expert support and representation in planning, greenhouse gas mitigation, and other stakeholder processes.
- As Vice President and Chief Operating Officer, I was also responsible for day-to-day operations of the company, quality assurance, client service, and professional development of staff.

Charles River Associates (CRA), Cambridge, MA. Senior Associate, 2004-2005
CRA acquired Tabors Caramanis & Associates in October 2004.

Tabors Caramanis & Associates, Cambridge, MA. Senior Associate, 1998-2004
As a member of the modeling group, developed and maintained dispatch modeling capability in support of electricity market consulting practice.

Performed modeling and analysis of electricity and natural gas markets, generation and transmission systems.

Global Risk Prediction Network, Inc., Greenland, NH. Vice President, 1997-1998
Developed private sector applications of climate forecast science in partnership with researchers at Columbia University.

Hub Data, Inc., Cambridge, MA. Financial Software Consultant, 1986-1987, 1993-1997
Responsible for design, implementation and support of analytic and communications modules for bond portfolio management software.

Abt Associates, Inc., Cambridge, MA. Environmental Policy Analyst, 1990-1991
Quantitative risk analysis to support federal environmental policy-making.

Massachusetts Water Resources Authority, Charlestown, MA. Analyst, 1988-1990
Applied and evaluated demand forecasting techniques for the Eastern Massachusetts service area; assessed yield/reliability relationship for the eastern Massachusetts water supply system.

Somerville High School, Somerville, MA. Math Teacher, 1986-1987
Courses included trigonometry, computer programming, and basic math.

EDUCATION

Ph.D., Earth and Planetary Sciences. Harvard University, Cambridge, MA, 1997

S.M., Applied Physics. Harvard University, Cambridge, MA, 1993

M.S., Civil Engineering. Tufts University, Medford, MA, 1990

B.A., Wesleyan University, Psychology. Middletown, CT, 1985

FELLOWSHIPS, AWARDS AND AFFILIATIONS

UCAR Visiting Scientist Postdoctoral Fellowship, 1997

Postdoctoral Research Fellowship, Harvard University, 1997

Certificate of Distinction in Teaching, Harvard University, 1997

Graduate Research Fellowship, Harvard University, 1991-1997

Invited Participant, UCAR Global Change Institute, 1993

House Tutor, Leverett House, Harvard University, 1991-1993

Graduate Research Fellowship, Massachusetts Water Resources Authority, 1989-1990

Teaching Fellowships:

Harvard University: *Principles of Measurement and Modeling in Atmospheric Chemistry; Hydrology; Introduction to Environmental Science and Public Policy; The Atmosphere*.

Wesleyan University: *Introduction to Computer Programming; Psychological Statistics; Playwriting and Production.*

Community Service

Vice President of Finance, Congregation Dorshei Tzedek, 2018 - Ongoing
Academic Mentor and Athletic Coach, SquashBusters Boston, 2014 - Ongoing
Judge, Cleantech Open innovation competitions, 2015-2016
President, Burr Elementary School Parent Teacher Organization, 2005-2007

EXPERT TESTIMONY AND SERVICES

Before the Public Utility Commission of Oregon (Case No. UE 374) – 2020-Ongoing
Expert witness on behalf of the Sierra Club in Pacific Power General Rate Case.

Before the Pennsylvania Public Utility Commission (Docket No. R-2020-3017206) – 2020-ongoing
Expert witness on behalf of the Clean Energy Council regarding Philadelphia Gas Works' general rate increase request.

Before the Public Service Commission of the District of Columbia (Formal Case No. 1154) – 2020
Expert witness on behalf of the Sierra Club regarding Washington Gas Light's PROJECT*pipes* II filing.

Before the New Jersey Board of Public Utilities (Docket No. EO18020190) – 2018-ongoing
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the Atlantic City Electric's proposed Voluntary Program for Plug-In Vehicle Charging.

Before the New Jersey Board of Public Utilities (Docket. Nos. ER18070688 and GR18070689) – 2019
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the Public Service Electric & Gas' 2018 PSE&G Green Programs Cost Recovery Filing. Settled prior to filing of intervener testimony.

Before the New Jersey Board of Public Utilities (Docket No. G018030350) – 2018
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the South Jersey Gas' Energy Efficiency Programs IV filing. Settled prior to filing of intervener testimony.

Before the New Jersey Board of Public Utilities (Docket No. GO18030355) – 2018
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the New Jersey Natural Gas Company's SAVEGREEN energy efficiency and renewable energy programs. Case was settled prior to filing of intervener testimony.

Before the New Jersey Board of Public Utilities (Docket No. EO18101111) – 2018-ongoing
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the Public Service Electric & Gas' proposed *Clean Energy Future - Electric Vehicle and Energy Storage* program.

Before the New Jersey Board of Public Utilities (Docket Nos. GO18101112 and EO16101113) – 2018-ongoing
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the Public Service Electric & Gas' proposed *Clean Energy Future - Energy Efficiency* program.

New Jersey Board of Public Utilities – 2020-Ongoing
Expert participation is stakeholder process regarding conversion to high-efficiency street lights on behalf of Rate Counsel.

New Jersey Board of Public Utilities – 2019-Ongoing
Expert participation is stakeholder process regarding transportation electrification policies on behalf of Rate Counsel.

New Jersey Division of Rate Counsel – 2016-Ongoing
General policy and stakeholder participation support on matters related to energy efficiency, renewable energy, and electrification of transportation in New Jersey.

Before the Washington Utilities and Transportation Commission – 2020-Ongoing
Expert witness on behalf of the Sierra Club regarding potential sale of ownership sale in Colstrip generating unit.

Before the Utah Public Service Commission (Docket No. 18-035-36) – 2020
Expert witness on behalf of the Sierra Club in Rocky Mountain Power depreciation case.

PacifiCorp Multi-State Protocols Stakeholder Process – 2019-Ongoing
Participation on behalf of Sierra Club in stakeholder process to establish protocols for allocation of resource costs ad benefits among PacifiCorp states.

Advisory Consulting for Natural Resources Defense Council – 2019-2020
Provide advisory and technical support to analysis team.

Memphis Light, Gas and Water – Power Supply Alternatives Study (2019-Ongoing)
Expert support for Sierra Club participation in Power Supply Advisory Team.

Before the Washington Utilities and Transportation Commission (Dockets UE-190334 and UG-190335) – 2019
Expert witness on behalf of the Sierra Club in Avista Energy rate case.

Before the Public Service Commission of South Carolina (Docket No. 2018-319-E) – 2019
Expert witness on behalf of the Sierra Club in Duke Energy Carolinas rate case.

Before the Public Service Commission of South Carolina (Docket No. 2018-318-E) – 2019
Expert witness on behalf of the Sierra Club in Duke Energy Progress rate case.

Before the Virginia State Corporation Commission (Case No. PUR-2018-00065) – 2018
Expert witness on behalf of the Sierra Club in Dominion Power IRP proceeding.

Before the Missouri Public Service Commission (Case No. EO-2018-0038) – 2018
Expert services in support of Sierra Club's participation in integrated resource planning process.

Before the Florida Public Service Commission (Docket No. 20170225-EI) – 2017-2018
Expert witness on behalf of the Sierra Club in FPL Determination of Need proceeding.

Before the North Carolina Utilities Commission (Docket No. E-7, SUB 1146) – 2017-2018
Expert witness on behalf of the Sierra Club in Duke Energy Carolinas rate case.

Before the New Jersey Board of Public Utilities (Docket No. ER17080869) – 2017
Expert witness on behalf of the New Jersey Division of rate Counsel regarding Public Service Electric and Gas Company's proposed Energy Efficiency 2017 Program.

Before the New Jersey Board of Public Utilities (Docket No. EO17030196) – 2017
Expert witness on behalf of the New Jersey Division of rate Counsel regarding Rockland Electric Company's proposed Low Income Audit and Install Energy Efficiency Program.

Before the New Jersey Board of Public Utilities (Docket No. GO15050504) – 2017
Expert witness on behalf of the New Jersey Division of rate Counsel regarding Elizabethtown Gas Company's Petition to Extend the Term of Energy Efficiency Programs. Settled prior to filing of intervener testimony.

Before the North Carolina Utilities Commission (Docket No. E-2, SUB 1142) – 2017
Expert witness on behalf of the Sierra Club in Duke Energy Progress rate case.

Before the Idaho Public Utilities Commission (Case No. AVU-E-17-01) – 2017
Expert witness on behalf of the Sierra Club in Avista Corporation rate case.

Before the Iowa Utilities Board (Docket No. RPU-2017-0002) –- 2017
Expert witness on behalf of the Sierra Club for Interstate Power and Light petition for ratemaking principles for proposed 500 MW wind project.

Before the Washington Utilities and Transportation Commission (Dockets UE-170033 and UG-170034) – 2017
Expert witness on behalf of the Sierra Club in Puget Sound Energy (PSE) rate case.

Clean Power Plan Modeling in PJM and MISO – 2016-2017
Participation on behalf of the Sustainable FERC Project in ISO initiative to model scenarios for state compliance with federal greenhouse gas mitigation rules.

California ISO/PacifiCorp Market Integration – 2015-2017
Technical support to Sierra Club in stakeholder review and participation in all relevant proceedings in California.

Before the New Jersey Board of Public Utilities (Docket No. GO14121412) – 2015
Expert witness on behalf of the New Jersey Division of rate Counsel regarding the New Jersey Natural Gas Company's petition for approval of its Extension of Energy - Efficiency Programs. Case was settled prior to filing of intervener testimony.

Before the New Jersey Board of Public Utilities (Docket No. GR15010090) – 2015
Expert witness on behalf of the New Jersey Division of rate Counsel regarding South Jersey Gas Company's petition for for Approval to Continue its Energy Efficiency Programs and Energy Efficiency Tracker. Case was settled prior to filing of intervener testimony.

United States Department of Justice – US District Court for the Eastern District of Missouri (Civil Action No. 4:11-CV-00077) – 2013-2019
Expert witness on behalf of the United States Department of Justice on successful prosecution of clean air act case.

Before the Missouri Public Service Commission (Case No. EO-2015-0084) – 2014-2015
Expert services in support of Sierra Club's participation in integrated resource planning process.

Before the Missouri Public Service Commission (File No. ER-2014-0258) – 2014-2015
Expert witness on behalf of the Sierra Club in Ameren Missouri rate case.

Before the Arizona Corporation Commission (Docket No. E-01345A-11-0224) – 2014
Expert witness on behalf of the Sierra Club regarding Arizona Public Service petition for rate treatment for acquisition of an additional ownership share of the Four Corners generating units.

Before the Missouri Public Service Comission (Docket No. ET-2014-0085) – 2013
Testimony on behalf of the Missouri Solar Energy Industries Association regarding Union Electric (d/b/a Ameren Missouri) motion to suspend payment of solar rebates.

Before the Missouri Public Service Comission (Docket No. ET-2014-0059 and ET-2014-0071) – 2013
Testimony on behalf of the Missouri Solar Energy Industries Association regarding Kansas City Power and Light Company's motions to suspend payment of solar rebates.

Eastern Interconnect Planning Collaborative (EIPC) – 2012-2013
Expert support on behalf of coalition of NGO stakeholders in transmission and resource planning process, including development and review of modeling assumptions and interim results, and development of comments.

Puget Sound Energy (PSE) – 2012-2013
Expert participant in PSE's 2013 IRP stakeholder process on behalf of the Sierra Club.

Before the Washington Utilities and Transportation Commission (Docket Nos. UE-111048 and UG-111049) – 2011
Testimony on behalf of the Sierra Club regarding the cost of operating the Colstrip power plant and other power procurement issues.

Before the Kansas Corporation Commission (Docket No. 11-KCPE-581-PRE) - 2011
Presented written and live testimony on behalf of the Sierra Club regarding Kansas City Power and Light request for predetermination of ratemaking principles.

Vermont Department of Public Service - 2011
Provided scenario analysis of the costs and benefits of various electric energy resource scenarios in support of the state Comprehensive Energy Plan.

Massachusetts Department of Energy Resources – 2009-2011
Served as expert analyst and modeling coordinator for analysis related to implementation of the Massachusetts Global Warming Solutions Act.

Iowa Office of Consumer Advocate – 2010-2011
Assisted Consumer Advocate in evaluating a proposed power purchase agreement for the output of the Duane Arnold nuclear power station.

Before the Missouri Public Service Commission (Docket No. EW-2010-0187) – 2010
Expert participant on behalf of the Sierra Club in stakeholder process to develop a "demand side investment mechanism" in Missouri.

Before the Louisiana Public Service Commission (Docket No. R-28271 Subdocket B) – 2009-2010
Expert participant on behalf of the Sierra Club in Renewable Portfolio Standard Task Force considering RPS for Louisiana.

Joint Fiscal Committee of the Vermont Legislature – 2008-2010
Serving as lead expert advising the Legislature on economic issues related to the possible recertification of the Vermont Yankee nuclear power plant.

Town of Littleton, NH – 2006-2010
Serving as expert witness on the value of the Moore hydroelectric facility.

Before the Nevada Public Service Commission (Docket No. 08-05014) – August 2008
Presented prefiled and live testimony on behalf of Nevadans for Clean Affordable Reliable Energy regarding the proposed Ely Energy Center and resource planning practices in Nevada.

Before the Mississippi Public Service Commission (Docket No. 2008-AD-158) – July 2008
Presented written and live testimony on behalf of the Sierra Club regarding the resource plans filed by Entergy Mississippi and Mississippi Power Company.

Kansas House of Representatives - Committee on Energy and Utilities – February 2008
Presented testimony on behalf of the Climate and Energy Project of the Land Institute of Kansas on a proposed bill regarding permitting of power plants. Focus was on the risks and costs associated with new coal plants and on their contribute to global climate change.

Before the Vermont Public Service Board (Docket No. 7250) – 2006-2008
Prepared report and testimony in support of the application of Deerfield Wind, LLC. For a Certificate of Public Good for a proposed wind power facility.

Before the Iowa Utilities Board (Docket No. GCU-07-1) – October, 2007 – January 2008
Presented wrtten and live testimony on behalf of the Iowa Office of Consumer Advocate regarding the science of global climate change and the contribution of new coal plants to atmospheric CO_2.

Before the Nevada Public Service Commission (Docket No. 07-06049) – October 2007
Presented prefiled direct testimony on behalf of Nevadans for Clean Affordable Reliable Energy regarding treatment of carbon emissions costs and coal plant capital costs in utility resource planning.

Before the Massachusetts General Court, Joint Committee on Economic Development and Emerging Technologies – July 2007
Presented written and live testimony on climate change science and the potential benefits of a revenue-neutral carbon tax in Massachusetts.

Town of Rockingham, VT – 2006-2007
Served as expert witness on the value of the Bellows Falls hydroelectric facility.

Before the South Dakota Public Utilities Commission (Case No EL05-22) – June 2006
Minnesota Public Utilities Commission (Docket TR-05-1275) – December 2006
Submitted prefiled and live testimony on the contribution of the proposed Big Stone II coal-fired generator to atmospheric CO_2, global climate change and the environment of South Dakota and Minnesota, respectively.

Before the Arkansas Public Service Commission (Docket No. 06-070-U) – October 2006
Submitted prefiled direct testimony on inclusion of new wind and gas-fired generation resources in utility rate base.

Federal Energy Regulatory Commission (Docket Nos. ER055-1410-000 and EL05-148-000) – May-Sept 2006

- Participant in settlement hearings on proposed capacity market structure (the Reliability Pricing Model, or RPM) on behalf of State Consumer Advocates in Pennsylvania, Ohio and the District of Columbia
- Invited participant on technical conference panel on PJM's proposed Variable Resource Requirement (VRR) curve
- Filed Pre- and post-conference comments and affidavits with FERC
- Participated in numerous training and design conferences at PJM on RPM implementation.

Before the Illinois Pollution Control Board (Docket No. R2006-025) – June-Aug 2006
Prefile and live testimony presented on behalf of the Illinois EPA regarding the costs and benefits of proposed mercury emissions rule for Illinois power plants.

Long Island Sound LNG Task Force – January 2006
Presentation of study on the need for and alternatives to the proposed Broadwater LNG storage and regasification facility in Long Island Sound.

Before the Iowa Utilities Board (Docket No. SPU-05-15) – November 2005
Presented written and live testimony on whether Interstate Power and Light's should be permitted to sell the Duane Arnold Energy Center nuclear facility to FPLE Duane Arnold, Inc., a subsidiary of Florida Power and Light.

PUBLICATIONS AND REPORTS

Hausman, E., Review of AltaGas' Climate Business Plan and Renewable Natural Gas Study. Technical report prepared on behalf of the Sierra Club, June 2020.

Hausman, E., The Worst of Both Worlds: Why the Ohio Legislature's OVEC Bailout Bill would Harm Consumers, Impede Competition, Increase Pollution, and Impair the Health and Welfare of Ohioans for Decades. White paper produced on behalf of The Sierra Club, June 2017.

Hausman, E., Risks and Opportunities for PacifiCorp - State Level Findings: Utah, Produced on behalf of the Sierra Club, October 2014.

Hausman, E., Risks and Opportunities for PacifiCorp - State Level Findings: Oregon, Produced on behalf of the Sierra Club, October 2014.

Hausman, E., Risks and Opportunities for PacifiCorp in a Carbon Constrained Economy, Produced on behalf of the Sierra Club, October 2014.

Luckow, P., E. Stanton, B. Biewald, J. Fisher, F. Ackerman, E. Hausman, 2013 Carbon Dioxide Price Forecast, Synapse Energy Economics, November 2013.

Stanton, E., T. Comings, K. Takahashi, P. Knight, T. Vitolo, E. Hausman, Economic Impacts of the NRDC Carbon Standard: Background Report prepared for the Natural Resources Defense Council, Synapse Energy Economics for NRDC, June 2013

Comings T., P. Knight, E. Hausman, Midwest Generation's Illinois Coal Plants: Too Expensive to Compete? (Report Update) Synapse Energy Economics for Sierra Club, April 2013

Stanton E., F. Ackerman, T. Comings, P. Knight, T. Vitolo, E. Hausman, Will LNG Exports Benefit the United States Economy? Synapse Energy Economics for Sierra Club, January 2013

Chang M., D. White, E. Hausman, Risks to Ratepayers: An Examination of the Proposed William States Lee III Nuclear Generation Station, and the Implications of "Early Cost Recovery" Legislation, Synapse Energy Economics for Consumers Against Rate Hikes, December 2012

Wilson R., P. Luckow, B. Biewald, F. Ackerman, and E.D. Hausman, 2012 Carbon Dioxide Price Forecast, Synapse Energy Economics, October 2012.

Fagan B., M. Chang, P. Knight, M. Schultz, T. Comings, E.D. Hausman, and R. Wilson, The Potential Rate Effects of Wind Energy and Transmission in the Midwest ISO Region. Synapse Energy Economics for Energy Future Coalition, May 2012.

Hausman, E.D., T. Comings, "Midwest Generation's Illinois Coal Plants: Too Expensive to Compete? Synapse Energy Economics for Sierra Club, April 2012.

Hausman, E.D., T. Comings, and G. Keith, Maximizing Benefits: Recommendations for Meeting Long-Term Demand for Standard Offer Service in Maryland. Synapse Energy Economics for Sierra Club, January 2012.

Keith G., B. Biewald, E.D. Hausman, K. Takahashi, T. Vitolo, T. Comings, and P. Knight, Toward a Sustainable Future for the U.S. Power Sector: Beyond Business as Usual 2011 Synpase Energy Economics for Civil Society Institute, November 2011.

Chang M., D. White, E.D. Hausman, N. Hughes, and B. Biewald, Big Risks, Better Alternatives: An Examination of Two Nuclear Energy Projects in the U.S. Synpase Energy Economics for Union of Concerned Scientists, October 2011.

Hausman E.D., T. Comings, K. Takahashi, R. Wilson, and W. Steinhurst, Electricity Scenario Analysis for the Vermont Comprehensive Energy Plan 2011. Synapse Energy Economics for Vermont Department of Public Service, September 2011.

Wittenstein M., E.D. Hausman, Incenting the Old, Preventing the New: Flaws in Capacity Market Design, and Recommendations for Improvement. Synapse Energy Economics for American Public Power Association, June 2011.

Johnston L., E.D. Hausman, B. Biewald, R. Wilson, and D. White. 2011 Carbon Dioxide Price Forecast. Synapse Energy Economics White Paper, February 2011.

Hausman E.D., V. Sabodash, N. Hughes, and J. I. Fisher, Economic Impact Analysis of New Mexico's Greenhouse Gas Emissions Rule. Synapse Energy Economics for New Energy Economy, February 2011.

Hausman E.D., J. Fisher, L. Mancinelli, and B. Biewald. Productive and Unproductive Costs of CO2 Cap-and-Trade: Impacts on Electricity Consumers and Producers. Synapse Energy Economics for National Association of Regulatory Utility Commissioners, National Association of State Utility Consumer Advocates, National Rural Electric Cooperative Association, and American Public Power Association, July 2009.

Peterson P., E. Hausman, R. Fagan, and V. Sabodash, Report to the Ohio Office of Consumer Counsel, on the value of continued participation in RTOs. Filed under Ohio PUC Case No. 09-90-EL-COI, May 2009.

Schlissel D., L. Johnston, B. Biewald, D. White, E. Hausman, C. James, and J. Fisher, Synapse 2008 CO2 Price Forecasts. July 2008.

Hausman E.D., J. Fisher and B. Biewald, Analysis of Indirect Emissions Benefits of Wind, Landfill Gas, and Municipal Solid Waste Generation. Synapse Energy Economics Report to the Air Pollution Prevention and Control Division, National Risk Management Research Laboratory, U.S. Environmental Protection Agency, July 2008.

Hausman E.D. and C. James, Cap and Trade CO2 Regulation: Efficient Mitigation or a Give-away? Synapse Enegy Ecomics presentation to the ELCON Spring Workshop, June 2008.

Hausman E.D., R. Hornby and A. Smith, Bilateral Contracting in Deregulated Electricity Markets. Synapse Energy Economics for the American Public Power Association, April 2008.

Hausman E.D., R. Fagan, D. White, K. Takahashi and A. Napoleon, LMP Electricity Markets: Market Operations, Market Power and Value for Consumers. Synapse Energy Economics for the American Public Power Association's Electricity Market Reform Initiative (EMRI) symposium, "Assessing Restructured Electricity Markets" in Washington, DC, February 2007.

Hausman E.D. and K. Takahashi, The Proposed Broadwater LNG Import Terminal Response to Draft Environmental Impact Statement and Update of Synapse Analysis. Synapse Energy Economics for the Connecticut Fund for the Environment and Save The Sound, January 2007.

Hausman E.D., K. Takahashi, D. Schlissel and B. Biewald, The Proposed Broadwater LNG Import Terminal: An Analysis and Assessment of Alternatives. Synapse Energy Economics for the Connecticut Fund for the Environment and Save The Sound, March 2006.

Hausman E.D., P. Peterson, D. White and B. Biewald, RPM 2006: Windfall Profits for Existing Base Load Units in PJM: An Update of Two Case Studies. Synapse Energy Economics for the Pennsylvania Office of Consumer Advocate and the Illinois Citizens Utility Board, February 2006.

Hausman E.D., K. Takahashi, and B. Biewald, The Glebe Mountain Wind Energy Project: Assessment of Project Benefits for Vermont and the New England Region. Synapse Energy Economics for Glebe Mountain Wind Energy, LLC., February 2006.

Hausman E.D., K. Takahashi, and B. Biewald, The Deerfield Wind Project: Assessment of the Need for Power and the Economic and Environmental Attributes of the Project. Synapse Energy Economics for Deerfield Wind, LLC., January 2006.

Hausman E.D., P. Peterson, D. White and B. Biewald, An RPM Case Study: Higher Costs for Consumers, Windfall Profits for Exelon. Synapse Energy Economics for the Illinois Citizens Utility Board, October 2005.

Hausman E.D. and G. Keith, Calculating Displaced Emissions from Energy Efficiency and Renewable Energy Initiatives. Synapse Energy Economics for EPA website 2005

Rudkevich A., E.D. Hausman, R.D. Tabors, J. Bagnal and C Kopel, Loss Hedging Rights: A Final Piece in the LMP Puzzle. Hawaii International Conference on System Sciences, Hawaii, January, 2005 (accepted).

Hausman E.D. and R.D. Tabors, The Role of Demand Underscheduling in the California Energy Crisis. Hawaii International Conference on System Sciences, Hawaii, January 2004.

Hausman E.D. and M.B. McElroy, The reorganization of the global carbon cycle at the last glacial termination. Global Biogeochemical Cycles, 13(2), 371-381, 1999.

Norton F.L., E.D. Hausman and M.B. McElroy, Hydrospheric transports, the oxygen isotope record, and tropical sea surface temperatures during the last glacial maximum. Paleoceanography, 12, 15-22, 1997.

Hausman E.D. and M.B. McElroy, Variations in the oceanic carbon cycle over glacial transitions: a time-dependent box model simulation. Presented at the spring meeting of the American Geophysical Union, San Francisco, 1996.

PRESENTATIONS AND WORKSHOPS

American Public Power Association: Invited expert participant in APPA's roundtable discussion of the current state of the RTO-operated electricity markets. October 2013.

California Long-Term Resource Adequacy Summit (Sponsored by the California ISO and the California Public Utility Commission): Panelist on "Applying Alternative Models to the California Market Construct." February 26, 2013.

ELCON 2011 Fall Workshop: "Do RTOs Need a Capacity Market?" October 2011.

Harvard Electricity Policy Group: Presentation on state action to ensure reliability in the face of capacity market failure. February 2011.

NASUCA 2010 Annual Conference: "Addressing Climate Change while Protecting Consumers." November 2010.

NASUCA Consumer Protection Committee: Briefing on the Synapse report entitled, "Productive and Unproductive Costs of CO_2 Cap-and-Trade." September 2009.

NARUC 2009 Summer Meeting: Invited speaker on topic: "Productive and Unproductive Costs of CO2 Cap-and-Trade." July, 2009.

NASUCA 2008 Mid-Year Meeting**:** Invited speaker on the topic, "Protecting Consumers in a Warming World, Part II: Deregulated Markets." June 2008.

Center for Climate Strategies: Facilitator and expert analyst on state-level policy options for mitigating greenhouse gas emissions. Serve as facilitator/expert for the Electricity Supply (ES) and Residential, Commercial and Industrial (RCI) Policy Working Groups in the states of Colorado and South Carolina. 2007-2008.

NASUCA 2007 Mid-Year Meeting**:** Invited speaker on the topic, "Protecting Consumers in a Warming World" June 2007.

ASHRAE Workshop on estimating greenhouse gas emissions from buildings in the design phase: Participant expert on estimating displaced emissions associated with energy efficiency in building design. Also hired by ASHRAE to document and produce a report on the workshop. April, 2007.

Assessing Restructured Electricity Markets An American Public Power Association Symposium: Invited speaker on the history and effectiveness of Locational Marginal Pricing (LMP) in northeastern United States electricity markets, February, 2007.

ASPO-USA 2006 National Conference: Invited speaker and panelist on the future role of LNG in the U.S. natural gas market, October, 2006.

Market Design Working Group: Participant in FERC-sponsored settlement process for designing capacity market structure for PJM on behalf of coalition of state utility consumer advocates, July-August 2006.

NASUCA 2006 Mid-Year Meeting**:** Invited speaker on the topic, "How Can Consumer Advocates Deal with Soaring Energy Prices?" June 2006.

Soundwaters Forum, Stamford, CT: Participated in a debate on the need for proposed Broadwater LNG terminal in Long Island Sound, June 2006.

Energy Modeling Forum: Participant in coordinated academic exercise focused on modeling US and world natural gas markets, December 2004.

Massachusetts Institute of Technology (MIT): Guest lecturer in Technology and Policy Program on electricity market structure, the LMP pricing system and risk hedging with FTRs. 2002-2005.

LMP: The Ultimate Hands-On Seminar. Two-day seminar held at various sites to explore concepts of LMP pricing and congestion risk hedging, including lecture and market simulation exercises. Custom seminars held for FERC staff, ERCOT staff, and various industry groups. 2003-2004.

Learning to Live with Locational Marginal Pricing: Fundamentals and Hands-On Simulation. Day-long seminar including on-line mock electricity market and congestion rights auction, December 2002.

LMP in California. Led a series of seminars on the introduction of LMP in the California electricity market, including on-line market simulation exercise. 2002.

Resume updated September 2020