IN THE MATTER OF THE PETITION OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY FOR APPROVAL OF ITS CLEAN ENERGY FUTURE ELECTRIC VEHICLE AND ENERGY STORAGE PROGRAMS ON A REGULATED BASIS

BPU Docket No. EO18101111

DIRECT TESTIMONY
OF
R. THOMAS BEACH
ON BEHALF OF
EVGO SERVICES LLC

September 4, 2020

EXECUTIVE SUMMARY OF RECOMMENDATIONS

This testimony presents the testimony of EVgo Services LLC (EVgo) on certain rate design issues associated with the request of Public Service Electric & Gas Company (PSEG) to implement new electric rates for commercial electric vehicle (CEV) charging facilities. Robust growth in commercial EV charging is necessary to meet New Jersey's important statewide goals to reduce greenhouse gas emissions through transportation electrification. EVgo supports the need for specific new electric rates for CEV charging facilities, in order to remove the barrier that standard commercial rates with significant demand charges present to the widespread deployment of facilities for public EV charging.

EVgo submits this testimony to address its significant concerns with PSEG's proposed CEV rate. PSEG is proposing to provide a rebate to CEV customers to the extent that their average rate in a month exceeds a target or "set point" rate. The factors that PSEG says it would use to establish the set point rate are largely factors that would reflect the utility's judgment of the value of electric service to CEV customers, not including the utility's own cost of service. EVgo is concerned that PSEG is not well-positioned to make these value-of-service judgements. Further, to the extent that the set point rate is linked closely to the costs of competing liquid fuels, the rate could vary significantly from year to year, due to the volatility in fossil fuel prices. This would introduce significant uncertainty in the set point rates that developers of CEV facilities could expect to pay over time as they build out a CEV charging infrastructure in New Jersey. Further, during the five-year period that the set point rate would be in effect under PSEG's proposal, station operators would have little incentive to increase usage or to offer pricing plans that encourage greater usage, unless it could be certain that its average rate would fall below the set point.

A better approach to establishing CEV rates would be to adopt a long-term plan to waive or reduce the demand charges applicable to CEV customers in PSEG's commercial rates. Many utilities in the U.S. have implemented successful CEV rate designs that feature waivers or reductions in demand charges. This testimony reviews the essential details of a number of these CEV rate designs. A reduction or waiver of demand charges better preserves the cost-based price signals conveyed by the utility's existing rate design. Further, because CEV loads are new, incremental loads, a rate with reduced recovery of fixed, demand-related costs will be beneficial to other ratepayers. The long-term nature of these rate structures also is important: the certainty that they provide to the owners and operators of CEV charging infrastructure will be crucial to supporting long-term investments in this new infrastructure. Finally, it is important to use a proven approach to resolving the demand charge barrier, given that time is of the essence in meeting New Jersey's ambitious 2025 goals for installing commercial EV chargers.

EVgo also supports making the new CEV rates available to all commercial EV customers, including existing facilities, not just to new customers that participate in PSEG's program under which the utility owns and installs make-ready facilities. CEV rate design should not discriminate against early adopters and should not favor those who participate in a particular program that adds to the utility's rate base.

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Prepared Direct Testimony of
R. Thomas Beach
on behalf of EVgo

Q1: Please state for the record your name, position, and business address.

A1: My name is R. Thomas Beach. I am principal consultant of the consulting firm Crossborder Energy. My business address is 2560 Ninth Street, Suite 213A, Berkeley, California 94710.

Q2: Please describe your experience and qualifications.

A2: My experience and qualifications are described in the attached *curriculum vitae* (CV), which is **Attachment RTB-1** to this testimony. As reflected in my CV, I have more than 35 years of experience on rate design and ratemaking issues for natural gas and electric utilities. I began my career in 1981 on the staff at the California Public Utilities Commission, working on the implementation of PURPA. Since leaving the CPUC in 1989, I have had a private consulting practice on energy issues and have appeared, testified, or submitted testimony, studies, or reports on numerous occasions before state regulatory commissions in 19 states. My CV includes a list of the formal testimony that I have sponsored in state regulatory proceedings concerning electric and gas utilities. One of the focuses of my consulting practice has been retail rate design issues for gas and electric utilities. With respect to the subject of my testimony in this case, in the last several years I have testified in two rate design proceedings in California concerning the design of rates for commercial electric vehicle (CEV) charging. I have not previously submitted testimony before this Board.

Q3: On whose behalf are you testifying today?

A3: I am appearing on behalf of EVgo Services LLC (EVgo). EVgo operates America's largest public EV fast charging network, with more than 800 direct current fast charging

(DCFC) locations located in 34 states and 66 metro markets nationwide. This network includes approximately 46 New Jersey fast chargers. Fast charging enables EV use by adopters without reliable access to charging at home or in the workplace, residents of multi-unit dwellings who rely on public charging for the majority of their charging needs, drivers utilizing key transit corridors,[1] as well as light duty vehicle (LDV) fleets, including car and rideshare applications. Today, roughly three quarters of New Jersey residents live within a 20-minute drive of one of EVgo's DCFC stations. EVgo is anticipating further expansion across New Jersey, assuming that there is a favorable economic environment for these long-term investments in clean energy infrastructure. It is EVgo expectation that its future DCFC stations in PSEG's territory would take service under the CEV charging rate that the Board approves in this proceeding.

I. SCOPE OF TESTIMONY

Q4: What is the scope of your testimony?

A4: My testimony presents EVgo's perspective on PSEG's proposed pricing for the electricity used by third-party-operated CEV charging stations, as presented in the testimony of PSEG witness Karen Reif. I am concerned that PSEG's proposed rebates to CEV operators are value-based and not cost-based, would depart from standard pricing approaches for utility services, and are likely to be contentious and unworkable. On behalf of EVgo, I propose an alternative rate design for CEV charging stations that is cost-based and competitive, that addresses the cost barrier to the growth of CEV charging infrastructure, and that is based on successful models from other markets.

[1] For example, EVgo recently completed energization of several DCFC locations on the New Jersey Turnpike and Garden State Parkway in collaboration with PSE&G.

II. REMOVING THE DEMAND CHARGE BARRIER

Q5: What is the principal barrier in existing commercial rates that impedes the deployment of a public fast charging infrastructure for EVs?

A5: The principal barrier is the demand charges that are a typical feature of commercial electric rates. The load factor of public fast charging stations is lower than that of other traditional commercial customers, especially at this nascent stage of the EV market. Station operators initially are unable to spread the significant demand charges in standard commercial rates over large volumes of usage. The result is very high per unit costs for commercial EV charging customers. These high $ per kWh costs may not be competitive with liquid fossil fuels. PSEG also has acknowledged this barrier, which PSEG's witness Ms. Reif describes as follows:

> In addition to the upfront costs, PSE&G recognizes that another barrier to entry in the DC Fast Charging market is the cost of electricity, especially in cases where demand charges apply and station utilization is low. Given the objective of DC Fast Charging stations – to deliver as much charge to drivers as possible in a short time window – they inherently face high levels of maximum demand under the existing PSE&G tariff. When coupled with low utilization overall, this can make the effective cost per kWh very expensive.[2]

III. PSEG'S "TARGET" OR "SET POINT" RATE PROPOSAL

Q6: How does PSEG propose to address the demand charge barrier to economic CEV rates?

A6: PSEG is proposing an off-bill rebate of electricity costs that will bring the CEV customer's per unit rate down to a "target rate" or "set point" that would be fixed for the CEV customer for a five-year period.

Q7: How would PSEG set this target or set point rate?

A7: PSEG's testimony has limited information on how the target rate would be set, stating in

general terms that the rate "will be determined by PSE&G using a variety of factors including but not limited to market dynamics affecting local customer electric rates and local DC Fast Charging economics."[3] In discovery, the utility provided little additional information, stating that "[m]ultiple factors should be considered when determining the target rate, including market benchmarks (i.e. rates charged to end users at existing DCFC stations), benchmark data regarding equivalence with gasoline fueling costs, existing commercial tariff rates, desired pricing for DCFC services to end users, the range of likely utilization levels, and basic DCFC investment economics."[4] PSEG further stated that it had "not finalized the methodology to set the target rate," but had "used a target rate of 40 cents/kWh to develop the program cost of the Company's proposal."[5] The utility further characterized the 40 cents/kWh set point rate as "a reasonable balance between addressing economic needs of the market and minimizing customer impacts."[6]

Q8: Did PSEG consider other possible pricing approaches, and if so, how did PSEG justify its choice of the target rate / set point method, in preference to those other possible approaches?

A8: PSEG stated in discovery that

> The Company assessed the demand charge holiday, similar to what is being offered in California, and a fixed-rate rebate for a fixed period of time, similar to what is being offered in New York. The Company chose the set point approach because it follows the cost-causation principle fundamental to rate design. The demand charge rebate provides a period of transition toward a standard tariff as utilization increases with increased EV adoption.[7]

PSEG also advanced this "cost causation" argument in its June 17, 2020 comments on the Staff "Straw Proposal" in Docket QO20050357:

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2 PSEG Testimony (Reif), at pp. 22-23.
3 *Ibid*., at p. 23.
4 PSEG response to Data Request (DR) TESLA-PSE&G-0001.
5 PSEG response to DR EVgo-PSEG-6(b) and DR EVgo-PSEG-6(e).
6 PSEG response to DR EVgo-PSEG-6(e).
7 PSEG response to DR EVgo-PSEG-8.

> The same [set point] mechanism will serve to maintain the appropriate rate for cost causation in the long term because demand charges, once utilization increases, send the correct cost signals to align peak demands with cost causation for distribution system delivery, transmission, and generation capacity costs of DCFC stations.[8]

IV. CRITIQUE OF THE SET POINT RATE PROPOSAL

Q9: Do you agree that PSEG's set point approach is consistent with cost causation principles?

A9: No, I do not. The cost causation principle in utility ratemaking generally refers to the concept that rates should be based on the utility's cost of service – more specifically, on how a customer's use of electricity causes the utility to incur costs to build, operate, and maintain its utility infrastructure.[9] The only way in which the utility's proposal is consistent with cost causation is that PSEG proposes to revert to standard (and presumably cost-based) commercial rates after the 5-year period using the "set point" rate is over. This is what the utility suggests in its two references to "cost causation" cited above – the set point rate is based on "cost causation" only because it is the rate for "a period of transition toward a standard [cost-based] tariff." But what happens after the set point period is over is beside the point and does not mean that the set point proposal itself is consistent with cost causation.

Q10: Please explain why the set point proposal is not based on cost causation.

A10: Most of the "multiple factors" that PSEG has stated will be included in its determination of the set point rate have nothing to do with the utility's costs, including:

- market benchmarks (i.e. rates charged to end users at existing DCFC stations),
- benchmark data regarding equivalence with gasoline fueling costs,

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[8] See PSEG June 17, 2020 comments in Docket QO20050357, at p. 12.

[9] See Jim Lazar, Paul Chernick, and William Marcus, *Electric Cost Allocation for a New Era: A Manual* (Regulatory Assistance Project, January 2020), at pp. 18 and 52: "Effective cost allocation and rate design require the identification of central cost causation factors, or cost drivers."

- desired pricing for DCFC services to end users,
- the range of likely utilization levels, and
- basic DCFC investment economics.

The only stated factor that is related to the utility's costs is "existing commercial tariff rates," although, as discussed above, there is general agreement that existing rates with demand charges present a significant barrier to the growth of CEV infrastructure. Thus, the existing rates would seem to be an inappropriate guide to setting the set point rate.

Q11: How would you characterize the factors that PSEG cites that are not related to the utility's costs?

A11: The factor bulleted above are all related to the value of electric service to the CEV charging customer or to the EV drivers that use a DCFC station, not to the utility's cost of service.

Q12: Do you have concerns with the utility determining a set point rate based on some of these value-based factors?

A12: Yes. Several of these factors would involve the utility making judgements about the state of competition in the CEV market ("rates charged to end users at existing DCFC stations"), about what EV customers think charging rates should be ("desired pricing for DCFC services to end users"), and about the economics of developing and running DCFC facilities ("basic DCFC investment economics"). I do not think that the utility is well-equipped or well-placed to make judgments about these aspects of the EV charging market in which it is not directly involved. It is particularly problematic to determine a set point rate that will be in place for five years based on such factors in a commercial EV market that is rapidly growing and evolving.

Q13: Should certain of these value of service factors for CEV customers be considered in setting CEV rates?

A13: Yes, but they should not be the only factors. Clearly, CEV rates need to be set at levels that allow EV owners to charge their vehicles at costs that, in general, are competitive with liquid fuels. This is important to encourage adoption of EVs and to increase usage of public charging facilities, which will be critical to support the long-term investments needed to deploy a CEV charging infrastructure. However, it would be a mistake to link the set point rate directly to the costs of liquid fuels.

Q14: Please explain why linking the "set point" directly to the cost of competing liquid fuels is problematic.

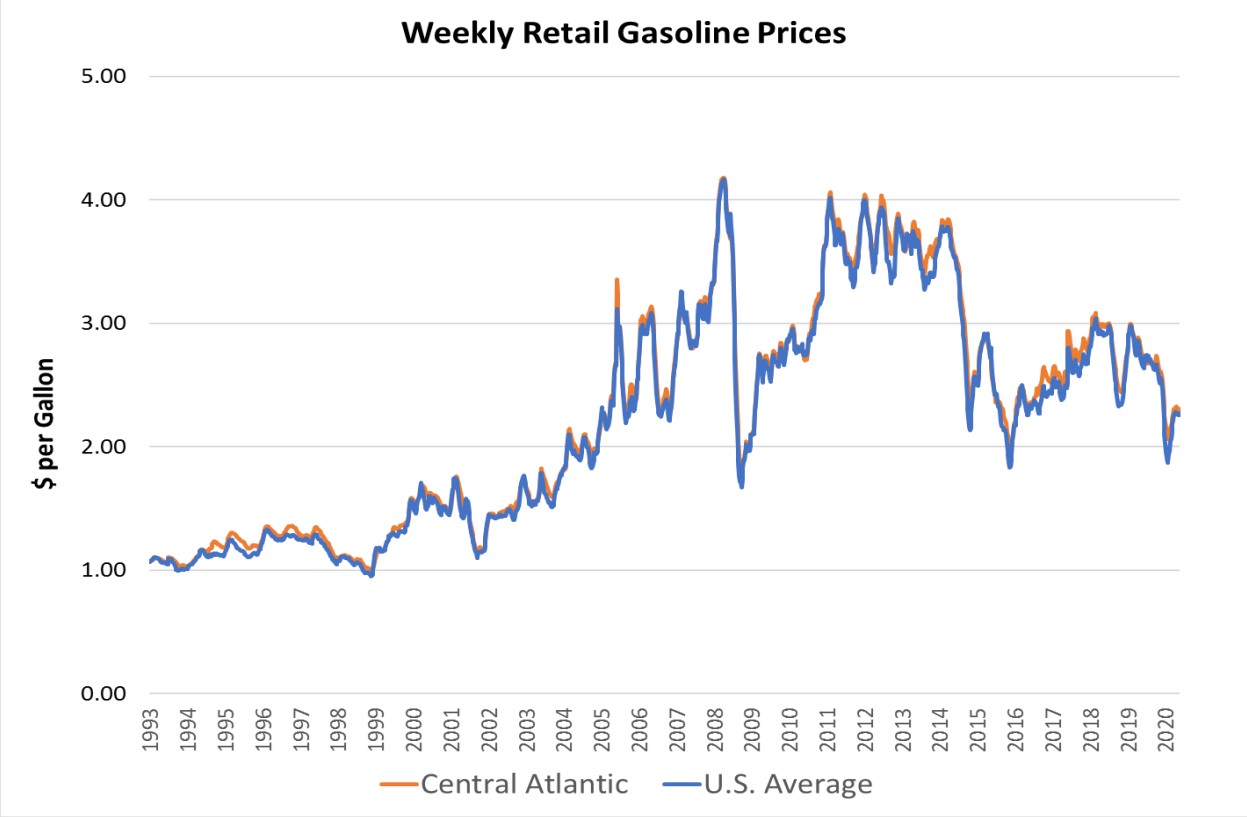
A14: A set point based directly on gasoline and/or diesel fuel costs will be difficult to establish and administer and could increase the volatility and uncertainty in station revenues. As the Board is undoubtedly aware, the prices for gasoline and diesel are influenced strongly by the world and regional oil markets and can fluctuate significantly and unexpectedly in a short period of time. See **Figure 1** below for U.S. and Mid-Atlantic gasoline prices over time.[10] The steep drop in gasoline and diesel prices resulting from the current COVID-19 pandemic and the steep drop due to the Great Recession are good examples of unexpected price drops; recent history also provides examples of major price spikes as a result of natural disasters and political turmoil impacting oil markets.

Given this volatility, establishing a set point rate based on today's liquid fuel prices could become substantially out of touch with market prices over the five-year period. If liquid fuel prices fall over time, stations with today's higher set point rate would be disadvantaged compared to later stations whose set points would be based on lower fuel prices. The converse would be true if prices rise over time. As a result, a set point rate benchmarked to fossil fuel prices at the single point in time when a station enters service could result in volatile and uncertain revenues for station owners. Electric rates tend to be more stable than gasoline or diesel prices, and the advantage of this

[10] Data on gasoline prices is from the U.S. Energy Information Administration.

stability could be lost if there are significant swings in set point rates from year to year as liquid fuel prices fluctuate. There are additional complexities: calculations, rules, and processes would be needed for the process of updating setpoint rates, as well as utility and commission staff time for calculating, administering, and reviewing the indexed set point rates whenever they are reset.[11]

Figure 1:



Q15: Would the set point rate inhibit conveying accurate price signals to charging customers?

[11] For example, converting a charging rate in $ per kWh into the $ per gallon of a liquid fuel requires assumptions about the efficiencies of both (1) the EVs that use the station and (2) the alternative liquid-fueled vehicles that the station's customers would otherwise drive. Benchmarking the charging rate to liquid fuels also will require an accepted and transparent index of local fuel costs.

A15: Yes. As I understand the PSEG proposal, the set point rate would become the single rate that a CEV customer would pay for all of its usage during the initial five-year period, assuming that the customer's average rate is above the set point. Thus, there would be no reason for the CEV station to offer its customers a rate lower than the set point – for example, to encourage charging during off-peak hours if the utility offers time-of-use rates. In essence, for as long as the set point applies to a CEV charging station, the set point rate will erase all of the price signals that could be conveyed through the utility's rate design.

Q16: Would the set point concept encourage CEV customers to increase station usage?

A16: Only to a limited extent. During the five-year set point period, the CEV customer would benefit from increasing usage only if a station is able to reduce its average rate below the set point. Otherwise, the only incentive for station operators to increase usage over time is that the set point rate will expire after five years.

Q17: Will the set point concept encourage third-party investments in a CEV charging infrastructure?

A17: Expanding the CEV charging infrastructure will be best encouraged with a known and stable rate design, such that there is a certain environment in which to plan future investments. The set point concept may not provide such a stable investment environment, given that the set point may change unexpectedly as liquid fuel prices vary or as the utility changes how it weighs the multiple factors that PSEG says it would consider in choosing set points. As noted, PSEG has stated that it has "not finalized the methodology to set the target rate."[12]

Q18: PSEG has put forward an exemplary set point rate of $0.40 per kWh. On its face, would a set point rate at this level be competitive with liquid fuels?

[12] PSEG response to DR EVgo-PSEG-6(b).

A18: No. Even if the CEV station charged its customers $0.40 per kWh (thus recovering nothing to offset its own costs for the charging facilities), this would be equivalent to about $3.60 per gallon for a typical EV.[13] This is above current retail gasoline prices in New Jersey of about $2.25 per gallon.[14]

V. RECOMMENDED RATE DESIGN FOR COMMERCIAL EV CHARGING

Q19: Is there another approach to setting CEV rates that both removes the demand charge barrier and respects cost causation?

A19: Yes. A better idea is to waive or reduce demand charges for a period of time – five to ten years – that is long enough to allow CEV stations to ramp up their usage.

Q20: What are the advantages of a demand charge waiver or reduction?

A20: There are several. First, the waiver directly addresses the demand charge barrier. Reducing demand charges lowers the per unit cost of charging. Second, the demand charge waiver preserves the important price signals in the other elements of the utility's rate design, such as TOU volumetric rates that encourage charging EVs in off-peak periods. Unlike the set point, this respects the cost causation principles inherent in these elements of the existing rate design. Perhaps most important, a known waiver applicable for a 5- to 10-year period provides a significant degree of long-term certainty in the rate structure applicable to charging stations. This allows station developers to plan for investments in new stations over a longer-term horizon with more certainty in the cost structure that those stations will face.

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[13] This is based on the U.S. Department of Energy's eGallon methodology, which uses the efficiency of the top five best-selling EVs and U.S. average fuel economy for comparable cars. See https://www.energy.gov/sites/prod/files/2016/01/f28/eGallon%20methodology%20%28Updated%20January%202016%29.pdf.

[14] *See* https://gasprices.aaa.com/state-gas-price-averages/.

Q21: Is a rate that waives some or all of the demand charges in a commercial rate equitable for the utility's other ratepayers?

A21: Yes. This is because electricity usage at CEV stations represents new, incremental loads for the utility. So long as the CEV rate recovers variable, energy-related costs through volumetric rates and makes a contribution over time to the recovery of fixed costs, it will be compensatory and beneficial for other ratepayers. The contribution to fixed costs can occur through a phase-in of demand charges over time.

Q22: Should the design of the waiver consider whether the resulting rate is competitive with liquid fuels?

A22: Yes. The waiver should be designed such that the resulting rate is broadly competitive with liquid fuels even at relatively low station utilizations, but the rate should not be indexed to liquid fuel prices to avoid the problems discussed above with the "set point" rebate.

Q23: Have other U.S. utilities adopted the demand charge waiver approach?

A23: Yes. In recent years, numerous utilities have adopted CEV rates based on variations of the concept of demand charge waivers or reductions. I provide examples below to illustrate the range of possible demand charge waivers or reductions that utilities are using.

Connecticut Light & Power (Eversource) has offered an Electric Vehicle Rate Rider Pilot (EVRRP) since July 1, 2014.[15] This pilot program applies to the rates charged to DCFC facilities in the CL&P service territory. The utility converts the demand charges of the applicable commercial rate schedule to an equivalent dollar per kWh charge for all kWh utilized by the DCFC customer during each billing period. These equivalent rates

[15] See https://www.eversource.com/content/docs/default-source/rates-tariffs/rider-ev.pdf. This rate rider was approved in the Connecticut Public Utilities Regulatory Authority's decision in Docket No. 13-12-11, dated June 4, 2014.

are based on the average $ per kWh of costs allocated to the demand charge portion of each commercial rate (i.e. by dividing the total demand charge costs by the total kWh, for each rate class). In effect, this rate assumes that DCFC facilities have the same load factor as the average customer in each rate class, when in reality DCFC load factors, for the initial years of operation, are likely to be lower.

Pennsylvania Electric Company (PECO) received regulatory approval in late 2018 for a new DCFC rider that offers commercial EV charging facilities a credit against the applicable distribution demand charge for up to 36 months.[16] The up-to-36 months of demand credits will be available during a five-year program period which will start next July 1, 2019 and run through June 2024. The credit is equal to 50% of the connected DCFC nameplate capacity. For example, a DCFC station with a nameplate charging capacity of 200 kW would receive a demand credit each month of 100 kW. Obviously, the station's billed distribution demand might not reach to full 200 kW every month, so this program could provide more than a 50% reduction in distribution demand charges. The demand charge credit does not appear to be offset by higher volumetric rates, so the demand credit functions as a direct demand charge reduction.

Southern California Edison (SCE) received approval from the California Public Utilities Commission May 2018 for a suite of new commercial EV charging rates that became available in early 2019.[17] SCE's new commercial EV rate schedules are all-volumetric TOU rates with strong price signals to consume energy in off-peak and super-off-peak periods and to limit usage during the daily on-peak or mid-peak period of 4 p.m.

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[16] See PECO's Electric Vehicle DCFC Pilot Rider (EV-FC), Tariff Electric Pa. P.U.C. No. 6, at pp. 84-85. Available at https://www.peco.com/SiteCollectionDocuments/CurrentTariffElec.pdf; also see https://www.peco.com/SiteCollectionDocuments/EVFastChargerPilotDiscountRates.pdf. This tariff was approved in the Pennsylvania PUC's December 20, 2018 opinion and order in Docket R-2018-3000164, at pp. 22-23 and 29.

[17] See CPUC Decision 18-05-040, Ordering Paragraph 45, and SCE Advice Letter 3853-E (filed August 29, 2018) to implement the new commercial EV rates approved in that order. The decision is available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M215/K783/215783846.PDF.

to 9 p.m. A key feature of the new SCE rates is that demand charges will not be used in these rates for a five-year period intended to allow EV penetration to grow. The costs that would have been collected in demand charges are moved to the TOU volumetric rates. In years six to ten, most of the demand charges from SCE's applicable standard commercial rates will be phased back into the EV rates, with corresponding reductions in the TOU volumetric rates. **Attachment RTB-2** shows SCE's new EV-8 rate, and compares it to SCE's standard TOU-GS-2 rates that apply to other medium commercial customers of similar size.

PacifiCorp has implemented Schedule 45 in its Pacific Power service territories in Oregon and Washington.[18] This rate is applicable to EV charging stations that have peak demands below 1 MW and that are separately metered from other electric loads. Schedule 45 features a discount on the demand charge which begins at a 90% discount in year 1 of the program, decreasing by 10% per year to zero in year 10. The demand charge discount is offset by an on-peak volumetric rate surcharge that begins at 90% of a defined amount ($0.107 per kWh in Oregon and $0.044 per kWh in Washington) and that also decreases over the same 10 years by 10% per year.[19]

Tacoma Power has implemented a similar structure to the Pacificorp CEV rate, in its EV-F rate.[20]

[18] These Schedule 45 tariffs are available at https://www.pacificpower.net/content/dam/pcorp/documents/en/pacificpower/rates-regulation/oregon/tariffs/rates/045_Public_DC_Fast_Charger_Optional_Transitional_Rate_Delivery_Service.pdf (Oregon) or https://www.pacificpower.net/content/dam/pcorp/documents/en/pacificpower/rates-regulation/washington/rates/045_Public_DC_Fast_Charger_Optional_Transitional_Rate.pdf (Washington).

[19] The Schedule 45 rate in Washington also includes an initial three-year period (November 1, 2018 to November 1, 2021) with a 100% demand charge discount plus the addition of 100% of the on-peak surcharge.

[20] See https://www.mytpu.org/wp-content/uploads/FC_July_2020.pdf.

Hawaiian Electric Company (HECO) offers Schedule EV-F for separately metered public EV charging facilities with peak demands for EV charging not exceeding 100 kW.[21] The rate is an all-volumetric TOU rate, with no demand charges. The lowest rate is in the midday (9a to 5p) TOU period when new loads are needed to manage the state's high penetration of rooftop solar.

Several electric utilities offer rates with reduced demand charges for customers with low load factors. **Public Service of Colorado**, a unit of Xcel Energy, offers a low-load-factor rate with a reduced demand charge and higher TOU volumetric rates.[22] So does **Madison Gas & Electric**, whose low-load-factor rate provides a 50% discount in the demand charge for customers with load factors below 15%. The rate is targeted at DCFC facilities and other types of low-load-factor customers.[23]

In 2019 the CPUC approved, in Decision No. 19-10-055, a CEV rate for **Pacific Gas & Electric** (PG&E) based on a subscription charge model.[24] This innovative rate design replaces the standard demand charges with a much smaller subscription charge, with the remainder of the rate designed as volumetric TOU rates. A CEV customer must subscribe to a level of kW demand adequate to serve the station's maximum demand each month. The monthly subscription charge is based on the level of demand to which the CEV customer subscribes. Significantly, the CPUC set the subscription charge and the on-peak rate to recover only marginal distribution costs, at a significant discount to PG&E's fully allocated distribution costs for commercial customers. The California commission took this step recognizing that CEV customers generally provide new, incremental, growing loads to which costs have yet to be allocated. As a result, in the

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[21] Schedule EV-F was established in the Hawai'i PUC's Final Decision and Order No. 35545 in Docket No. 2016-0328, filed on June 22, 2018.

[22] See https://www.xcelenergy.com/staticfiles/xe/PDF/Regulatory/CO-Rates-&-Regulations-Entire-Electric-Book.pdf, at Sheet No. 44.

[23] See https://www.mge.com/MGE/media/Library/pdfs-documents/rates-electric/E32.pdf.

Commission's words, "any revenue collected from the new class [of CEV loads] beyond the marginal cost to serve them is an overcollection."[25] The Commission also recognized that a lower subscription charge would reduce the cost of electricity at low-utilization sites.

Another California utility, **San Diego Gas & Electric**, recently asked the CPUC to approve a settlement with most of the parties to its proceeding on CEV rates.[26] The settlement proposes a CEV rate that also is based on the subscription charge approach. Similar to the PG&E rate, the small subscription charge initially would be set to recover only marginal distribution costs. Over a ten-year period, the subscription charge would increase to recover a gradually larger share of non-marginal distribution costs. This structure allows time for the usage at CEV charging stations to increase. Furthermore, over time, as EV penetration increases, a gradually smaller portion of CEV loads will be new loads, and a higher portion will be loads that have been on the system for an increasing number of years. The SDG&E CEV rate structure allows commercial EV charging to transition over time to support the same allocation of distribution costs as other commercial customers, including the recovery of distribution costs in excess of marginal distribution costs.

Q24: Are there important commonalities in these demand charge waivers or reductions that you would like to highlight?

A24: Yes. The long-term nature of many of these rates provides significant certainty to the

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[24] This order is available at https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M318/K552/318552527.PDF.

[25] CPUC Decision No. 19-10-055, at p. 44.[26] *Joint Motion Of Settling Parties For Commission Adoption Of Settlement Agreement* (filed June 29, 2020 in CPUC Application 19-07-006). Available at https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M342/K864/342864901.PDF.[27] N.J.S.A. §48:25-3.a.(4)(a).

[26] *Joint Motion Of Settling Parties For Commission Adoption Of Settlement Agreement* (filed June 29, 2020 in CPUC Application 19-07-006). Available at

owners and operators of CEV charging infrastructure on the rate structure that they will face for up to the next 10 years, thus supporting long-term investments in this new infrastructure. In addition, many of these rate designs will phase-out the demand charge reductions over time, thus providing a transition over time to the same cost-based commercial rates as other utility customers. In my opinion, this approach is more consistent with cost causation principles than the value-based set point method.

Q25: Clearly, many utilities have chosen to use the demand charge waiver/reduction approach to setting CEV rates. Please comment on the popularity of this approach in the context of New Jersey's goals for deploying a commercial EV charging infrastructure.

A25: New Jersey's PIV Act, P.L. 2019, c. 362, mandates a goal of activating 400 DCFC chargers by 2025.[27] As a result, time is of the essence in approving a CEV rate design that is effective in removing the demand charge barrier. To my knowledge, the set point approach as approved by PSEG has not been tested in another state, so it would be risky to adopt this novel approach. One experience worth highlighting is New York's state-wide DCFC per-plug direct incentive, which opened in early 2019. While well-intentioned, New York's per-plug incentive program is complex and includes onerous data reporting requirements. It has resulted in fewer than 10 successful applicants, and has failed to ignite the market transformation necessary to enable New York's ambitious EV goals.[28] This experience shows that a direct subsidy or rebate is not a true substitute for the rate reform necessary to grow infrastructure deployments in a sustainable way.. In contrast, the demand charge waiver/reduction method is a proven approach that has been used in various forms in many states, with significant success.

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https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M342/K864/342864901.PDF.[27] N.J.S.A. §48:25-3.a.(4)(a).

[27] N.J.S.A. §48:25-3.a.(4)(a).

[28] Comments of EV Industry Stakeholder Coalition on Department of Public Service Staff Whitepaper in Case 18-E-0138 - *Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure*.

VI. OTHER TARIFF ISSUES

Q26: Are there other policies that are important to a successful transportation electrification program?

A26: Yes. The adopted rate structure for commercial EV charging should be applicable to all CEV customers. In discovery, PSEG stated that the set point rebate will only be available to third-party DC fast charging facilities that apply to participate in the utility's program under which the utility owns and installs make-ready facilities.[29] I am not an attorney, but I would question whether it is unduly discriminatory to condition the availability of a beneficial rate on the customer agreeing to allow the utility to install facilities on which it will earn a return. This could discriminate against existing DCFC customers or customers who may decide to deploy EV charging either through their own private funding or under other state programs, such as those being administered by the New Jersey Department of Environmental Protection. Existing DCFC customers – who have been early adopters of this new technology – also should not be disadvantaged in comparison to later CEV facilities. Existing CEV customers also face a demand charge barrier and should not have to compete against new stations that qualify for a more beneficial rate. New Jersey's ambitious transportation electrification goals will be met more quickly if the demand charge barrier is reduced for all CEV customers and there is a level playing field for competing CEV providers in terms of the rate available from PSEG.

Q27: PSEG's set point rebate proposes an off-bill rebate in order to minimize the changes to its billing system.[30] Could a demand charge waiver also be provided through an off-bill rebate, if necessary?

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[29] *See* PSEG response to DR EVgo-PSEG-5(d): "PSE&G's proposal did not offer the demand charge rebate to pre-existing stations. The demand charge rebate is intended for DCFC stations developed through the purchase and installation rebate portions of the subprogram."

[30] *See* PSEG response to DR EVgo-PSEG-7.

A27: Yes. I observe that PSEG is proposing an off-bill rebate for the set point rate, yet on on-bill repayments for on-site charging infrastructure. It is unclear to me why the former rebate to the customer needs to be off-bill, while the later payment from the customer can be on-bill. Nonetheless, it also would be possible to implement a demand charge waiver or reduction through a straightforward off-bill rebate. Such a rebate could be calculated off-bill using relatively simple reductions in the customer's otherwise-applicable demand charges, adjusted for the possible addition of volumetric surcharges.

Q28: Does this conclude your testimony in this case?

A28: Yes, it does.

Attachment RTB-1

CV of R. Thomas Beach

R. THOMAS BEACH
Principal Consultant

Mr. Beach is principal consultant with the consulting firm Crossborder Energy. Crossborder Energy provides economic consulting services and strategic advice on market and regulatory issues concerning the natural gas and electric industries. The firm is based in Berkeley, California, and its practice focuses on the energy markets in California, the U.S., and Canada.

Since 1989, Mr. Beach has had an active consulting practice on policy, economic, and ratemaking issues concerning renewable energy development, the restructuring of the gas and electric industries, the addition of new natural gas pipeline and storage capacity, and a wide range of issues concerning independent power generation. From 1981 through 1989 he served at the California Public Utilities Commission, including five years as an advisor to three CPUC commissioners. While at the CPUC, he was a key advisor on the CPUC's restructuring of the natural gas industry in California, and worked extensively on the state's implementation of the Public Utilities Regulatory Policies Act of 1978.

AREAS OF EXPERTISE

- *Renewable Energy Issues:* extensive experience assisting clients with issues concerning Renewable Portfolio Standard programs, including program structure and rate impacts. He has also worked for the solar industry on rate design and net energy metering issues, on the creation of the California Solar Initiative, as well as on a wide range of solar issues in many other states.

- *Restructuring the Natural Gas and Electric Industries:* consulting and expert testimony on numerous issues involving the restructuring of the electric industry, including the 2000 - 2001 Western energy crisis.

- *Energy Markets:* studies and consultation on the dynamics of natural gas and electric markets, including the impacts of new pipeline capacity on natural gas prices and of electric restructuring on wholesale electric prices.

- *Qualifying Facility Issues:* consulting with QF clients on a broad range of issues involving independent power facilities in the Western U.S. He is one of the leading experts in California on the calculation of avoided cost prices. Other QF issues on which he has worked include complex QF contract restructurings, standby rates, greenhouse gas emission regulations, and natural gas rates for cogenerators. Crossborder Energy's QF clients include the full range of QF technologies, both fossil-fueled and renewable.

- *Pricing Policy in Regulated Industries:* consulting and expert testimony on natural gas pipeline rates and on marginal cost-based rates for natural gas and electric utilities.

EDUCATION

Mr. Beach holds a B.A. in English and physics from Dartmouth College, and an M.E. in mechanical engineering from the University of California at Berkeley.

ACADEMIC HONORS

Graduated from Dartmouth with high honors in physics and honors in English.
Chevron Fellowship, U.C. Berkeley, 1978-79

PROFESSIONAL ACCREDITATION

Registered professional engineer in the state of California.

EXPERT WITNESS TESTIMONY BEFORE THE CALIFORNIA PUBLIC UTILITIES COMMISSION

1. Prepared Direct Testimony on Behalf of **Pacific Gas & Electric Company/Pacific Gas Transmission** (I. 88-12-027 — July 15, 1989)

   - *Competitive and environmental benefits of new natural gas pipeline capacity to California.*

2. a. Prepared Direct Testimony on Behalf of the **Canadian Producer Group** (A. 89-08-024 — November 10, 1989)
   b. Prepared Rebuttal Testimony on Behalf of the **Canadian Producer Group** (A. 89-08-024 — November 30, 1989)

   - *Natural gas procurement policy; gas cost forecasting.*

3. Prepared Direct Testimony on Behalf of the **Canadian Producer Group** (R. 88-08-018 — December 7, 1989)

   - *Brokering of interstate pipeline capacity.*

4. Prepared Direct Testimony on Behalf of the **Canadian Producer Group** (A. 90-08-029 — November 1, 1990)

   - *Natural gas procurement policy; gas cost forecasting; brokerage fees.*

5. Prepared Direct Testimony on Behalf of the **Alberta Petroleum Marketing Commission and the Canadian Producer Group** (I. 86-06-005 — December 21, 1990)

   - *Firm and interruptible rates for noncore natural gas users*

6. a. Prepared Direct Testimony on Behalf of the **Alberta Petroleum Marketing Commission** (R. 88-08-018 — January 25, 1991)
   b. Prepared Responsive Testimony on Behalf of the **Alberta Petroleum Marketing Commission** (R. 88-08-018 — March 29, 1991)

   - *Brokering of interstate pipeline capacity; intrastate transportation policies.*

7. Prepared Direct Testimony on Behalf of the **Canadian Producer Group** (A. 90-08-029/Phase II — April 17, 1991)

   - *Natural gas brokerage and transport fees.*

8. Prepared Direct Testimony on Behalf of **LUZ Partnership Management** (A. 91-01-027 — July 15, 1991)

   - *Natural gas parity rates for cogenerators and solar thermal power plants.*

9. Prepared Joint Testimony of R. Thomas Beach and Dr. Robert B. Weisenmiller on Behalf of the **California Cogeneration Council** (I. 89-07-004 — July 15, 1991)

   - *Avoided cost pricing; use of published natural gas price indices to set avoided cost prices for qualifying facilities.*

10. a. Prepared Direct Testimony on Behalf of the **Indicated Expansion Shippers** (A. 89-04-033 — October 28, 1991)
    b. Prepared Rebuttal Testimony on Behalf of the **Indicated Expansion Shippers** (A. 89-04-0033 — November 26,1991)

    - *Natural gas pipeline rate design; cost/benefit analysis of rolled-in rates.*

11. Prepared Direct Testimony on Behalf of the **Independent Petroleum Association of Canada** (A. 91-04-003 — January 17, 1992)

    - *Natural gas procurement policy; prudence of past gas purchases.*

12. a. Prepared Direct Testimony on Behalf of the **California Cogeneration Council** (I.86-06-005/Phase II — June 18, 1992)
    b. Prepared Rebuttal Testimony on Behalf of the **California Cogeneration Council** (I. 86-06-005/Phase II — July 2, 1992)

    - *Long-Run Marginal Cost (LRMC) rate design for natural gas utilities.*

13. Prepared Direct Testimony on Behalf of the **California Cogeneration Council** (A. 92-10-017 — February 19, 1993)

    - *Performance-based ratemaking for electric utilities.*

14. Prepared Direct Testimony on Behalf of the **SEGS Projects** (C. 93-02-014/A. 93-03-053 — May 21, 1993)

    - *Natural gas transportation service for wholesale customers.*

15 a. Prepared Direct Testimony on Behalf of the **Canadian Association of Petroleum Producers** (A. 92-12-043/A. 93-03-038 — June 28, 1993)
   b. Prepared Rebuttal Testimony of Behalf of the **Canadian Association of Petroleum Producers** (A. 92-12-043/A. 93-03-038 — July 8, 1993)

    - *Natural gas pipeline rate design issues.*

16. a. Prepared Direct Testimony on Behalf of the **SEGS Projects** (C. 93-05-023 — November 10, 1993)
    b. Prepared Rebuttal Testimony on Behalf of the **SEGS Projects** (C. 93-05-023 — January 10, 1994)

    - *Utility overcharges for natural gas service; cogeneration parity issues.*

17. Prepared Direct Testimony on Behalf of the **City of Vernon** (A. 93-09-006/A. 93-08-022/A. 93-09-048 — June 17, 1994)

    - *Natural gas rate design for wholesale customers; retail competition issues.*

18. Prepared Direct Testimony of R. Thomas Beach on Behalf of the **SEGS Projects** (A. 94-01-021 — August 5, 1994)

    - *Natural gas rate design issues; rate parity for solar thermal power plants.*

19. Prepared Direct Testimony on Transition Cost Issues on Behalf of **Watson Cogeneration Company** (R. 94-04-031/I. 94-04-032 — December 5, 1994)

    - *Policy issues concerning the calculation, allocation, and recovery of transition costs associated with electric industry restructuring.*

20. Prepared Direct Testimony on Nuclear Cost Recovery Issues on Behalf of the **California Cogeneration Council** (A. 93-12-025/I. 94-02-002 — February 14, 1995)

    - *Recovery of above-market nuclear plant costs under electric restructuring.*

21. Prepared Direct Testimony on Behalf of the **Sacramento Municipal Utility District** (A. 94-11-015 — June 16, 1995)

    - *Natural gas rate design; unbundled mainline transportation rates.*

22. Prepared Direct Testimony on Behalf of **Watson Cogeneration Company** (A. 95-05-049 — September 11, 1995)

    - *Incremental Energy Rates; air quality compliance costs.*

23. a. Prepared Direct Testimony on Behalf of the **Canadian Association of Petroleum Producers** (A. 92-12-043/A. 93-03-038/A. 94-05-035/A. 94-06-034/A. 94-09-056/A. 94-06-044 — January 30, 1996)
    b. Prepared Rebuttal Testimony on Behalf of the **Canadian Association of Petroleum Producers** (A. 92-12-043/A. 93-03-038/A. 94-05-035/A. 94-06-034/A. 94-09-056/A. 94-06-044 — February 28, 1996)

    - *Natural gas market dynamics; gas pipeline rate design.*

24. Prepared Direct Testimony on Behalf of the **California Cogeneration Council and Watson Cogeneration Company** (A. 96-03-031 — July 12, 1996)

    - *Natural gas rate design: parity rates for cogenerators.*

25. Prepared Direct Testimony on Behalf of the **City of Vernon** (A. 96-10-038 — August 6, 1997)

    - *Impacts of a major utility merger on competition in natural gas and electric markets.*

26. a. Prepared Direct Testimony on Behalf of the **Electricity Generation Coalition** (A. 97-03-002 — December 18, 1997)
    b. Prepared Rebuttal Testimony on Behalf of the **Electricity Generation Coalition** (A. 97-03-002 — January 9, 1998)

    - *Natural gas rate design for gas-fired electric generators.*

27. Prepared Direct Testimony on Behalf of the **City of Vernon** (A. 97-03-015 — January 16, 1998)

    - *Natural gas service to Baja, California, Mexico.*

28. a. Prepared Direct Testimony on Behalf of the **California Cogeneration Council and Watson Cogeneration Company** (A. 98-10-012/A. 98-10-031/A. 98-07-005 — March 4, 1999).
    b. Prepared Direct Testimony on Behalf of the **California Cogeneration Council** (A. 98-10-012/A. 98-01-031/A. 98-07-005 — March 15, 1999).
    c. Prepared Direct Testimony on Behalf of the **California Cogeneration Council** (A. 98-10-012/A. 98-01-031/A. 98-07-005 — June 25, 1999).

    - *Natural gas cost allocation and rate design for gas-fired electric generators.*

29. a. Prepared Direct Testimony on Behalf of the **California Cogeneration Council and Watson Cogeneration Company** (R. 99-11-022 — February 11, 2000).
    b. Prepared Rebuttal Testimony on Behalf of the **California Cogeneration Council and Watson Cogeneration Company** (R. 99-11-022 — March 6, 2000).
    c. Prepared Direct Testimony on Line Loss Issues of behalf of the **California Cogeneration Council** (R. 99-11-022 — April 28, 2000).
    d. Supplemental Direct Testimony in Response to ALJ Cooke's Request on behalf of the **California Cogeneration Council and Watson Cogeneration Company** (R. 99-11-022 — April 28, 2000).
    e. Prepared Rebuttal Testimony on Line Loss Issues on behalf of the **California Cogeneration Council** (R. 99-11-022 — May 8, 2000).

    - *Market-based, avoided cost pricing for the electric output of gas-fired cogeneration facilities in the California market; electric line losses.*

30. a. Direct Testimony on behalf of the **Indicated Electric Generators** in Support of the Comprehensive Gas OII Settlement Agreement for Southern California Gas Company and San Diego Gas & Electric Company (I. 99-07-003 — May 5, 2000).
    b. Rebuttal Testimony in Support of the Comprehensive Settlement Agreement on behalf of the **Indicated Electric Generators** (I. 99-07-003 — May 19, 2000).

    - *Testimony in support of a comprehensive restructuring of natural gas rates and services on the Southern California Gas Company system. Natural gas cost allocation and rate design for gas-fired electric generators.*

31. a. Prepared Direct Testimony on the Cogeneration Gas Allowance on behalf of the **California Cogeneration Council** (A. 00-04-002 — September 1, 2000).
    b. Prepared Direct Testimony on behalf of **Southern Energy California** (A. 00-04-002 — September 1, 2000).

    - *Natural gas cost allocation and rate design for gas-fired electric generators.*

32. a. Prepared Direct Testimony on behalf of **Watson Cogeneration Company** (A. 00-06-032 — September 18, 2000).
    b. Prepared Rebuttal Testimony on behalf of **Watson Cogeneration Company** (A. 00-06-032 — October 6, 2000).

    - *Rate design for a natural gas "peaking service."*

33. a. Prepared Direct Testimony on behalf of **PG&E National Energy Group & Calpine Corporation** (I. 00-11-002—April 25, 2001).
    b. Prepared Rebuttal Testimony on behalf of **PG&E National Energy Group & Calpine Corporation** (I. 00-11-002—May 15, 2001).

    - *Terms and conditions of natural gas service to electric generators; gas curtailment policies.*

34. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (R. 99-11-022—May 7, 2001).
    b. Prepared Rebuttal Testimony on behalf of the **California Cogeneration Council** (R. 99-11-022—May 30, 2001).

    - *Avoided cost pricing for alternative energy producers in California.*

35. a. Prepared Direct Testimony of R. Thomas Beach in Support of the Application of **Wild Goose Storage Inc.** (A. 01-06-029—June 18, 2001).
    b. Prepared Rebuttal Testimony of R. Thomas Beach on behalf of **Wild Goose Storage** (A. 01-06-029—November 2, 2001)

    - *Consumer benefits from expanded natural gas storage capacity in California.*

36. Prepared Direct Testimony on behalf of the **County of San Bernardino** (I. 01-06-047—December 14, 2001)

    - *Reasonableness review of a natural gas utility's procurement practices and storage operations.*

37. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (R. 01-10-024—May 31, 2002)
    b. Prepared Supplemental Testimony on behalf of the **California Cogeneration Council** (R. 01-10-024—May 31, 2002)

    - *Electric procurement policies for California's electric utilities in the aftermath of the California energy crisis.*

38. Prepared Direct Testimony on behalf of the **California Manufacturers & Technology Association** (R. 02-01-011—June 6, 2002)

    - *"Exit fees" for direct access customers in California.*

39. Prepared Direct Testimony on behalf of the **County of San Bernardino** (A. 02-02-012 — August 5, 2002)

    - *General rate case issues for a natural gas utility; reasonableness review of a natural gas utility's procurement practices.*

40. Prepared Direct Testimony on behalf of the **California Manufacturers and Technology Association** (A. 98-07-003 — February 7, 2003)

    - *Recovery of past utility procurement costs from direct access customers.*

41. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council, the California Manufacturers & Technology Association, Calpine Corporation, and Mirant Americas, Inc.** (A 01-10-011 — February 28, 2003)
    b. Prepared Rebuttal Testimony on behalf of the **California Cogeneration Council, the California Manufacturers & Technology Association, Calpine Corporation, and Mirant Americas, Inc.** (A 01-10-011 — March 24, 2003)

    - *Rate design issues for Pacific Gas & Electric's gas transmission system (Gas Accord II).*

42. a. Prepared Direct Testimony on behalf of the **California Manufacturers & Technology Association; Calpine Corporation; Duke Energy North America; Mirant Americas, Inc.; Watson Cogeneration Company; and West Coast Power, Inc.** (R. 02-06-041 — March 21, 2003)
    b. Prepared Rebuttal Testimony on behalf of the **California Manufacturers & Technology Association; Calpine Corporation; Duke Energy North America; Mirant Americas, Inc.; Watson Cogeneration Company; and West Coast Power, Inc.** (R. 02-06-041 — April 4, 2003)

    - *Cost allocation of above-market interstate pipeline costs for the California natural gas utilities.*

43. Prepared Direct Testimony of R. Thomas Beach and Nancy Rader on behalf of the **California Wind Energy Association** (R. 01-10-024 — April 1, 2003)

    - *Design and implementation of a Renewable Portfolio Standard in California.*

44. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (R. 01-10-024 — June 23, 2003)
    b. Prepared Supplemental Testimony on behalf of the **California Cogeneration Council** (R. 01-10-024 — June 29, 2003)

    - *Power procurement policies for electric utilities in California.*

45. Prepared Direct Testimony on behalf of the **Indicated Commercial Parties** (02-05-004 — August 29, 2003)

    - *Electric revenue allocation and rate design for commercial customers in southern California.*

46. a. Prepared Direct Testimony on behalf of **Calpine Corporation and the California Cogeneration Council** (A. 04-03-021 — July 16, 2004)
    b. Prepared Rebuttal Testimony on behalf of **Calpine Corporation and the California Cogeneration Council** (A. 04-03-021 — July 26, 2004)

    - *Policy and rate design issues for Pacific Gas & Electric's gas transmission system (Gas Accord III).*

47. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (A. 04-04-003 — August 6, 2004)

    - *Policy and contract issues concerning cogeneration QFs in California.*

48. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council and the California Manufacturers and Technology Association** (A. 04-07-044 — January 11, 2005)
    b. Prepared Rebuttal Testimony on behalf of the **California Cogeneration Council and the California Manufacturers and Technology Association** (A. 04-07-044 — January 28, 2005)

    - *Natural gas cost allocation and rate design for large transportation customers in northern California.*

49. a. Prepared Direct Testimony on behalf of the **California Manufacturers and Technology Association and the Indicated Commercial Parties** (A. 04-06-024 — March 7, 2005)
    b. Prepared Rebuttal Testimony on behalf of the **California Manufacturers and Technology Association and the Indicated Commercial Parties** (A. 04-06-024 — April 26, 2005)

    - *Electric marginal costs, revenue allocation, and rate design for commercial and industrial electric customers in northern California.*

50. Prepared Direct Testimony on behalf of the **California Solar Energy Industries Association** (R. 04-03-017 — April 28, 2005)

    - *Cost-effectiveness of the Million Solar Roofs Program.*

51. Prepared Direct Testimony on behalf of **Watson Cogeneration Company, the Indicated Producers, and the California Manufacturing and Technology Association** (A. 04-12-004 — July 29, 2005)

    - *Natural gas rate design policy; integration of gas utility systems.*

52. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (R. 04-04-003/R. 04-04-025 — August 31, 2005)
    b. Prepared Rebuttal Testimony on behalf of the **California Cogeneration Council** (R. 04-04-003/R. 04-04-025 — October 28, 2005)

    - *Avoided cost rates and contracting policies for QFs in California*

53. a. Prepared Direct Testimony on behalf of the **California Manufacturers and Technology Association and the Indicated Commercial Parties** (A. 05-05-023 — January 20, 2006)
    b. Prepared Rebuttal Testimony on behalf of the **California Manufacturers and Technology Association and the Indicated Commercial Parties** (A. 05-05-023 — February 24, 2006)

    - *Electric marginal costs, revenue allocation, and rate design for commercial and industrial electric customers in southern California.*

54. a. Prepared Direct Testimony on behalf of the **California Producers** (R. 04-08-018 – January 30, 2006)
    b. Prepared Rebuttal Testimony on behalf of the **California Producers** (R. 04-08-018 – February 21, 2006)

    - *Transportation and balancing issues concerning California gas production.*

55. Prepared Direct Testimony on behalf of the **California Manufacturers and Technology Association and the Indicated Commercial Parties** (A. 06-03-005 — October 27, 2006)

    - *Electric marginal costs, revenue allocation, and rate design for commercial and industrial electric customers in northern California.*

56. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (A. 05-12-030 — March 29, 2006)

    - *Review and approval of a new contract with a gas-fired cogeneration project.*

57. a. Prepared Direct Testimony on behalf of **Watson Cogeneration, Indicated Producers, the California Cogeneration Council, and the California Manufacturers and Technology Association** (A. 04-12-004 — July 14, 2006)
    b. Prepared Rebuttal Testimony on behalf of **Watson Cogeneration, Indicated Producers, the California Cogeneration Council, and the California Manufacturers and Technology Association** (A. 04-12-004 — July 31, 2006)

    - *Restructuring of the natural gas system in southern California to include firm capacity rights; unbundling of natural gas services; risk/reward issues for natural gas utilities.*

58. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (R. 06-02-013 — March 2, 2007)

    - *Utility procurement policies concerning gas-fired cogeneration facilities.*

59. a. Prepared Direct Testimony on behalf of the **Solar Alliance** (A. 07-01-047 — August 10, 2007)
    b. Prepared Rebuttal Testimony on behalf of the **Solar Alliance** (A. 07-01-047 — September 24, 2007)

    - *Electric rate design issues that impact customers installing solar photovoltaic systems.*

60. a. Prepared Direct Testimony on Behalf of **Gas Transmission Northwest Corporation** (A. 07-12-021 — May 15, 2008)
    b. Prepared Rebuttal Testimony on Behalf of **Gas Transmission Northwest Corporation** (A. 07-12-021 — June 13, 2008)

    - *Utility subscription to new natural gas pipeline capacity serving California.*

61. a. Prepared Direct Testimony on behalf of the **Solar Alliance** (A. 08-03-015 — September 12, 2008)
    b. Prepared Rebuttal Testimony on behalf of the **Solar Alliance** (A. 08-03-015 — October 3, 2008)

    - *Issues concerning the design of a utility-sponsored program to install 500 MW of utility- and independently-owned solar photovoltaic systems.*

62. Prepared Direct Testimony on behalf of the **Solar Alliance** (A. 08-03-002 — October 31, 2008)

    - *Electric rate design issues that impact customers installing solar photovoltaic systems.*

63. a. Phase II Direct Testimony on behalf of **Indicated Producers, the California Cogeneration Council, California Manufacturers and Technology Association, and Watson Cogeneration Company** (A. 08-02-001 — December 23, 2008)
    b. Phase II Rebuttal Testimony on behalf of **Indicated Producers, the California Cogeneration Council, California Manufacturers and Technology Association, and Watson Cogeneration Company** (A. 08-02-001 — January 27, 2009)

    - *Natural gas cost allocation and rate design issues for large customers.*

64. a. Prepared Direct Testimony on behalf of the **California Cogeneration Council** (A. 09-05-026 — November 4, 2009)

    - *Natural gas cost allocation and rate design issues for large customers.*

65. a. Prepared Direct Testimony on behalf of **Indicated Producers and Watson Cogeneration Company** (A. 10-03-028 — October 5, 2010)
    b. Prepared Rebuttal Testimony on behalf of **Indicated Producers and Watson Cogeneration Company** (A. 10-03-028 — October 26, 2010)

    - *Revisions to a program of firm backbone capacity rights on natural gas pipelines.*

66. Prepared Direct Testimony on behalf of the **Solar Alliance** (A. 10-03-014 — October 6, 2010)

    - *Electric rate design issues that impact customers installing solar photovoltaic systems.*

67. Prepared Rebuttal Testimony on behalf of the **Indicated Settling Parties** (A. 09-09-013 — October 11, 2010)

    - *Testimony on proposed modifications to a broad-based settlement of rate-related issues on the Pacific Gas & Electric natural gas pipeline system.*

68. a. Supplemental Prepared Direct Testimony on behalf of **Sacramento Natural Gas Storage, LLC** (A. 07-04-013 — December 6, 2010)
    b. Supplemental Prepared Rebuttal Testimony on behalf of **Sacramento Natural Gas Storage, LLC** (A. 07-04-013 — December 13, 2010)
    c. Supplemental Prepared Reply Testimony on behalf of **Sacramento Natural Gas Storage, LLC** (A. 07-04-013 — December 20, 2010)

    - *Local reliability benefits of a new natural gas storage facility.*

69. Prepared Direct Testimony on behalf of **The Vote Solar Initiative** (A. 10-11-015—June 1, 2011)

    - *Distributed generation policies; utility distribution planning.*

70. Prepared Reply Testimony on behalf of the **Solar Alliance** (A. 10-03-014—August 5, 2011)

    - *Electric rate design for commercial & industrial solar customers.*

71. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 11-06-007—February 6, 2012)

    - *Electric rate design for solar customers; marginal costs.*

72. a. Prepared Direct Testimony on behalf of the **Northern California Indicated Producers** (R.11-02-019—January 31, 2012)
    b. Prepared Rebuttal Testimony on behalf of the **Northern California Indicated Producers** (R. 11-02-019—February 28, 2012)

    - *Natural gas pipeline safety policies and costs*

73. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 11-10-002—June 12, 2012)

    - *Electric rate design for solar customers; marginal costs.*

74. Prepared Direct Testimony on behalf of the **Southern California Indicated Producers** and **Watson Cogeneration Company** (A. 11-11-002—June 19, 2012)

    - *Natural gas pipeline safety policies and costs*

75. a. Testimony on behalf of the **California Cogeneration Council** (R. 12-03-014—June 25, 2012)
    b. Reply Testimony on behalf of the **California Cogeneration Council** (R. 12-03-014—July 23, 2012)

    - *Ability of combined heat and power resources to serve local reliability needs in southern California.*

76. a. Prepared Testimony on behalf of the **Southern California Indicated Producers** and **Watson Cogeneration Company** (A. 11-11-002, Phase 2—November 16, 2012)
    b. Prepared Rebuttal Testimony on behalf of the **Southern California Indicated Producers** and **Watson Cogeneration Company** (A. 11-11-002, Phase 2—December 14, 2012)

    - *Allocation and recovery of natural gas pipeline safety costs.*

77. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 12-12-002—May 10, 2013)

    - *Electric rate design for commercial & industrial solar customers; marginal costs.*

78. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 13-04-012—December 13, 2013)

    - *Electric rate design for commercial & industrial solar customers; marginal costs.*

79. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 13-12-015—June 30, 2014)

    - *Electric rate design for commercial & industrial solar customers; residential time-of-use rate design issues.*

80. a. Prepared Direct Testimony on behalf of **Calpine Corporation** and the **Indicated Shippers** (A. 13-12-012—August 11, 2014)
    b. Prepared Direct Testimony on behalf of **Calpine Corporation, the Canadian Association of Petroleum Producers, Gas Transmission Northwest,** and **the City of Palo Alto** (A. 13-12-012—August 11, 2014)
    c. Prepared Rebuttal Testimony on behalf of **Calpine Corporation** (A. 13-12-012—September 15, 2014)
    d. Prepared Rebuttal Testimony on behalf of **Calpine Corporation, the Canadian Association of Petroleum Producers, Gas Transmission Northwest,** and **the City of Palo Alto** (A. 13-12-012—September 15, 2014)

    - *Rate design, cost allocation, and revenue requirement issues for the gas transmission system of a major natural gas utility.*

81. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (R. 12-06-013—September 15, 2014)

    - *Comprehensive review of policies for rate design for residential electric customers in California.*

82. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 14-06-014—March 13, 2015)

    - *Electric rate design for commercial & industrial solar customers; marginal costs.*

83. a. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A.14-11-014—May 1, 2015)
    b. Prepared Rebuttal Testimony on behalf of the **Solar Energy Industries Association** (A. 14-11-014—May 26, 2015)

    - *Time-of-use periods for residential TOU rates.*

84. Prepared Rebuttal Testimony on behalf of the **Joint Solar Parties** (R. 14-07-002 — September 30, 2015)

    - *Electric rate design issues concerning proposals for the net energy metering successor tariff in California.*

85. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 15-04-012—July 5, 2016)

    - *Selection of Time-of-Use periods, and rate design issues for solar customers.*

86. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 16-09-003 — April 28, 2017)

    - *Selection of Time-of-Use periods, and rate design issues for solar customers.*

87. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 17-06-030 — March 23, 2018)

    - *Selection of Time-of-Use periods, and rate design issues for solar customers.*

88. Prepared Direct and Rebuttal Testimony on behalf of **Calpine Corporation** (A. 17-11-009 – July 20 and August 20, 2018)

    - *Gas transportation rates for electric generators, gas storage and balancing issues*

89. Prepared Direct Testimony on behalf of **Gas Transmission Northwest LLC** and the **City of Palo Alto** (A. 17-11-009 – July 20, 2018)

    - *Rate design for intrastate backbone gas transportation rates*

90. Prepared Direct Testimony on behalf of **EVgo** (A. 18-11-003 – April 5, 2019)

    - *Electric rate design for commercial electric vehicle charging*

91. Prepared Direct and Rebuttal Testimony on behalf of **Vote Solar** and the **Solar Energy Industries Association** (R. 14-10-003 — October 7 and 21, 2019)

    - *Avoided cost issues for distributed energy resources*

92. Prepared Direct and Rebuttal Testimony on behalf of **EVgo** (A. 19-07-006 – January 13 and February 20, 2020)

    - *Electric rate design for commercial electric vehicle charging*

93. Prepared Direct Testimony on behalf of the **Solar Energy Industries Association** (A. 19-03-002 — March 17, 2020)

    - *Electric rate design issues for solar and storage customers*

EXPERT WITNESS TESTIMONY BEFORE THE ARIZONA CORPORATION COMMISSION

1. Prepared Direct, Rebuttal, and Supplemental Testimony on behalf of **The Alliance for Solar Choice (TASC)**, (Docket No. E-00000J-14-0023, February 27, April 7, and June 22, 2016).

   - *Development of a benefit-cost methodology for distributed, net metered solar resources in Arizona.*

2. Prepared Surrebuttal and Responsive Testimony on behalf of the **Energy Freedom Coalition of America** (Docket No. E-01933A-15-0239 – March 10 and September 15, 2016).

   - *Critique of a utility-owned solar program; comments on a fixed rate credit to replace net energy metering.*

3. Direct Testimony on behalf of the **Solar Energy Industries Association** (Docket No. E-01345A-16-0036, February 3, 2017).

4. Direct and Surrebuttal Testimony on behalf of **The Alliance for Solar Choice and the Energy Freedom Coalition of America** (Docket Nos. E-01933A-15-0239 (TEP), E-01933A-15-0322 (TEP), and E-04204A-15-0142 (UNSE) – May 17 and September 29, 2017).

EXPERT WITNESS TESTIMONY BEFORE THE COLORADO PUBLIC UTILITIES COMMISSION

1. Direct Testimony and Exhibits on behalf of the **Colorado Solar Energy Industries Association** and the **Solar Alliance**, (Docket No. 09AL-299E – October 2, 2009). https://www.dora.state.co.us/pls/efi/DDMS_Public.Display_Document?p_section=PUC&p_source=EFI_PRIVATE&p_doc_id=3470190&p_doc_key=0CD8F7FCDB673F1043928849D9D8CAB1&p_handle_not_found=Y

   - *Electric rate design policies to encourage the use of distributed solar generation.*

2. Direct Testimony and Exhibits on behalf of the **Vote Solar Initiative** and the **Interstate Renewable Energy Council**, (Docket No. 11A-418E – September 21, 2011).

   - *Development of a community solar program for Xcel Energy.*

3. Answer Testimony and Exhibits, plus Opening Testimony on Settlement, on behalf of the **Solar Energy Industries Association**, (Docket No. 16AL-0048E [Phase II] – June 6 and September 2, 2016).

   - *Rate design issues related to residential customers and solar distributed generation in a Public Service of Colorado general rate case.*

EXPERT WITNESS TESTIMONY BEFORE THE GEORGIA PUBLIC SERVICE COMMISSION

1. Direct Testimony on behalf of **Georgia Interfaith Power & Light and Southface Energy Institute, Inc.** (Docket No. 40161 – May 3, 2016).

    - *Development of a cost-effectiveness methodology for solar resources in Georgia.*

EXPERT WITNESS TESTIMONY BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

1. Direct Testimony on behalf of the **Idaho Conservation League** (Case No. IPC-E-12-27—May 10, 2013)

    - *Costs and benefits of net energy metering in Idaho.*

2. a. Direct Testimony on behalf of the **Idaho Conservation League and the Sierra Club** (Case Nos. IPC-E-15-01/AVU-4-15-01/PAC-E-15-03 — April 23, 2015)
    b. Rebuttal Testimony on behalf of the **Idaho Conservation League and the Sierra Club** (Case Nos. IPC-E-15-01/AVU-4-15-01/PAC-E-15-03 — May 14, 2015)

    - *Issues concerning the term of PURPA contracts in Idaho.*

2. a. Direct Testimony on behalf of the **Sierra Club** (Case No. IPC-E-17-13 — December 22, 2017)
    b. Rebuttal Testimony on behalf of the **Sierra Club** (Case No. IPC-E-17-13 — January 26, 2018)

EXPERT WITNESS TESTIMONY BEFORE THE MASSACHUSETTS DEPARTMENT OF PUBLIC UTILITIES

1. Direct and Rebuttal Testimony on behalf of **Northeast Clean Energy Council, Inc.** (Docket D.P.U. 15-155, March 18 and April 28, 2016)

    - *Residential rate design and access fee proposals related to distributed generation in a National Grid general rate case.*

EXPERT WITNESS TESTIMONY BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

1. Prepared Direct Testimony on behalf of **Vote Solar** (Case No. U-18419—January 12, 2018)

2. Prepared Rebuttal Testimony on behalf of the **Environmental Law and Policy Center, the Ecology Center, the Solar energy Industries Association, Vote Solar, and the Union of Concerned Scientists** (Case No. U-18419 — February 2, 2018)

EXPERT WITNESS TESTIMONY BEFORE THE MINNESOTA PUBLIC UTILITIES COMMISSION

1. Direct and Rebuttal Testimony on Behalf of **Geronimo Energy, LLC**. (In the Matter of the Petition of Northern States Power Company to Initiate a Competitive Resource Acquisition Process [OAH Docket No. 8-2500-30760, MPUC Docket No. E002/CN-12-1240, September 27 and October 18, 2013])

    - *Testimony in support of a competitive bid from a distributed solar project in an all-source solicitation for generating capacity.*

EXPERT WITNESS TESTIMONY BEFORE THE MONTANA PUBLIC SERVICE COMMISSION

1. Pre-filed Direct and Supplemental Testimony on Behalf of **Vote Solar and the Montana Environmental Information Center** (Docket No. D2016.5.39, October 14 and November 9, 2016).

    - *Avoided cost pricing issues for solar QFs in Montana.*

EXPERT WITNESS TESTIMONY BEFORE THE PUBLIC UTILITIES COMMISSION OF NEVADA

1. Pre-filed Direct Testimony on Behalf of the **Nevada Geothermal Industry Council** (Docket No. 97-2001—May 28, 1997)

    - *Avoided cost pricing for the electric output of geothermal generation facilities in Nevada.*

2. Pre-filed Direct Testimony on Behalf of **Nevada Sun-Peak Limited Partnership** (Docket No. 97-6008—September 5, 1997)

    - *QF pricing issues in Nevada.*

3. Pre-filed Direct Testimony on Behalf of the **Nevada Geothermal Industry Council** (Docket No. 98-2002 — June 18, 1998)

    - *Market-based, avoided cost pricing for the electric output of geothermal generation facilities in Nevada.*

4. a. Prepared Direct Testimony on behalf of **The Alliance for Solar Choice (TASC)**, (Docket Nos. 15-07041 and 15-07042 –October 27, 2015).
    b. Prepared Direct Testimony on Grandfathering Issues on behalf of **TASC**, (Docket Nos. 15-07041 and 15-07042 –February 1, 2016).

c. Prepared Rebuttal Testimony on Grandfathering Issues on behalf of **TASC**, (Docket Nos. 15-07041 and 15-07042 –February 5, 2016).

- *Net energy metering and rate design issues in Nevada.*

EXPERT WITNESS TESTIMONY BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

1. Prepared Direct and Rebuttal Testimony on behalf of **The Alliance for Solar Choice (TASC)**, (Docket No. DE 16-576, October 24 and December 21, 2016).

- *Net energy metering and rate design issues in New Hampshire.*

EXPERT WITNESS TESTIMONY BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION

1. Direct Testimony on Behalf of the **Interstate Renewable Energy Council** (Case No. 10-00086-UT—February 28, 2011)
http://164.64.85.108/infodocs/2011/3/PRS20156810DOC.PDF

- *Testimony on proposed standby rates for new distributed generation projects; cost-effectiveness of DG in New Mexico.*

2. Direct Testimony and Exhibits on behalf of the **New Mexico Independent Power Producers** (Case No. 11-00265-UT, October 3, 2011)

- *Cost cap for the Renewable Portfolio Standard program in New Mexico*

EXPERT WITNESS TESTIMONY BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

1. Direct, Response, and Rebuttal Testimony on Behalf of the North Carolina Sustainable Energy Association. (In the Matter of Biennial Determination of Avoided Cost Rates for Electric Utility Purchases from Qualifying Facilities – 2014; Docket E-100 Sub 140; April 25, May 30, and June 20, 2014)

- *Testimony on avoided cost issues related to solar and renewable qualifying facilities in North Carolina.*

April 25, 2014: http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=89f3b50f-17cb-4218-87bd-c743e1238bc1
May 30, 2014: http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=19e0b58d-a7f6-4d0d-9f4a-08260e561443
June 20, 2104: http://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=bd549755-d1b8-4c9b-b4a1-fc6e0bd2f9a2

EXPERT WITNESS TESTIMONY BEFORE THE PUBLIC UTILITIES COMMISSION OF OREGON

1. a. Direct Testimony of Behalf of **Weyerhaeuser Company** (UM 1129 — August 3, 2004)
   b. Surrebuttal Testimony of Behalf of **Weyerhaeuser Company** (UM 1129 — October 14, 2004)

2. a. Direct Testimony of Behalf of **Weyerhaeuser Company and the Industrial Customers of Northwest Utilities** (UM 1129 / Phase II — February 27, 2006)
   b. Rebuttal Testimony of Behalf of **Weyerhaeuser Company and the Industrial Customers of Northwest Utilities** (UM 1129 / Phase II — April 7, 2006)

   - *Policies to promote the development of cogeneration and other qualifying facilities in Oregon.*

3. Direct Testimony on Behalf of the **Oregon Solar Energy Industries Association** (UM 1910,01911, and 1912 — March 16, 2018).

EXPERT WITNESS TESTIMONY BEFORE THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

1. Direct Testimony and Exhibits on behalf of **The Alliance for Solar Choice** (Docket No. 2014-246-E – December 11, 2014)
   https://dms.psc.sc.gov/attachments/matter/B7BACF7A-155D-141F-236BC437749BEF85

   - *Methodology for evaluating the cost-effectiveness of net energy metering*

EXPERT WITNESS TESTIMONY BEFORE THE PUBLIC UTILITIES COMMISSION OF TEXAS

1. Direct Testimony on behalf of the **Solar Energy Industries Association** (SEIA) (Docket No. 44941 – December 11, 2015)

   - *Rate design issues concerning net metering and renewable distributed generation in an El Paso Electric general rate case.*

EXPERT WITNESS TESTIMONY BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

1. Direct Testimony on behalf of the **Sierra Club** (Docket No. 15-035-53—September 15, 2015)

   - *Issues concerning the term of PURPA contracts in Idaho.*

EXPERT WITNESS TESTIMONY BEFORE THE VERMONT PUBLIC SERVICE BOARD

1. Pre-filed Testimony of R. Thomas Beach and Patrick McGuire on Behalf of **Allco Renewable Energy Limited** (Docket No. 8010 — September 26, 2014)

    - *Avoided cost pricing issues in Vermont*

EXPERT WITNESS TESTIMONY BEFORE THE VIRGINIA CORPORATION COMMISSION

Direct Testimony and Exhibits on Behalf of the Maryland – District of Columbia – Virginia Solar Energy Industries Association, (Case No. PUE-2011-00088, October 11, 2011) http://www.scc.virginia.gov/docketsearch/DOCS/2gx%2501!.PDF

- *Cost-effectiveness of, and standby rates for, net-metered solar customers.*

LITIGATION EXPERIENCE

Mr. Beach has been retained as an expert in a variety of civil litigation matters. His work has included the preparation of reports on the following topics:

- The calculation of damages in disputes over the pricing terms of natural gas sales contracts (2 separate cases).
- The valuation of a contract for the purchase of power produced from wind generators.
- The compliance of cogeneration facilities with the policies and regulations applicable to Qualifying Facilities (QFs) under PURPA in California.
- Audit reports on the obligations of buyers and sellers under direct access electric contracts in the California market (2 separate cases).
- The valuation of interstate pipeline capacity contracts (3 separate cases).

In several of these matters, Mr. Beach was deposed by opposing counsel. Mr. Beach has also testified at trial in the bankruptcy of a major U.S. energy company, and has been retained as a consultant in anti-trust litigation concerning the California natural gas market in the period prior to and during the 2000-2001 California energy crisis.

Attachment RTB-2

Southern California Edison's New EV-8 Rate, compared to the standard TOU-GS-2 rate

Rate Element	Season	TOU Period	EV-8	TOU-GS-2	
				Option D	Option E
Customer *($/meter/month)*	All	n/a	$133.31	$133.31	$133.31
Demand *($/kW-month)*	Summer	On-peak	None for Years 1-5	$30.01	$4.40
		All hours		$11.46	$7.96
	Winter	Mid-peak		$7.64	$0.85
		All hours		$11.46	$7.96
Energy *($/kWh)*	Summer	On-peak	$0.52	$0.13	$0.53
		Mid-peak	$0.28	$0.12	$0.19
		Off-peak	$0.14	$0.09	$0.13
	Winter	Mid-peak	$0.32	$0.11	$0.17
		Off-peak	$0.15	$0.10	$0.10
		Super-off-peak	$0.09	$0.08	$0.09

Notes:

1. *EV-8 is applicable to commercial EV charging customers with maximum loads between 20 kW and 500 kW. TOU-GS-2 applies to commercial customers with loads between 20 and 200 kW.*
2. *Option D is the default rate for TOU-GS-3 customers. Option E is an optional rate available to all TOU-GS-2 customers.*
3. *The following table shows SCE's TOU periods:*

Season	***TOU Period***	***Hours***
Summer	*On-peak*	*4p to 9p weekdays*
	Mid-peak	*4p to 9p weekends*
	Off-peak	*All other hours*
Winter	*Mid-peak*	*4p to 9p all days*
	Off-peak	*9p to 8a all days*
	Super-off-peak	*8a to 4p all days*