Exhibit No.:
Issue: Large Load Tariff
Witness: Ryan Hledik
Type of Exhibit: Rebuttal Testimony
Sponsoring Party: Evegy Missouri Metro and Evergy Missouri West
Case No.: ET-2025-0184
Date Testimony Prepared: September 5, 2025

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO.: ET-2025-0184

REBUTTAL TESTIMONY

OF

RYAN HLEDIK

ON BEHALF OF

EVERGY MISSOURI METRO and EVERGY MISSOURI WEST

Kansas City, Missouri
September 5, 2025

TABLE OF CONTENTS

REBUTTAL TESTIMONY

OF

RYAN HLEDIK

Case No. ET-2025-0184

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is Ryan Hledik. I am a Principal of The Brattle Group. My business address is 555 Mission Street, Suite 1500, San Francisco, CA 94105.

Q. On whose behalf are you submitting testimony?

A. I am submitting testimony on behalf of Evergy Metro, Inc. d/ b/a Evergy Missouri Metro and Evergy Missouri West, Inc. d/b/a Evergy Missouri West (together as "Evergy" or Company").

Q. What are your qualifications as they pertain to this testimony?

A. My consulting practice focuses on regulatory, planning, and economic matters related to emerging energy technologies. My areas of expertise include retail rate design, distributed generation, load flexibility, electrification, energy efficiency, energy storage, and grid modernization.

I have led studies and authored papers, articles, and regulatory filings on rate design issues such as the design of rates for large load customers, the benefits of time-varying pricing, strategies for transitioning customers to innovative rate designs, the efficient pricing of electricity for customers with distributed generation, rate design practices for public electric vehicle ("EV") charging, designing pilots to test innovative retail rate concepts, rate designs for promoting the efficient use of battery storage, and the energy efficiency impacts of inclining block rates.

My clients have included electric and gas utilities, state and federal regulatory commissions, power developers, independent system operators, government agencies, industry trade associations, technology firms, research institutions, and law firms. I have published more than 30 articles on electricity matters, presented at industry events in 11 countries, and given lectures on distributed grid economics at The University of Pennsylvania, Stanford University, and Yale University. I have served on the advisory boards of a demand flexibility startup and an energy storage trade association. My research has been cited by *Forbes*, *National Geographic*, *The New York Times*, *NPR*, and *The Washington Post*.

I received my M.S. in Management Science and Engineering from Stanford University, where I concentrated in Energy Economics and Policy. I received my B.S. in Applied Science from the University of Pennsylvania, with minors in Economics and Mathematics. More details regarding my professional background and education are included in my Statement of Qualifications, which is provided in **Schedule RH-1**.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide the Missouri Public Service Commission ("PSC" or "Commission") with a comparison of Ameren's and Evergy's large load tariff proposals. I discuss similarities and differences between the two companies' proposals within the broader context of other proposed large load tariffs in jurisdictions across the United States.

Q. Please summarize your testimony.

A. Based on my review of large load tariff proposals in other jurisdictions, I identify three common objectives of many of those proposals:

- Attracting new large customers to the utilities' service territories;
- Mitigating the risk of stranded assets if the new large load customer does not materialize as planned; and
- Mitigating the risk of costs being shifted to other customers.

Ideally, a large load tariff will accomplish all three of these objectives.

Ameren's and Evergy's proposals are conceptually similar in that they both include several features to attract new large customers to Missouri. These features offer the flexibility to support new large load customers in meeting their corporate sustainability goals and to accommodate various options for adding capacity to the power system.

Ameren's and Evergy's proposals are also conceptually similar by including several provisions that protect against stranded asset risk. Those provisions include collateral requirements, minimum contract terms, a minimum bill, and exit fees, for example.

Ameren's and Evergy's proposals are designed to mitigate cost-shift risks from new large customers to existing customers, but their approaches differ in the degree to which this objective is addressed. While both proposals have rates that are based on embedded costs, Evergy's proposal also includes a mechanism that addresses the additional costs associated with accelerated investment.

While there are other nuanced differences between Ameren's and Evergy's proposals, in my opinion the key decision facing the Commission is whether it is comfortable with a rate design that is strictly based on embedded costs (as proposed by

Ameren) or if it prefers a rate design that has a foundation in embedded costs but also includes a provision to recover additional costs caused by the new large load customers (as proposed by Evergy).

Q. How is the remainder of your testimony organized?

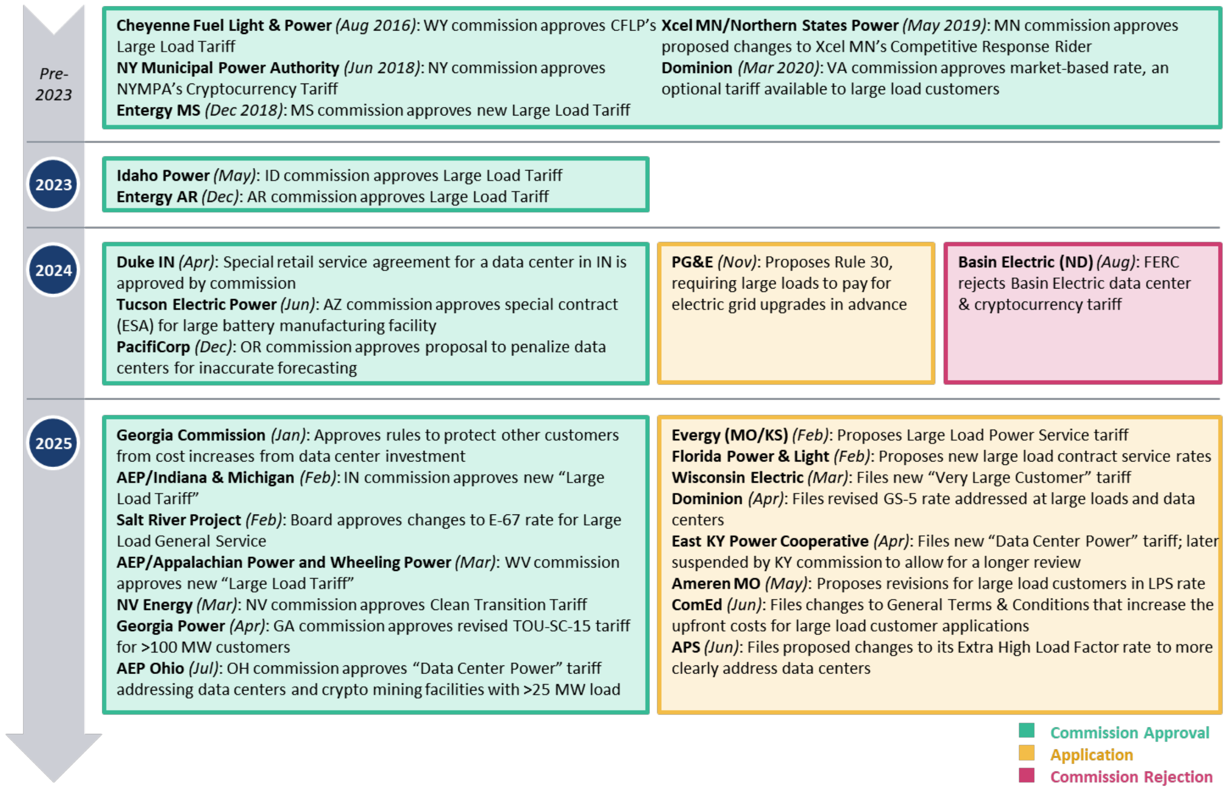
A. The remainder of my testimony is organized as follows: Section II discusses takeaways from my review of large load tariff proposals in other jurisdictions. Section III provides a comparison of Ameren's and Evergy's proposed large load tariffs, and discusses the proposals within the broader context of my jurisdictional scan. Section IV concludes my testimony.

II. REVIEW OF LARGE LOAD TARIFFS IN OTHER JURISDICTIONS

Q. Have you reviewed large load tariff proposals in other jurisdictions?

A. Yes, I have. While it is a very fast-moving area, my Brattle colleagues and I have been tracking large load tariff proposals and their regulatory status in a variety of US jurisdictions. Figure 1 below summarizes the status of large load tariff proposals from select US utilities as of August 2025.

Figure 1: Select Large Load Tariff and Regulatory Activity Across the US



Q. Have you observed any common themes in your review of those large load tariff proposals?

A. Yes, I have. At a high level, I have observed that the tariff proposals often are designed to accomplish three objectives. In no particular order, they are:

- Attract new large customers to the service territory;
- Mitigate the risk of stranded assets if the large customer does not materialize as expected; and
- Protect customers from a potential cost shift resulting from the addition of the large load customers to the system.

Q. Let's discuss each of those in more detail, starting with features designed to attract large load customers. Please explain why utilities would include features to attract new large customers to their service territories.

A. Evergy Witness Kevin Gunn describes the benefits of attracting new large load customers in his rebuttal testimony in this proceeding.[1] Reasons to attract large load customers may include economic development, tax revenues, or a larger sales base over which to recover fixed costs.

Large customers vary in their investment requirements, operational needs, and corporate objectives, all of which influence those customers' decisions over where to locate their loads and which utilities to engage in this regard. Accordingly, utilities seeking to attract such customers would need to account for these factors when designing tariffs to ensure alignment with the customers' priorities.

Q. Can you provide an example of a tariff proposal that is designed to attract large loads to the utility's service territory?

A. Yes. NV Energy's Clean Transition Tariff ("CTT") is an example. The CTT, designed largely in response to Google's request, is an advanced direct contracting arrangement that allows large customers to finance clean energy projects to meet their corporate sustainability goals. The arrangement is similar to a sleeved power purchase agreement ("PPA"). A customer receiving service under the new rate enters into a long-term Energy Supply Agreement ("ESA") with NV Energy to purchase power from a new electricity resource that is chosen by the customer. The customer pays a fixed price (dollars per megawatt hour, or $/MWh), which is intended to cover the incremental cost of the selected

[1] Rebuttal Testimony of Kevin Gunn, Docket No. ET-2025-0184, September 5, 2025.

resource as determined through NV Energy's Integrated Resource Plan ("IRP") modeling.[2] The customer also pays the utility for any consumption in excess of electricity generation from the contracted resource. In return, the customer receives the clean energy attributes associated with the contracted resource.

The CTT provides a novel avenue for sophisticated customers who are willing to pay a "green premium" to match their energy consumption with clean energy supply on an hourly basis. My understanding is that the approach is being considered in other jurisdictions, including Indiana and North Carolina.[3]

NV Energy's approach illustrates a strategy of attracting large loads without providing a price discount. Instead, the same objective can be accomplished by offering tariff features that are attractive to potential customers, such as facilitating the achievement of their corporate sustainability goals.

Q. Please describe the potential stranded asset risks associated with serving large load customers.

A. Stranded cost risks associated with serving new large customers arise when utilities procure resources or invest in infrastructure to meet the anticipated demand of these customers but are unable to recover those costs due to unforeseen changes in usage or customer behavior. For instance, large customers may downsize, relocate, or cease operations earlier than expected. If the utility has made substantial capital investments to serve that load (e.g.,

---

[2] NV Energy Clean Transition Tariff, Schedule No. CTT, Advice Letter No. 547-E (Nevada Power Company)/ No. 674-E (Sierra Pacific Power Company), Docket Nos. 24-05022 and 24-05023, filed May 1, 2024, approved on March 11, 2025.

[3] Indiana Michigan Power Company, Stipulation and Settlement Agreement, Cause No. 46097, February 19, 2025, p. 6; and Duke Energy, "Responding to growing demand, Duke Energy, Amazon, Google, Microsoft and Nucor execute agreements to accelerate clean energy options," May 29, 2024.

transmission upgrades), and those assets are no longer fully utilized, the associated costs may become "stranded" and unrecoverable from the departing customer.

Q. Can you provide an example of a large load tariff proposal that is designed to mitigate the risk of stranded assets?

A. Yes. AEP Indiana Michigan ("I&M")'s recently approved large load tariff provides an example of how rates can be designed to mitigate stranded asset risks. Approved earlier this year, the company's revised Industrial Power tariff introduced several elements that impose restrictions on large load customers exiting the system and increased the penalties for doing so. For example, I&M's rate includes a 12-year minimum contract term following an optional ramp period of up to five years, and customers who wish to terminate service before the term is over are subject to a termination fee equivalent to up to five years of minimum charges. For the duration of the contract, customers are subject to a minimum demand charge, which is set based on 80% of the contracted capacity. Industrial Power customers are also subject to a stringent collateral requirement, equivalent to 24 months of non-fuel charges; customers that meet specific liquidity and credit ratings can post smaller collateral amounts. Together, these provisions are designed to minimize the utility's stranded cost risks.[4]

Q. Lastly, please explain the cost-shift risks that utilities may face when serving new large load customers.

A. Aside from the risk of stranded assets, there also is a risk that the cost of serving the new customer's load will be higher than the revenue produced from the customer's applicable rate. This is a complex issue, because whether or not it occurs depends on factors such as

[4] Indiana Michigan Power Company, Submission of Tariff—Tariff I.P., Cause No. 46097, February 19, 2025, p. 6.

the load profile of the customer, the regulatory precedent for setting the pricing in the large load tariff, the potential applicability of an economic development rider, whether the utility's marginal costs are higher than its embedded costs, and the potential cost of accelerating investments to quickly serve the new large load. As a result, utilities take a variety of approaches to addressing this issue based on jurisdiction-specific ratemaking practices.

Q. Can you provide examples of the strategies that utilities have taken to protect existing customers from cost-shift risks when serving new large customers?

A. Many of the same mechanisms designed to alleviate the risk of stranded assets also protect existing customers from cost shifts. For example, I&M's aforementioned large load tariff includes a minimum demand charge set at 80% of contracted capacity, which ensures that the utility recovers a substantial proportion of the estimated bill revenue even if actual usage falls short.

As another example, PG&E's recently proposed tariff for large, transmission-level retail customers would require such customers to pay up-front for all transmission facilities and upgrades needed to serve their load.[5] Under this framework, the only transmission upgrade costs socialized across ratepayers are those that provide value to the broader customer base (e.g., transmission network upgrades). Any upgrades that provide value solely to the large load customer must be paid by that customer.

[5] California Public Utilities Commission, Proposed Decision, Application 24-11-007, July 24, 2025.

III. REVIEW OF AMEREN'S AND EVERGY'S PROPOSALS

Q. Have you reviewed Ameren's and Evergy's large load tariff proposals?

A. Yes. I have reviewed Ameren's proposed revisions to its Large Power Service tariff and Evergy's proposed Large Load Power Service ("LLPS") tariff.

Q. First, how do Ameren's and Evergy's large load tariff proposals compare in terms of their rate design structures?

A. The utilities' proposed tariffs to serve large load customers have similar rate design structures. Both rate structures contain the same elements, which include:

- Customer charge: assessed on a $/customer basis, the customer charge is used to recover customer-specific costs such as metering, billing, and customer support.
- Energy charge: assessed on a $/kWh basis, the energy charge recovers energy-related costs based on metered kWh consumed and varies by season.[6]
- Demand charge: assessed on $/kW-month of billing demand, the demand charge recovers costs related to electricity production and varies by season.
- Reactive demand charge: assessed on a $/kVar basis, the reactive charge recovers costs associated with managing reactive demand caused by the customer.

There are some nuanced differences in the charges across the two proposals. For example, whereas Ameren proposes to recover all demand-related costs through a single demand charge, Evergy proposes to recover demand-related costs through two different

[6] Evergy's proposed energy charge has the same pricing level across seasons. Ameren's proposed tariff also includes an optional time-of-day variation.

charges: (1) a "Grid Charge" to recover substation and transmission-related costs and (2) a "Demand Charge" to recover production-related costs. The utilities' proposed methods to measure the billing demand for the demand charges are accordingly different.[7]

Aside from these technical differences, the proposed charges are similar in structure across the two tariffs.

Table 1 summarizes my comparison of the rate design elements in Ameren's and Evergy's proposals. A green circle indicates that the rate design element is common across the two proposals, and a yellow circle indicates that the rate design element is included in only one of the proposals.

Table 1:
Comparison of Rate Design Elements in Ameren's and Evergy's Large Load Tariff Proposals

Ameren (Large Power Service)	**Evergy** (Large Load Power Service)
Customer Charge $412.66/month	Customer Charge EMM: $1,181/month EMW: $675/month
Energy Charge: Flat (or TOU), Seasonal Summer: $0.0406/kWh; Winter: $0.0371/kWh TOU: Peak & Off-Peak Pricing with Summer (June - September) and Winter (October - May) Pricing in $/kWh	Energy Charge: Flat, Seasonal EMM: $0.02988/kWh EMW: $0.02881/kWh
Demand Charge: Flat, Seasonal Summer: $23.90/kW-month Winter: $10.63/kW-month	Demand Charge: Flat, Seasonal EMM: Summer: $14/kW-month; Winter: $12/kW-month EMW: Summer: $10/kW-month; Winter: $8/kW-month
	Grid Charge EMM: $3.003/kW-month Substation Charge <u>or</u> $2.2/kW-month Transmission Charge EMW: $4.811/kW-month Substation Charge <u>or</u> $4.75/kW-month Transmission Charge
Reactive Charge $0.4481/kVar	Reactive Charge EMM: $0.99294/kVar EMW: $0.46/kVar
Rate design element is common across both proposals. **Rate design element is included in only one proposal.**	EMM: Evergy Missouri Metro EMW: Evergy Missouri West

[7] Specifically, Ameren's proposed definition for billing demand is based on the "highest demand established during peak hours [10 AM to 10 PM] or 50% of the highest demand established during off-peak hours, whichever is highest during the month, but in no event less than 5,000 kW." See Direct Testimony of Steven M. Wills, Schedule SMW-D1, Sheet No. 61.3 ("Wills Direct Testimony"). In comparison, Evergy proposes to measure "grid demand" for the Grid Charge as the highest demand measured every 15 minutes in the last 12 months, and "billing demand" for the Demand harge as the higher of the highest demand measured every 15 minutes or the minimum demand. See Direct Testimony of Brad Lutz, Schedule BDL-1, p. 88, Case No. EO-2025-0154 ("Lutz Direct Testimony").

Q. How do the average customer bills under Ameren's and Evergy's proposed large load tariffs compare?

A. To illustrate the implications of the proposed tariffs for customer bills, I calculated the average monthly bills for a large customer under each proposed tariff (see Table 2 below). In this illustrative calculation, I assumed a contracted capacity of 500 MW, actual usage of 400 MW, and load factor of 70%. For simplicity, I assumed the customer has zero kVar.

Under Ameren's proposed rate, the customer would pay an average of $13.8 million per month, equivalent to an all-in rate of 6.8 cents/kWh. Under Evergy's proposed rate, the same customer would pay $15.9 million, resulting in an all-in rate of 7.8 cents/kWh. The higher bill under Evergy's proposed rate is in part due to revenue from the System Support Rider, which will be used to offset the accelerated generation costs otherwise expected to be borne by non-LLPS customer classes.[8]

Table 2:
Comparison of Ameren's and Evergy's Monthly Bills and
Average Pricing Levels for an Illustrative Large Load Customer

Ameren (Large Power Service)	
Average Monthly Payment	**$13,844,398**
All-in Rate ($/kWh)	**$0.06773**
Evergy Missouri Metro (Large Load Power Service)	
Average Monthly Payment	**$15,891,320**
All-in Rate ($/kWh)	**$0.07775**

Notes: Assumes customer has 500-MW contract capacity, 70% load factor, and 0 kVar reactive demand, served at transmission voltage. The average monthly bill is the total annual bill divided by 12. Both estimates include charges shown in Table 1 (plus the SSR for the Evergy bill) and assume that the customer does not receive an economic development rate discount. In the Evergy case, the customer is charged the transmission-level Grid Charge.

[8] Lutz Direct Testimony, p. 33.

Q. Let’s return to the three large load rate design objectives that you identified in your jurisdiction scan. Please provide an overview of how Ameren’s and Evergy’s large load tariff proposals compare in this context.

A. Table 3 below provides an overview of the key features of each proposal. Ameren and Evergy share the goal of attracting new large customers (the first objective), though their approaches differ slightly, with Evergy offering options for customers to contribute capacity in addition to clean energy options. Both utilities rely on similar tariff mechanisms to mitigate stranded asset risk (the second objective), though with some technical differences in their design. The most notable divergence across the two proposed tariffs lies in their treatment of cost-shift risks. Both proposals establish rates based on embedded costs, but Evergy's proposal includes an additional mechanism to recover additional costs arising from accelerated infrastructure investment.

Table 3: Comparison of Key Features of Ameren's and Evergy's Proposals

Category	Ameren (Large Power Service)	Evergy (Large Load Power Service)
Mechanisms to Attract New Large Loads	Optional Clean Energy Credit Riders (1) Renewable Solutions Program - Large Load Customers (RSP-LLC) and (2) Nuclear Energy Credits (NEC)	Optional Clean Energy Credit Riders (1) Renewable Energy Rider (RENEW), (2) Green Solutions Connections (GSR), and (3) Alternative Energy Credits (AEC)
	Clean Energy Choice Program	Clean Energy Choice Rider
	Clean Capacity Advancement Program	Demand Response & Local Generation Rider
		Customer Capacity Rider
Mechanisms to Mitigate Stranded Asset Risk	Minimum Contract Term 15 Years	Minimum Contract Term 15 Years
	Minimum Monthly Bill Based on 70% of contract demand	Minimum Monthly Bill Based on 80% of contract demand
	Collateral Requirements 50% of minimum capacity commitments for full term.	Collateral Requirements Twenty-four (24) months multiplied by the minimum monthly bill
	Capacity Reduction Restrictions One-time reduction up to 10% (after first five years of contract term) upon payment of a Capacity Reduction Fee	Capacity Reduction Restrictions One-time 20% reduction allowed; greater reductions allowed with payment of a Capacity Reduction Fee
	Termination Fees Minimum charges for 5 years or rest of contract term, whichever is less (in addition to any outstanding months of ramp period)	Termination Fees Minimum charges for 1 year or rest of contract term, whichever is greater
		Early Termination Fee Additional fee if customer seeks to terminate service with less than 36 months' notice, equal to twice the minimum monthly bill multipled by the difference between 36 months and the requested number of months' notice.
Mechanisms to Mitigate Cost-Shift Risk	Interim Capacity Charge Customer *may* be subject to additional demand charge for interim capacity (design unspecified)	Interim Capacity Charge Customer *required* to pay for procurement costs of additional capacity until next general rate case
		System Support Rider

LEGEND:
- Mechanisms shared across both Evergy's and Ameren's proposals
- Mechanisms unique to one proposal

Q. Starting with the first objective, what features do Ameren's and Evergy's proposals include to attract large load customers to Missouri?

A. Ameren's and Evergy's proposals are quite similar in this regard: they both include several provisions that are designed to attract large load customers to Missouri without offering a price discount.

Evergy's proposal offers service flexibility to customers via several different mechanisms. One of these features is the Customer Capacity Rider, under which a customer would be credited for the transfer of resource capacity rights to Evergy, which Evergy could then utilize to meet its capacity obligations. The proposed Demand Response Generation Rider would credit a customer providing demand response services. Both mechanisms could expedite the load interconnection process, one of the main priorities for large load customers.

Many large load customers are also interested in receiving clean energy supply, and Evergy's proposal includes four optional riders that address this priority. The Renewable Energy Program Rider ("RENEW") and the Green Solution Connections Rider ("GSR") both would offer customers the opportunity to purchase renewable energy attributes to comply with corporate emission inventories. The Alternative Energy Credits Rider would allow customers to purchase zero emission credits from Evergy's Wolf Creek Nuclear Generating plant for similar purposes. The other offering is more complex. Evergy's Clean Energy Choice Rider would provide customers with the option to pay the price premium of a new clean generation resource incremental to Evergy's baseline IRP portfolio.

Ameren's proposal appears to include very similar provisions. While there is no equivalent Customer Capacity Rider, Ameren does propose the Clean Capacity Advancement Program, which would help fund energy storage projects designed to help large load customers integrate wind and solar resources.[9] The proposed Renewable Solution Program – Large Load Customers and Nuclear Energy Credit riders are functionally similar to Evergy's RENEW and GSR riders.[10] Lastly, Ameren offers a Clean Energy Choice Program that is equivalent to Evergy's rider of the same name.[11]

[9] Wills Direct Testimony, pp. 21–22.
[10] *Id.*, pp. 18–23.
[11] *Id.*, pp. 23–25.

Q. Do Ameren's and Evergy's proposals include provisions to mitigate the risk of stranded assets?

A. Yes. In this area as well, the proposals from both utilities include several features that protect against stranded asset risks. Both proposals include five common measures to mitigate risks of stranded assets:[12,13]

- Contract term: both proposals include a service contract term of 15 years, including a ramp period of no more than 5 years;
- Minimum monthly bill: which, among other charges, includes a minimum demand charge;
- Collateral requirements: new large load customers must post collateral, which is calculated based on contract capacity, and the exact amount can be discounted or avoided with certain level of creditworthiness and liquidity;
- Termination fee: customers must pay substantial fees if they wish to exit the service contract early; and
- Capacity reduction restrictions: customers can opt to reduce their capacity obligations. Ameren allows up to a 10% reduction upon payment of a capacity reduction fee, while Evergy allows for up to 20% reduction for no fee, and greater for a capacity reduction fee.

Table 2 above contains additional details of these tariff elements. These tariff mechanisms proposed by Ameren and Evergy are designed to protect customers from potential stranded cost risks, and they have been adopted by other utilities across the country for similar purposes.

[12] *Id.*, pp. 11–13.
[13] Lutz Direct Testimony, pp. 19-20.

Q. Are there any differences in the ways in which Ameren and Evergy have proposed to address stranded asset risks?

A. Yes, there are some technical differences in Evergy's and Ameren's proposed collateral requirements and termination fees.

There are two key differences between the companies' proposed collateral requirements. The first difference pertains to the baseline collateral amount. Evergy's proposal requires customers to post collateral equal to 24 months of minimum charges, whereas Ameren's proposal requires 50% of the minimum charge for the duration of the contract. The second difference pertains to the available options for reducing the collateral requirement. Evergy's proposal exempts eligible customers from 50% of the collateral requirement, and the exemption amount cannot exceed $150 million; customers with lower credit ratings can avoid up to 40%, or $125 million, of their collateral amount if they meet the liquidity requirement.[14] Under Ameren's proposal, eligible customers can avoid the collateral requirement altogether.

Regarding the exit fee provision, Ameren's proposal requires customers to pay the lesser of the remaining contract term or the equivalent of five years of minimum charges (plus any remaining term of the load ramp period), while Evergy's proposal is more stringent and requires customers to pay the greater of the remaining contract term or the equivalent of one year of minimum charges. In addition, Evergy's proposal includes a clause that any outstanding interim capacity charges the company is unable to reassign to a different customer can be included in the exit fee. Ameren's proposal does not appear to include a similar term. Further, Evergy's proposal requires customers to provide 36 months

[14] *Ibid*.

advance notice of termination. Shorter notice requires payment of an additional early termination fee. Ameren's proposal only requires 24 months and does not include an additional fee for early termination.[15,16]

Q. Lastly, do Ameren's and Evergy's proposals include provisions to protect customers from the risk of a cost shift?

A. This is the key area in which I consider the two companies' approaches to be conceptually different.

As I described previously, additional costs could be imposed on the system by a new large load customer but recovered from other customers if not sufficiently addressed through class cost-of-service study and rate design. Those additional costs could be due to the difference between the marginal and average cost of serving the customer (if rates are set based on embedded costs), and/or the cost of accelerated infrastructure investment needed to quickly scale and serve the new large load.[17]

The pricing in both utilities' tariff proposals is based on embedded costs, a choice that is consistent with prior ratemaking practices in Missouri and reflects a philosophy that the power system is a shared resource to be paid for consistently by all customers regardless of the specific time at which they enter the system. In this regard, both utilities' proposed rates potentially could be exposed to the two cost-shift risks I described above (i.e., marginal costs exceeding embedded costs and the cost of accelerated investment).

---

15 Wills Direct Testimony, Schedule SMW-D1, Sheet No. 61.6.

16 Lutz Direct Testimony, pp. 18-19.

17 Additionally, a cost shift could be created through the provision of an economic development rider (EDR) to the new large load customers. My understanding is that Ameren does not provide the EDR. Evergy does provide the EDR but recovers its cost directly through the Cost Recovery Component of the System Support Rider, so both utilities similarly mitigate this cost-shift risks.

Evergy's proposal goes further to reduce the risk of a cost shift through the inclusion of a mechanism designed to recover some additional costs. That mechanism is included in the Acceleration Component of the System Support Rider ("SSR"), which recovers costs associated with the acceleration of resource investment needed to serve large loads.[18] I understand Evergy is proposing, as part of the class cost-of-service study, to allocate revenue from the SSR to non-LLPS classes, thereby offsetting the accelerated generation costs expected to be borne by those customers classes.[19]

Q. How else do Ameren's and Evergy's proposals differ in their approach to protect customers from the risk of a cost shift?

A. In addition to the System Support Rider, Evergy's proposal includes an optional Interim Capacity Charge that is specifically focused on recovering the cost of capacity procurements needed to serve a new large load customer for the period between their interconnection and their full incorporation into Evergy's IRP. This charge would pass the cost of these procurements directly through to the large load customer. While Ameren's proposal leaves the option open for a similar interim capacity charge, it does not specify that such a charge would need to recover all of these procurement costs.[20]

Ameren has concluded that to mitigate the risk of a cost shift in its proposal, persistent increases to the large customer rate exceeding 4% per year for the next 20 years would be needed.[21] This equates to a cumulative increase of approximately 120% over that

---

[18] The other component of the SSR, the Cost Recovery Component, charges customers the difference between their estimated revenue before and after economic development discounts are applied.

[19] Lutz Direct Testimony, p. 33.

[20] Wills Direct Testimony, Schedule SMW-D1, Sheet No. 61.7.

[21] *Id.,* p. 35.

20-year period (i.e., more than doubling the rate).[22] Rates likely would need to be adjusted frequently to ensure this outcome.

Q. Taking a step back, how do Ameren's and Evergy's proposed tariffs compare to those that have been proposed and approved in other jurisdictions around the United States?

A. Both Evergy's and Ameren's proposed tariffs are broadly consistent with the approaches being used in large load tariffs across the United States (see the table in Schedule RH-2). From a national perspective, utilities increasingly are relying on tariffs as a tool to attract new large customers while addressing stranded cost and cost-shift risks. For instance, many utilities have introduced new clean energy procurement frameworks to attract customers with ambitious sustainability goals. These are similar to the options available under Ameren's and Evergy's proposals, where customers can pay a premium to cover the incremental cost of the next cheapest carbon-free energy resource identified through the utilities' IRP process. Likewise, many utilities are incorporating a common set of mechanisms in their large load tariffs to mitigate stranded cost risks. These mechanisms include long-term contracts, minimum charges/minimum bills, early termination fees, and collateral requirements—elements that are included in both Ameren's proposal and Evergy's proposal.

Q. Are there outliers that you have seen in your review of large load tariffs?

A. Yes. While many of the large customer tariffs I have reviewed aim to balance the three objectives described in my Rebuttal Testimony, the Missouri PSC Staff's proposal in

[22] Assuming a 4% year over year growth rate, the rate 20 years from today would be 2.19 times the current rate.

Evergy's LLPS proceeding[23] represents a departure from these emerging rate design practices. The table in Schedule RH-2 documents the key differences.

Q. In what ways is Staff's proposal an outlier?

A. At a conceptual level, there are two important ways in which Staff's proposal differs from proposals I have reviewed in other jurisdictions. First, Staff's proposal does not provide flexibility to attract new large load customers to Missouri. Specifically, Staff has recommended rejecting all of Evergy's proposed options designed to enable new customers to choose clean energy resources or provide capacity through local generation or demand response.[24]

Second, Staff's proposal is more complex than proposals I have reviewed in other jurisdictions and includes elements that I have not observed elsewhere. For example, Staff's proposal includes a four-season time-of-use energy charge with three pricing periods, several fixed cost adjustments, and two separate fees for variance between forecasted and actual demand that would require the customer and utility to update financial estimates on a monthly basis. I would expect this complexity, combined with a lack of flexibility, to make Staff's proposal unattractive to large load customers relative to competing proposals in other jurisdictions.

---

[23] Missouri Public Service Commission Staff, Missouri Public Service Commission Staff Recommendation, Case No. Case No. EO-2025-0154 ("Missouri PSC Staff Proposal").

[24] Missouri PSC Staff Proposal, pp. 86 (Clean Energy Rider), 94 (Demand Response and Local Generation Rider), 99 (Customer Capacity Rider), 106 (Renewable Energy Program Rider), 107 (Green Solution Connection Rider), 109 (Alternative Energy Credit Rider).

IV. CONCLUSION

Q. What should the Commission take away from your comparison of Ameren's and Evergy's large load tariff proposals?

A. While there are nuanced differences between the two proposals, at a conceptual level both tariffs include several provisions that can attract large loads to Missouri while simultaneously protecting against stranded asset risk. Both proposals align favorably with my jurisdictional scan of large load tariff proposals in these two areas.

The key conceptual difference between the two proposals is their respective approach to mitigating the risk of a cost shift to other customers. By including a mechanism through which additional costs are recovered from large loads, Evergy's proposal goes further toward mitigating this cost-shift risk.

As I see it, the key decision facing the Commission is to determine whether, and to what extent, the proposed tariffs help to achieve Missouri's energy and economic policy objectives. Both tariff proposals are intended to attract new large load customers while mitigating stranded cost and cost-shift risks. However, the two proposals strike the balance between these competing objectives somewhat differently, with Evergy's approach placing more emphasis on protecting existing customers from cost-shift risks by incorporating mechanisms to recover additional costs caused by the new large loads.

Q. Does this conclude your Rebuttal Testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION
OF THE STATE OF MISSOURI

In the Matter of the Application of Union Electric Company d/b/a Ameren Missouri for Approval of New Modified Tariffs for Service to Large Load Customers	))))	Docket No. ET-2025-0184

AFFIDAVIT OF RYAN HLEDIK

STATE OF OREGON)
) **ss**
COUNTY OF CLACKAMAS)

Ryan Hledik, being first duly sworn on his oath, states:

1. My name is Ryan Hledik and I am a Principal of The Brattle Group.

2. Attached hereto and made a part hereof for all purposes is my Rebuttal Testimony on behalf of Evergy Missouri Metro and Evergy Missouri West consisting of Twenty-two (22) pages, having been prepared in written form for introduction into evidence in the above-captioned docket.

3. I have knowledge of the matters set forth therein. I hereby swear and affirm that my answers contained in the attached testimony to the questions therein propounded, including any attachments thereto, are true and accurate to the best of my knowledge, information and belief.

Ryan Hledik 9/4/2025
Ryan Hledik

Subscribed and sworn before me this 4th day of September 2025.

Notary Public

My commission expires: 04/05/2027

OFFICIAL STAMP
HESHAM G KHALED
NOTARY PUBLIC - OREGON
COMMISSION NO. 1035842
MY COMMISSION EXPIRES APRIL 5, 2027

Ryan M. Hledik

PRINCIPAL

San Francisco | +1.415.217.1000 | Ryan.Hledik@brattle.com

Mr. Hledik specializes in regulatory and planning matters related to emerging energy technologies.

He advises clients in matters related to energy storage, load flexibility, distributed generation, electrification, retail rate design, energy efficiency, and grid modernization. He has worked on behalf of utilities, energy companies, grid operators, public service commissions, and government and regulatory agencies across 35 states and nine countries.

Mr. Hledik's work has been cited in regulatory decisions establishing procurement targets for distributed energy resources, authorizing billions of dollars in smart metering investments, and approving the introduction of innovative rate designs. He is a recognized voice in debates on how to price electricity for customers with distributed generation. He has authored widely-cited studies on the economics of virtual power plants, Saudi Arabia's first demand-side management (DSM) plan, the US Department of Energy's *A National Roadmap for Grid-Interactive Efficient Buildings*, and the Federal Energy Regulatory Commission's *A National Assessment of Demand Response Potential* and *National Action Plan for Demand Response*.

He has published more than 30 articles on electricity matters, presented at industry events in 11 countries, and given lectures on distributed grid economics at Penn, Stanford and Yale. His research on the "grid edge" has been cited by *Forbes, National Geographic, The New York Times, NPR*, and *The Washington Post*, and he has served on the advisory boards of a demand flexibility startup and an energy storage trade association.

Mr. Hledik received his M.S. in Management Science and Engineering from Stanford University, where he concentrated in Energy Economics and Policy. He received his B.S. in Applied Science from the University of Pennsylvania, with minors in Economics and Mathematics. Prior to joining Brattle, Mr. Hledik was a research assistant with Stanford's Energy Modeling Forum and a research analyst with Charles River Associates.

AREAS OF EXPERTISE

- Innovative Retail Electricity Pricing
- Electrification
- Load Flexibility, Demand Response, and Energy Efficiency
- Energy Storage
- Grid Modernization
- Model Development

EDUCATION

- **Stanford University**
  MS in Management Science & Engineering
- **University of Pennsylvania**
  BS in Applied Science

PROFESSIONAL EXPERIENCE

- **The Brattle Group (2006–Present)**
  Principal (2015–Present)
  Senior Associate (2009–2014)
  Associate (2006–2009)
- **Stanford Energy Modeling Forum (2005)**
  Research Assistant
- **Charles River Associates (2002–2005)**
  Research Analyst

TESTIMONY AND REGULATORY FILINGS

- Before the Assembly Energy and Utilities Committee, "Ryan Hledik Oral Testimony Regarding Senate Bill 541," on behalf of Senator Josh Becker, July 16, 2025.
- Before the California Senate Energy, Utilities, and Communications Committee, "Ryan Hledik Oral Testimony Regarding Senate Bill 541," on behalf of Senator Josh Becker, April 21, 2025.

- Before the New York Public Service Commission, "New York's Grid Flexibility Potential, Volume III: Supplemental Analysis," report filed on behalf of the New York Department of Public Service and NYSERDA, Case No. 24-E-0165, March 2025 (with A. Ramakrishnan, K. Peters, S. Edelman, and A. Savage Brooks).
- Before the New York Public Service Commission, "New York's Grid Flexibility Potential, Volume II: Technical Appendix," report filed on behalf of the New York Department of Public Service and NYSERDA, Case No. 24-E-0165, January 2025 (with A. Ramakrishnan, K. Peters, S. Edelman, and A. Savage Brooks).
- Before the New York Public Service Commission, "New York's Grid Flexibility Potential, Volume I: Summary Report," report filed on behalf of the New York Department of Public Service and NYSERDA, Case No. 24-E-0165, January 2025 (with A. Ramakrishnan, K. Peters, S. Edelman, and A. Savage Brooks).
- Before the Kansas Corporation Commission, "Design Considerations for an Optimal Commercial and Industrial TOU Rate in Evergy's Kansas Central Territory," report filed on behalf of Evergy in Docket No. 25-EKCE-294-RTS, January 2025 (with L. Lam, A. Bigelow, and J. Gonzalez).
- Before the British Columbia Utilities Commission, "Residential Rate Design in British Columbia: Key Issues for Consideration," report filed on behalf of BC Hydro in the company's 2024 Rate Design Application, June 27, 2024 (with S. Sergici).
- Before the Maryland Public Service Commission, rebuttal testimony filed on behalf of Pepco, on the issue of a benefit-cost analysis of Pepco's transportation electrification programs, Case No. 9702, January 2024.
- Before the Maryland Public Service Commission, "An Assessment of Electrification Impacts on the Maryland Electric Grid," report filed on behalf of the Maryland Public Service Commission in compliance with Sect. 10 of the Climate Solutions Now Act of 2022, December 29, 2023 (with S. Sergici, A. Ramakrishnan, K. Peters, J. Hagerty, E. Snyder, J. Olszewski, and H. Ethier).
- Before the Maryland Public Service Commission, "Fairmount Heights Microgrid BCA: Supplemental Analysis," report filed on behalf of Pepco in Case No. 9619, October 17, 2023 (with K. Viswanathan and J. Olszewski).
- Before the Maryland Public Service Commission, direct testimony filed on behalf of Pepco, on the issue of a benefit-cost analysis of Pepco's transportation electrification programs, Case No. 9702, May 2023.

- Before the Public Service Company of Colorado (PSCo), "Transportation Electrification Cost-Benefit Analysis for Public Service Company of Colorado," report filed on behalf of PSCo in Proceeding No. 23A-0242E, May 2023 (with J. Hagerty, S. Sergici, E. Snyder, J. Olszewski, and J. Grove).
- Before the Alberta Utilities Commission, "A Review of Maximum Investment Levels in Alberta: Theory and Precedent," report filed on behalf of ATCO in Proceeding 27658, March 24, 2023 (with A. Ramakrishnan).
- Before the British Public Utilities Commission, "A Review of BC Hydro's Optional Residential TOU Rate," report filed on behalf of BC Hydro in the company's Optional Residential Time-of-Use Rate Application, February 21, 2023 (with S. Sergici).
- Before the Public Service Commission of the District of Columbia, direct testimony filed on behalf of Pepco, on the issue of a benefit-cost analysis of Pepco's Climate Solutions Plan Phase I Application, Formal Case No. 1167, December 2022.
- Before the Missouri Public Service Commission, surrebuttal testimony filed on behalf of Evergy Missouri (West and Metro), on the issue of a proposed subscription pricing program, Case No. ER-2022-0130, August 2022.
- Before the Colorado Public Utilities Commission, "Xcel Energy Colorado Demand Response Study: Opportunities in 2030," report filed on behalf of Xcel Energy in Proceeding No. 22A-0309EG, June 2022 (with A. Ramakrishnan, K. Peters, R. Nelson, and X. Bartone).
- Before the Missouri Public Service Commission, direct testimony filed on behalf of Evergy Missouri (West and Metro), on the issue of a proposed subscription pricing program, Case No. ER-2022-0130, January 2022.
- Before the Public Service Commission of the District of Columbia, "Pepco's Climate Solutions 5-Year Action Plan: Benefits and Costs," report filed on behalf of Pepco in Formal Case No. 1167, January 2022 (with S. Sergici, M. Hagerty, M. Witkin, J. Olszewski, and S. Ganjam).
- Before the Public Service Commission of the District of Columbia, "An Assessment of Electrification Impacts on the Pepco DC System," report filed on behalf of Pepco in Formal Case No. 1167, August 27, 2021 (with S. Sergici, M. Hagerty, and J. Olszewski).
- Before the Alberta Utilities Commission, "Modernizing Distribution Rate Design," report filed on behalf of ATCO in *Distribution Inquiry – Combined Module (2 and 3)*, Proceeding ID 24116, March 13, 2020 (with A. Faruqui and L. Lam).

- Before the Arizona Corporation Commission, "An Assessment of APS's New Bill Comparison Web Tool," report filed on behalf of APS in *Arizona Public Service Company's (APS) Rate Review and Examination*, Docket No. E-01345A-19-0003, January 15, 2020 (with A. Faruqui and C. Bourbonnais).

- Before the Nova Scotia Utility and Review Board, "An Assessment of Nova Scotia Power's Proposed Extra Large Industrial Active Demand Control Tariff," expert report filed on behalf of NS Power *In the Matter of an Application by Nova Scotia Power Incorporated for Approval of an Extra Large Industrial Active Demand Control (ELIADC) Tariff, Under Which Port Hawkesbury Paper LP Will Take Electric Service From NS Power*, Matter No. M09420, September 26, 2019 (with A. Faruqui).

- Before the Public Utilities Commission of Nevada, direct testimony filed on behalf of Solar Partners XI ("Arevia"), Joint Application of Nevada Power Company d/b/a NV Energy and Sierra Pacific Power Company d/b/a NV Energy for approval of the third amendment to its 2018 Joint Integrated Resource Plan to update and modify the renewable portion of the Supply-Side Plan and the Transmission Action Plan, Docket No. 19-06039, Aug 26, 2019.

- Before the Minnesota Public Utilities Commission, "The Potential for Load Flexibility in Northern States Power's Service Territory," report filed on behalf of Xcel Energy in *2020-2034 Upper Midwest Integrated Resource Plan*, Docket No. E002/RP-19-368, June 2019 (with A. Faruqui, P. Donohoo-Vallett, and T. Lee).

- Before the New Mexico Public Regulation Commission, "The Value of Energy Storage to the PNM System," report filed on behalf of Public Service Company of New Mexico *In the matter of Public Service Company of New Mexico's Consolidated Application for Approvals for the Abandonment, Financing, and Resource Replacement for San Juan Generating Station Pursuant to the Energy Transition Act*, Case No. 19-00195-UT, August 4, 2019 (with J. Pfeifenberger, J. Chang, P. Ruiz, and J. Cohen).

- Before the Public Utilities Commission of Nevada, "The Economic Potential for Energy Storage in Nevada," report filed on behalf of the Public Utilities Commission of Nevada and the Nevada Governor's Office of Energy, *Investigation and Rulemaking to Implement Senate Bill 204 (2017)*, Docket No. 17-07014, October 1, 2018 (with J. Chang, R. Lueken, J. Pfeifenberger, J. Imon Pedtke, and J. Vollen).

- Before the Oregon Public Utilities Commission, "Demand Response Market Research: Portland General Electric, 2016 to 2035," report filed on behalf of Portland General Electric *In the Matter of Portland General Electric Company, 2016 Integrated Resource Plan*, Docket No. LC 66, November 15, 2016 (with A. Faruqui and L. Bressan).

- Before the Oregon Public Utilities Commission, "An Assessment of PGE's Demand Response Potential," report filed on behalf of Portland General Electric *In the Matter of Portland General Electric Company, 2013 Integrated Resource Plan*, Docket No. LC 56, March 2014 (with A. Faruqui).
- Before the Federal Energy Regulatory Commission, Affidavit on Behalf of Comverge Regarding PJM's Proposed Tariff Revisions Regarding Demand Response Capacity Market Participation Requirements. Docket No. ER13-2108-000, August 22, 2013 (with A. Faruqui).

SELECTED CONSULTING EXPERIENCE

INNOVATIVE RETAIL ELECTRICITY PRICING

- For the New Jersey BPU, leading the development of the state's net energy metering successor policy.
- For LBNL, contributed to a report on historical drivers of increases in U.S. retail electricity rates.
- For a California investor-owned utility, conducted a jurisdictional scan of new tariff offerings for data centers and provided research support to the utility's executive steering committee.
- For a midwestern utility, assessed large load rate offerings and emerging state policies and regulations related to large loads, to contribute to the utility's development of a new rate for large load customers.
- For Evergy, designed the company's proposed optional TOU rates for its C&I customers in Kansas. Filed an expert report summarizing the proposal with the Kansas Corporation Commission in January 2025.
- For a midwestern utility, contributed to the development of a new rate for large load customers. Conducted a review of rate offerings for large loads in other U.S. jurisdictions, assessed gaps in the utility's existing rate offerings relative to its objectives for the new rate, and assisted in the design of the new rate to address those gaps.
- With LBNL, developed a brief on the landscape of rate offerings for large load customers across the U.S. Summarized the range of approaches being taken across key rate design decisions.
- With LBNL, developed a dynamic, web-based guide to better achieve policy outcomes with more deliberate retail electricity rate design.

- For an eastern US utility, assessed the impact that various retail rate designs would have on the economics of residential electric heating relative to gas heat.
- For a New Zealand distribution utility, developed a long-term vision for designing rates that will facilitate demand flexibility and reduce required investment in distribution system expansion.
- For Evergy, developed and evaluated alternatives to the company's "hours use charge" for large C&I customers. Filed an expert report summarizing the findings and recommendations with the Kansas Corporation Commission.
- For Lawrence Berkeley National Lab, contributed to a report on rate design for a power system with variable renewable energy resources.
- For Evergy, developed a proposal for a subscription pricing plan. The proposal included innovative features to promote EE and clean energy adoption. Testified in support of the plan before the Missouri PSC.
- For a large Midwestern utility, contributed to the development of the utility's rate modernization plan. The project involved developing and analyzing TOU rate design proposals and developing a new proposal for a subscription pricing pilot.
- For Arizona Public Service, conducted a review of the utility's online bill comparison tool. Results summarizing Brattle's assessment of the accuracy of the tool were filed with the Arizona Corporation Commission (ACC).
- For a western utility, benchmarked the utility's operating costs and services against a relevant sample of comparison utilities in order to identify areas of relative strength as well as growth opportunities.
- For IPL, contributed to a range of improvements to the company's rate offerings and supported the associated regulatory filing.
- For ATCO, produced an expert report on the precedent for "Maximum Incentive Levels" through which large customers pay for a portion of the distribution infrastructure developed specifically to serve their load.
- For Colorado Springs Utilities, provide a range of rate design support, including TOU rate design and a review of the company's offering for data center customers.
- For Nova Scotia Power, reviewed and assessed a load flexibility tariff that the utility proposed for its largest customer. Co-authored an expert report summarizing the findings, which was filed with the Nova Scotia Utility and Review Board.
- For a Midwestern utility, assessed the extent to which various distribution rate design options were cost reflective and aligned with the utility's underling cost of service.

- For Abradee, the trade association for the Brazilian distribution utilities, developed two whitepapers. The first paper addressed international stakeholder perspectives on emerging distribution tariff designs. The second paper summarized opportunities and risks associated with new utility services.
- For Vector, a distribution utility in New Zealand, evaluated the relative advantages and disadvantages of a variety of new distribution tariff designs that the utility was considering. Conducted analysis of customer bill impacts and estimated likely DR from the new tariff offerings, in addition to establishing other rate evaluation metrics.
- For NorthWestern Energy, provided regulatory support for the utility's proposal to create a new rate class for customers with distributed generation and to introduce three-part rates for those customers.
- For Arizona Public Service, provided regulatory support and analysis in a proceeding to determine if the utility's commission-approved rate increase had been appropriately implemented.
- For Westar Energy, supported the utility's proposal to create a separate rate class for residential customers with distributed generation and to introduce a three-part rate for those customers.
- For Idaho Power, supported the utility's proposal to create a separate rate class for residential customers with distributed generation. Included an analysis of the extent to which behind-the-meter storage would impact the load shapes of customers with rooftop solar and reduce their energy exports to the grid.
- For Commonwealth Edison, contributed to the development of a pilot that would test customer acceptance of a prepayment metering program. Work involved identifying pilot objectives, developing experimental design, and establishing appropriate sample size.
- For Citizens Advice, the largest consumer organization in Great Britain, led a study on the value of time-varying rates. The study included detailed power system modeling to quantify the monetary value time-varying rates in terms of avoided system costs. The study also included primary and secondary market research to identify the features of time-varying rate offerings that are most appealing to customers. The final report informed ongoing dialogue in Great Britain around how to best capture value from the nation's ongoing smart metering rollout.
- For the US Department of Energy (DOE), coauthored a whitepaper on methods for unbundling and pricing distribution services in an environment of high distributed energy resource (DER) market penetration. The report identified the various services

that are provided by the utility to DER customers, the discrete services provided by DER customers to the utility, and various frameworks for packaging and pricing these services. The report included an assessment of the advantages and disadvantages of each pricing framework from the perspective of both the utility and its customers.

- For a clean energy organization, developed a whitepaper on residential demand charges, their impact on low-income customers, and the potential opportunities that they would create for behind-the-meter energy storage.
- For the Edison Electric Institute (EEI), researched stakeholder perspectives on residential demand charges. Conducted interviews with nine consumer advocates to better understand their views on the advantages and disadvantages of demand charges relative to other rate design options. Findings were summarized in a *Public Utilities Fortnightly* article.
- For Georgia Power, developed a model to simulate likely customer response to demand charges (e.g., load shifting and/or changes in overall consumption). The model assumptions were based on a review of price elasticity studies as well as three pricing pilots involving residential demand charges. Also surveyed utility experience with residential demand charges and established a list of "lessons learned" from this experience.
- For Westar Energy, assessed the extent to which a new three-part rate (with a fixed charge, a demand charge, and a variable charge) would impact customer bills. Simulated the impact on owners of distributed generation (DG) and assessed the extent to which rate increases associated with sales reductions due to DG adoption would be reduced by introducing the new rate. Estimated likely customer rate switching behavior that would result from the introduction of the new options and the impact that this would have on utility revenue.
- Assisted a large Southwestern US utility in establishing its vision for an ideal residential rate. Established key principles for ratemaking and evaluated a comprehensive range of rate designs against these principles, particularly as they related to fairness and equity in an environment of rapidly growing solar PV adoption. Provided strategic recommendations for transitioning to the ideal rate design.
- For a large Midwestern utility, assessed the bill impacts of a rollout of mandatory residential demand charges. The assessment included a particular focus on the impacts on low-income customers using estimates of household-level income data obtained through a market data firm and validated with public data from the US Census.
- For Citizens Advice, led a study on distribution network tariff design. The report includes insights from interviews with industry stakeholders, a survey of tariff reform activity in

other countries, and detailed modeling of the distribution of bill impacts from the new tariff designs for more than 14,000 British customers. The simulations accounted for likely consumer response to the tariffs.

- For Xcel Energy, contributed to rebuttal testimony in support of the utility's proposal to eventually introduce three-part rates for residential customers. Addressed points in intervenor testimony regarding the efficacy of residential demand charges.
- For a large Midwestern utility, simulated likely customer response to a three-part rate. Developed three different approaches to estimating the impacts. Results were provided in context of the utility's rates proceeding.
- For Salt River Project (SRP), assessed the utility's rate proposal for residential DG customers. The proposal was a mandatory, revenue neutral three-part rate with a tiered demand charge. Analysis culminated in the development of a whitepaper presented to SRP's Board. The rate proposal was approved by the Board.
- Assisted PGE in the design of a dynamic pricing pilot. Provided pilot design and evaluation assistance to test a number of under-researched issues, such as the impact of behavioral DR and differences in customer response when rates were offered on an opt-in versus an opt-out basis.
- For more than 15 utilities and other organizations across North America, designed dynamic pricing rates such as time-of-use (TOU), critical peak pricing (CPP), peak time rebates (PTR), and real-time pricing (RTP). Simulated the likely impact of the rates on utility load shapes and customer bills. Conducted cost-effectiveness analysis of offering these rates to the mass market. These studies were conducted in Arizona, California, Connecticut, the District of Columbia, Delaware, Florida, Hawaii, Idaho, Illinois, Kansas, Maryland, Michigan, Missouri, New Jersey, North Carolina, Oregon, and Pennsylvania. Several of the analyses served as input to AMI business cases. The analyses also included a review of other demand-side options such as direct load control and EE.
- For the three California investor-owned utilities (IOUs), assessed the likely impact of residential rate reform on consumption. Analyzed the extent to which rate design changes (e.g., a reduction in the price differential between tiers of the inclining block rate, the introduction of a monthly customer charge, or a reduction in the low-income discount) would affect conservation. Drafted expert testimony submitted to the California Public Utilities Commission.
- For a large Southwestern utility, benchmarked the utility's projected retail rate against those of other utilities. Reviewed utility resource plans to estimate each utility's retail rate trajectory. Compared the utilities across a variety of rate drivers, such as reserve margin, fuel mix, load growth, load factor, renewables investment requirements, and

demand-side activities. Provided strategic recommendations for addressing these drivers of future rate growth.

- For PacifiCorp, assessed the likely impacts of new rate designs on customer behavior. Projected likely adoption of the new rate offerings based on a survey of enrollment rates in other jurisdictions. Extrapolated the customer-level impacts to system-level impacts. Analysis was a key element of the utility's DSM potential study.
- For a large western utility, evaluated the degree to which the introductions of new optional residential rate options would affect the utility's revenue. Developed a model to simulate customer switching behavior between the rate options. Provided strategic advice for transitioning from the current rate offering to a new paradigm of rate choice.
- For the Regulatory Assistance Project (RAP), coauthored a whitepaper on issues and emerging best practices in dynamic pricing rate design and deployment. The paper's audience was international regulators and rate analysts in regions exploring the potential benefits of AMI and innovative retail pricing.
- For multiple US utilities, helped design pilot programs for testing the impact of dynamic pricing rates and enabling technologies such as smart thermostats and in-home energy information displays. Contributions to pilot design included designing and selecting the appropriate treatments and providing general recommendations for ensuring the statistical validity of the results.
- For China Light & Power, provided guidance on dynamic pricing pilot design. Also evaluated the utility's methodology for calculating customer baseline consumption when determining rebate payments for a peak time rebate program.
- For the Ontario Energy Board (OEB), developed recommendations for improving the effectiveness of the province's mandatory residential TOU rate. Coauthored a whitepaper benchmarking the rate's design and deployment against best practices, and provided suggestions for improving certain elements. Co-presented the findings at a stakeholder workshop in Ontario.
- For Commonwealth Edison, contributed to the design of the first opt-out residential dynamic pricing pilot. Reviewed rate designs and simulated expected bill impacts across a representative sample of customers. Developed estimates of the potential value of an opt-out deployment of peak time rebates.
- For the Demand Response Research Center (DRRC), coauthored a whitepaper on leading issues in rate design. Developed a set of dynamic rates that were used in a workshop to guide California decision makers through the process of designing dynamic rates.

Results were cited in a landmark ruling making dynamic pricing the default rate offering in California.

- For Xcel Energy, contributed to expert testimony supporting a filing proposing new inclining block rate (IBR) designs. The rates were designed to provide incentives for Xcel's customers to conserve energy. Developed a model for simulating customer response to the new rate designs and the resulting impact on Xcel's sales.
- For a large North American utility, developed estimates of the likely impact of moving from an inclining block rate structure to a time-of-use rate structure. Simulated the impact on overall energy consumption and peak demand under a range of rate design and price elasticity scenarios.
- For a large Southeastern utility, assessed the costs of the utility's green pricing program. Benchmarked the costs against those of similar programs offered by other utilities. Analyzed differences across programs and provided an assessment of the utility's costs, which was presented to the regulatory commission.

ELECTRIFICATION

- For a DERMS company, assessing the potential value of various EV managed charging strategies based on results of the company's field tests.
- For Pepco, conducting an assessment of the potential impacts of system-wide electrification on the cost of expanding and operating the company's distribution system. The study considers the extent to which DERs and flexibility can avoid those costs.
- For the Beneficial Electrification League, preparing a report on the impacts of electrification adoption over the past decade. The report focuses on improvements in affordability, quality of service, reliability, and environmental outcomes.
- For ev.energy, supported the development of an EV managed charging playbook.
- For Pepco, supported development of the company's comments on an electrification benefit-cost analysis (BCA) framework proposed by the DC PSC.
- For Pepco, produced a report on the cost-effectiveness of the company's proposed 2024 electrification programs.
- For the Maryland PSC, conducted a statewide assessment of the power system impacts of the achieving the state's electrification goals. The study included consideration of the role of demand flexibility in mitigating the impacts, and involved extensive stakeholder engagement.

- For Efficiency Maine, provided input to the organization's benefit-cost analysis framework.
- For Xcel Energy, conducted a benefit-cost analysis of the company's proposed transportation electrification projects. The study was filed with the Colorado PSC.
- For the Beneficial Electrification League, produced a report analyzing the societal costs of key water heating technologies across various home configurations to determine the most cost-effective and applicable options.
- For Pepco, assessed the benefits and costs of the company's Climate Solutions Plan. The Plan consisted of 62 demand-side initiatives, including large energy efficiency, building electrification, and transportation electrification portfolios. The analysis quantified the energy system and environmental benefits of the programs and evaluated the target scale of the impact of the programs. Led a series of stakeholder workshops on the study findings and methodology. The final report filed with the Washington, DC Public Service Commission. Testimony based on the report was subsequently filed.
- For Pepco, led the development of a study to analyze the peak demand impacts of achieving Washington, DC's decarbonization goals through electrification. The study included analysis of a portfolio of advanced energy efficiency and load flexibility measures to mitigate peak demand growth, and concluded that the projected peak demand growth rates would remain within the historical range experienced by the utility.
- For a West Coast utility, estimated the change in energy use attributable to adopters of new technologies, including electric heating, electric vehicles, and rooftop solar PV. The analysis contributed to the utility's broader assessment of the energy affordability of technology adoption.
- For Pepco, conducted a benefit-cost analysis of the transportation electrification programs in the company's 2023 multi-year rate plan.
- For an East Coast utility, part of a team that analyzed how various retail rate designs would impact the economics of heat pump ownership. Constructed customer load profiles and assessed bill impacts.
- For a car manufacturer, assessed market opportunities for enabling EV managed charging and vehicle-to-grid. Surveyed market participants, estimated revenue potential, and conducted strategic market entry assessment.
- With the Smart Electric Power Alliance (SEPA), coauthored a paper on time-varying rates for home electric vehicle (EV) charging. The report was based on a survey of current utility rate offerings and identified practices related to high enrollment in the rates.

- For the Electric Power Research Institute (EPRI), developed a survey and associated discrete choice modeling experiment to better understand drivers of EV adoption. The survey results were used to develop EV adoption models and resulting forecasts for several electric utilities.
- For the Edison Electric Institute (EEI), developed a whitepaper to assess options and experience with rate design for fast-charging infrastructure to support adoption of electric vehicles. The whitepaper, "Facilitating Electric Vehicle Fast Charging Deployment," was published in October 2018.
- For EPRI, developed a framework for evaluating the cost-effectiveness of new electrification initiatives. The framework built upon cost-effectiveness tests used to evaluate demand-side management (DSM) programs. The report was published in August 2019.

LOAD FLEXIBILITY, DEMAND RESPONSE & ENERGY EFFICIENCY

- For a hyperscaler, developing proposals to expand demand response offerings in two U.S. ISO/RTOs. The proposals include recommendations for new market products to improve the utilization and uptake of demand response, and analysis of the potential impact of the proposals.
- For a Midwestern utility, conducting an assessment of demand response and energy efficiency potential as input to the company's 2026 IRP.
- For the IESO, analyzing opportunities for increasing the value of the Peak Perks smart thermostat program. The engagement includes consideration of other forms of demand flexibility as well.
- For Xcel Energy, conducting a detailed assessment of achievable demand flexibility potential in the company's Colorado and Minnesota service territories. The assessment includes primary market research, development of demand flexibility supply curves, and analysis of behavioral and technical limitations on demand flexibility potential.
- For a hyperscaler, conducting assessments of the system capacity that could be created from new investments in energy efficiency and demand response through a partnership between data center developers and utilities.
- For Sunrun and Tesla, conducted a study on the benefits and costs of California's Demand Side Grid Support (DSGS) program. The study included an assessment of the impacts of a test event that produced more than 500 MW of capacity from residential batteries in California.

- For Beyond Fossil Fuels, preparing a report on sources of clean flexibility and their value to the European power system.
- For Clean Energy Canada, conducting a study on the value of demand flexibility to the Canadian power system. The analysis focuses in particular on the distribution system value of demand flexibility.
- For the NY Department of Public Service and NYSERDA, led the development of an assessment of New York's grid flexibility potential. The three-volume report analyzed statewide potential for customer-sited flexibility, identified barriers and potential solutions through extensive stakeholder engagement, and discussed additional considerations for disadvantaged communities and emerging sources of flexibility.
- For the Alliance to Save Energy, conducted a study to quantify the cost savings from coordinating heat pump sizing with building envelope efficiency improvements, as well as the distribution value associated with improvements in demand-side efficiency and flexibility.
- For a residential multi-family housing developer, assessed market opportunities for incorporating VPPs into new housing developments.
- For the U.S. DOE, contributed to the development of the 2023 VPP commercial liftoff report and its subsequent 2025 update.
- For a large Texas retail energy provider, analyzed the potential increase in residential VPP deployment that could result from improving the design of transmission charges in ERCOT.
- For ENOWA, developed a roadmap for incorporating demand flexibility into the plans for NEOM, a carbon-free city being developed in northwestern Saudi Arabia. The roadmap included an assessment of the value of various strategies for flexibility deployment, an implementation plan, and commentary on supporting strategies that would enable the plans.
- For LBNL, led a study to identify strategies for maximizing enrollment in VPP programs. The findings were based on interviews with utilities and aggregators leading the most successful VPP and demand response programs in the U.S.
- For Google, produced a report comparing the cost of developing capacity from a virtual power plant to the cost of conventional resources such as gas peakers and utility-scale batteries. The study included hourly modeling of the performance of the VPP.
- For the Maryland PSC, contributed to an assessment of the potential for demand-side initiatives to reduce statewide GHG emissions, with a focus on the impact of load shifting.

- For LBNL, contributed to a study on opportunities for state energy regulators to improve the integration of DERs into wholesale markets.
- For a southwestern U.S. utility, conducted a strategic assessment of various utility-led DER business models and developed a high-level implementation plan for pursuing the most attractive opportunities.
- For a Mid-Atlantic utility, assessed the total addressable market for a variety of DER investment and development opportunities, including distributed storage, EV managed charging, HVAC load control, and smart water heating.
- For GridLab, produced a report on the achievable market potential for VPP deployment in California.
- For Pepco, conducted the demand response portion of the company's 2023 DSM potential study in its Washington, DC jurisdiction.
- For Xcel Colorado, assessed the cost-effective potential for new load flexibility programs in 2030. The study included benchmarking Xcel Colorado's existing demand response portfolio, assessing the seasonal need for new load flexibility programs and quantifying the potential benefits and costs of the expanded portfolio.
- For a private equity firm, assessed the revenue potential of a meter data disaggregation firm, with a focus on the market value of innovative behavioral energy efficiency and demand response programs that would be enabled by providing customers with real-time, appliance-level usage information.
- With Lawrence Berkeley National Lab (LBNL), developed a whitepaper on emerging models for making load flexibility a win-win for both utilities and consumers.
- For a building equipment manufacturer, provided an overview of market opportunities for developing a demand response business.
- For the Alliance to Save Energy, developed the content for an interactive website designed to provide a variety of industry stakeholders with information about the value of load flexibility.
- For a large Canadian utility, served as an advisor on the utility's load flexibility assumptions in its integrated resource plan.
- For Oracle, assessed the potential for "consumer action pathways" to play a key role in reducing national carbon emissions. The customer action pathway consisted of energy efficiency, electrification, rooftop solar PV, and load flexibility.
- For PGE, participated in a team developing the utility's 2021 DER potential study. The study informed PGE's integrated resource plan and distribution resource plan.

- For a utility in the Upper Midwest, conducted a load flexibility study to inform the strategic development of the utility's demand-side resources.
- For an East Coast IOU, conducted analysis to forecast how the utility's load would increase if aggressive decarbonization goals were met through electrification, and to determine the extent to which energy efficiency and load flexibility measures could mitigate that load growth, highlighting the key role that load flexibility would play in facilitating the decarbonization transition.
- For a DER software developer, estimated the potential market value of residential load flexibility offerings across five utilities. The analysis highlighted that the load flexibility value proposition varied significantly depending on system and market conditions. The final report was a key input to the company's load flexibility business case. Subsequent work involved conducting a workshop for the company's staff on valuing load flexibility.
- For an investment firm considering an investment in a demand response aggregator, provided an outlook on DR market opportunities and an overview of the current state of DR in the US.
- For the US Department of Energy, developed a national roadmap for grid-interactive efficient buildings (GEBs). The engagement involved modeling the national potential for GEBs, research and stakeholder engagement to identify barriers to GEB deployment, as well as opportunities for overcoming the barriers. The release of the roadmap was announced by the Secretary of Energy in May 2021.
- For the US Department of Energy, led a study to assess the relative benefits of energy efficiency, load flexibility, and electrification technologies for buildings under a variety of decarbonization scenarios. The study included analysis of more than 80 demand-side measures for 25 regions across the US, and included evaluation of the cost-effectiveness of the measures.
- For LBNL, led a study to assess the extent to which various policy and technology developments could increase cost-effective energy efficiency deployment potential. The study involved simulation of a representative Southeastern US utility using Brattle's resource planning model, GridSIM.
- For an Asian utility deploying its first demand response programs, provided research on current practices by utilities and third-party aggregators with DR offerings in ISO and non-ISO markets. The research was used as input to the utility's DR strategy development initiative.
- For a natural gas distribution utility, assessed the market potential for demand response programs. The first-of-its-kind study assessed opportunities to utilize demand response

as an alternative to developing gas distribution infrastructure. The study served as input to the utility's resource planning process.

- For Xcel Energy, led a study to assess opportunities for load flexibility in its Northern States Power service territory. The study looked beyond conventional DR options to evaluate the potential for emerging programs (e.g., EV charging control, behavioral DR) while considering new value streams (e.g., ancillary services, off-peak load building, around-the-clock load flexibility). The study utilized Brattle's LoadFlex model and was based on a detailed survey of DR programs and pilot projects deployed around the US. The study was filed with the Minnesota PUC and results used as inputs to Xcel Energy's integrated resource plan in the Upper Midwest.
- For EPRI, conducted a study to explore methods for incorporating DERs into integrated resource planning. A unique feature of this study was the use of Brattle's capacity expansion model, GridSIM, to quantitatively illustrate the implications of various DER modeling techniques. In the first phases of the engagement, assessed the implications of different approaches to modeling EE and DR, such as the advantages and disadvantages of modeling these resources on the "supply side" versus the "demand side" of the model. The project focused on electric vehicles (EVs) and rooftop solar, and included a review of techniques for forecasting adoption of these technologies, as well as modeling the resource impacts of growth in EV adoption.
- For Xcel Energy, conducted a first-of-its-kind study to assess the extent to which "organic conservation" (also known as naturally occurring energy efficiency) was affecting electricity sales. Surveyed industry contacts about trends in organic conservation. Conducted a quantitative assessment of the impact of organic conservation for three end-use case studies using data from the US Energy Information Administration and Xcel Energy.
- Contributed to a study for the Texas Clean Energy Coalition to determine role of DR, EE, and combined heat and power in future energy scenarios in Texas. Developed a feasible portfolio of EE and DR measures, including costs and performance characteristics. The programs were then fed into a suite of resource planning models to determine the impacts of EE and DR on ERCOT prices and system operations. The final report was highly publicized and presented to stakeholders and policymakers throughout the state.
- For EnerNOC, developed a whitepaper on valuing DR in international markets. Provided guidelines for quantifying the value of DR and presented three international case studies to illustrate how those calculations vary across markets.
- For a large power developer, assessed the energy efficiency aspects of the US Environmental Protection Agency's (EPA's) Clean Air Act, section 111(d). Specifically,

analyzed the extent to which the energy efficiency targets that were established in the proposed policy were reasonable and achievable, and whether the EPA had represented energy efficiency correctly in its modeling scenarios.

- For the Kingdom of Saudi Arabia's energy regulator (ECRA), worked with a team of consultants to develop the nation's first demand-side management (DSM) plan. Participated in an introductory workshop with key stakeholders and conducted a series of in-country interviews to gather information. Coauthored a study on the potential impacts and cost-effectiveness of a full range of DSM measures in Saudi Arabia. Worked with the team to develop policy recommendations and a ten-year plan for rolling out DSM measures across the country.
- For a national team of energy stakeholders in the Kingdom of Saudi Arabia, assessed the potential for broader adoption of combined heat and power (CHP). Developed a model to predict CHP potential by industry and technology type for a range of policy scenarios. Assessed barriers to adoption.
- For the Federal Energy Regulatory Commission (FERC), managed a team of contractors that developed the National Action Plan for DR. The report defined a blueprint for maximizing the amount of cost-effective DR that could be achieved in the US. Led the development of a model that could be used to quantify the potential impacts and benefits of a variety of DR and smart grid portfolios. Results were filed with US Congress in June 2010.
- For the FERC, developed a state-by-state assessment of the potential for DR. The analysis used a bottom-up approach to quantify economic and achievable potentials individually for each of the 50 states and to characterize the existing level of DR in each state. Additionally, created a survey for and analysis of existing literature on DR barriers at the wholesale and retail levels, as well as policy options for addressing these barriers. Results were filed with US Congress in June 2009 in a report titled A National Assessment of Demand Response Potential. Coauthored the document and managed its development across a team of subcontractors.
- For the California Energy Commission (CEC), coauthored two whitepapers on DR and the potential for the CEC to exercise its load management authority to further increase DR efforts in the state. The whitepapers were the impetus for two CEC-sponsored workshops involving the California utilities, regulators, consumer advocates, and other stakeholders. The whitepapers contributed to the CEC's 2007 Integrated Energy Policy Report and resulted in a formal proceeding on the CEC's load management authority.
- For one of California's investor-owned utilities, developed recommendations for a forward-looking demand response strategy. Conducted a series of interviews with

internal stakeholders and helped to lead two workshops to create a common understanding across the company regarding the value proposition of demand response, and ways in which it could be used to address key challenges facing the utility.

- Served as the lead architect of the Demand Response Impact and Value Estimation (DRIVE) model for assessing the hourly system impacts of portfolios of smart grid programs over a 20-year forecast horizon. The model simulated hourly system dispatch for 13 regions of the United States, both before and after a user-specified deployment of smart grid programs.
- For the LBNL, updated the assumptions in the FERC's 2009 A National Assessment of Demand Response Potential to reflect more recent industry developments. The results of that update were used as inputs to the Western Electricity Coordinating Council's (WECC's) transmission planning activities.
- For Portland General Electric, developed a bottom-up assessment of the peak demand reductions that could be achieved through and expanded offering of DR programs. Tailored the analysis to the specific market conditions unique to the Pacific Northwest and PGE's service territory. Reviewed studies on the ability of DR to integrate renewable energy resources into the grid. The study was first conducted in 2009 and then updated in 2012 and again in 2015. The 2015 update included a number of emerging DR options, such as bring-your-own-thermostat, behavioral DR, electric vehicle load control, and smart water heating programs.
- For Xcel Energy's Colorado and Minnesota service territories, conducted a bottom-up assessment of the potential impacts of DR programs. In Colorado, the study included an assessment of the cost-effectiveness of the DR options and results were filed with the Colorado PUC. In Minnesota, the study included the development of DR supply curves, which were inputs to Xcel Energy's integrated resource planning process.
- For the Midwest Independent System Operator (MISO), Bonneville Power Administration (BPA), and one of the largest power generation companies in the US, developed regional forecasts of the potential impacts of DR and EE programs. Forecasts included a bottom-up assessment of existing demand response programs and a detailed projection of the achievable potential peak savings for each of these programs. The studies also included an assessment of the costs associated with the peak savings. The forecasts were used as inputs to the ISO's full-scale transmission expansion modeling effort and to enhance the market modeling efforts of BPA and the power generation company.
- For a large southern utility, assessed policies, standards, and rules/regulations addressing the development and implementation of energy efficiency programs and

renewable energy resources by utilities. Analysis included an assessment of the pros and cons of various energy efficiency incentive mechanisms such as the Save-a-Watt model and California's shared savings model. Assessed the political influence and collaboration potential of the utility's stakeholders as part of the strategy formulation process.

- For a large Independent System Operator (ISO), coauthored a whitepaper assessing the status of the region's achievement of its DR potential. The paper included an assessment of the barriers to achieving the DR potential, followed by policy and market design recommendations for addressing the barriers. The results were presented at the ISO's annual board meeting.
- For a large ISO, coauthored a whitepaper summarizing the current state of third-party access to smart meter data. The paper reviewed existing policies in states that had already explored this issue, and drew parallels to other industries that dealt with similar problems.
- For Comverge, developed an estimate of the potential benefits of offering an expanded residential direct load control program in the ComEd service territory. The assessment included quantification of avoided resource costs and a qualitative description of additional potential benefits, such as improved reliability and emissions reductions.

ENERGY STORAGE

- For a potential investor in a pumped storage hydro facility in California, estimated the facility's market revenue potential.
- For a large battery developer and an investor in power generation, conducted a study to assess the role of storage as on-site generation for data centers. Conducted a quantitative comparative analysis of serving data centers from various portfolios of on-site resources.
- For a battery storage company and a renewable energy developer, analyzed the role that behind-the-meter storage could play in serving data center load. Developed a model to determine the cost-minimizing mix of on-site gas, solar, and storage resources that could serve the data center off-grid until interconnection was available. Assessed business models for monetizing the market value of those on-site resources after the data center connected to the power grid.
- For Sunrun, developed a summary of the structure of incentives in residential battery VPP programs being offered across the U.S. Presented the findings at an Illinois Commerce Commission stakeholder meeting.

- For the developer of a pumped storage hydro facility in California, conducted an assessment and produced a report summarizing the value of the facility to the California power system.
- For Energy Consumers Australia, produced a report on the benefits of community storage. The study included a comparative analysis of community storage relative to behind-the-meter batteries and utility-scale deployments, and an assessment of the barriers to maximizing the value of community storage.
- For a large Southeastern utility, assessed two proposed battery projects. The study included identification and analysis of additional value streams not considered by the utility, and analysis of battery cycling strategies to optimize revenue while accounting for degradation effects.
- For a private investor, assessed the revenue potential for new storage assets in ERCOT. The analysis included estimation of the revenue impact associated with delayed market entry of competing assets as well as the risks associated with overbuilding of storage.
- For a large international energy company, evaluated the revenue potential of an investment in three US battery storage developers. The company ultimately made large investments in two of the three companies.
- For a large US power developer, summarized drivers of battery cost trends.
- For a large US renewables developer, assisted the company in its entry into the utility-scale storage business by evaluating storage and solar-plus-storage revenue potential in various organized wholesale markets in the US.
- For a large Southeastern utility, led a study to assess long-term opportunities for deploying storage to meet a large legislative requirement. The study focused on opportunities for emerging long-duration storage technologies.
- For Arevia, the developer of a large solar-plus-storage project in Nevada, provided regulatory testimony on the costs and benefits of the proposed project. The project, which was the largest solar-plus-storage project in the United States, was approved by the Public Utilities Commission of Nevada in December 2019.
- Served on the Energy Storage Association's Technical Advisory Council. Responsibilities included technical advice, providing input to the organization's research agenda, and developing whitepapers on emerging issues in the storage industry.
- For the Energy Storage Association (ESA), organized and led a two-day seminar on emerging industry practices for incorporating energy storage into utility resource planning. Developed content and program, focused on issues such as storage costs and

benefits, modeling and valuation techniques, the current state of energy storage in utility IRPs, and the interface between bulk system and distribution resource planning.

- For the Public Service Company of New Mexico (PNM), led analysis of the value that new energy storage developments could provide to the utility's system. The analysis focused specifically on the benefits of standalone, utility-scale battery storage deployments. Results were summarized in a report titled, "The Value of Energy Storage to the PNM System," which was attached to a regulatory filing by PNM in June 2019.
- For the Public Utilities Commission of Nevada and the Nevada Governor's Office of Energy, led a study to estimate the statewide potential for cost-effective energy storage deployment. The analysis involved detailed modeling of the western US power system and included an assessment of both utility scale and behind-the-meter storage. Results were published in a report titled, "The Economic Potential for Energy Storage in Nevada." The study contributed to a regulatory proceeding to establish an energy storage procurement target for the state.
- For Dominion Energy, provided an assessment of the opportunities available for deploying energy storage pilots. The analysis began with a screening analysis to identify most attractive pilot options based on net economic benefits as well as other practical considerations such as implementation time, technical feasibility, consistency with state policies, and repeatability. Based on the findings of the screening analysis, a detailed assessment of specific solar-plus-storage and standalone storage projects estimated the benefits and costs of each project under a range of market price scenarios, technology configurations, and operational strategies. The proposed pilots were approved by the Virginia State Corporation Commission (SCC).
- For a large solar and storage developer, provided due diligence support for a potential investment in a solar-plus-storage facility in California. The analysis estimated revenue potential for the project under a range of price forecasts, technology configurations, and battery dispatch scenarios.
- For an international investor in power assets, analyzed the revenue opportunities and risks for standalone storage projects in California, Ontario (Canada), and New York. In addition to detailed revenue forecasts, the analysis included a review of wholesale market participation opportunities, state policies and incentives, and trends in market fundamentals.
- For an energy storage developer, provided an outlook of revenue opportunities in Ontario, Canada. The analysis included an assessment of near-term revenue potential and commentary on the likely impact of regulatory and market developments on that potential.

- For a large Midwestern utility, contributed to the development of a model that forecasted behind-the-meter storage adoption and its impact on utility revenues and costs, electricity rates, system peak demand, and other key metrics.
- For a battery technology manufacturer, reviewed the impacts that PJM rule changes for participation in the frequency regulation market had on the battery's performance.
- For EOS, a battery storage developer, assessed the "stacked value" of a battery in the California market. The valuation included an assessment of market prices and was based on realistic modeling of the battery's ability to simultaneously capture multiple value streams. The study also assessed barriers to capturing this value, and recommendations regarding retail tariff design features that could address the barriers.
- For an environmental advocacy group (NRDC) and consortium of utilities (NRECA), estimated the costs and benefits of using controllable hot water heaters as "thermal batteries." Evaluated several control strategies, including daily energy arbitrage, peak shaving, and fast-response controllers capable of providing ancillary services. The study was covered by *The Washington Post* and in industry trade press.
- For a battery manufacturer, assessed the potential benefits that could be realized by deploying their technology in PJM and NYISO. Developed a dispatch model to simulate the technology's optimal operation in wholesale energy and ancillary services markets. Also quantified the value of avoided generation capacity and transmission and distribution capacity costs, as well as the reliability value of deploying the battery behind the meter. Assessed the ability of various stakeholders (ratepayers, utilities, third parties) to capture the value.

GRID MODERNIZATION

- For a California utility, provided strategic and analytical support for the company's proactive grid planning initiative, to reduce distribution system bottlenecks and increase the speed of interconnection for new customers. The work involved distribution system modeling and comprehensively quantifying the potential benefits and costs of the proactive grid buildout strategy.
- For Pepco, assessed the potential future value of microgrid deployments in Maryland.
- For the Brazilian distribution utilities, contributed to an assessment of the potential country-wide benefits and costs of smart grid investment.
- For Enchanted Rock, a developer of microgrids, assessed the economic, resilience, and GHG impacts of a variety of microgrid options, including natural gas, renewable natural gas, and solar-plus-storage, as well as "hybrid" microgrids that combined these options.

- For Entergy, provided regulatory support for the company's proposal to roll out smart meters. Support included analysis of the EE and DR benefits enabled by the rollout.
- For a large British energy supplier, assessed the national smart metering program. Identified risks that emerged since the program's inception. Developed recommendations for plausible paths forward to mitigate the risks and increase the likelihood of the program's success. Research involved a review of the government's smart metering Impact Assessment (IA), including modifications to the IA based on alternative future smart metering adoption and TOU uptake scenarios.
- For the US Department of Energy (DOE), served as a member of a technical advisory group to review the activities of recipients of federal stimulus funding for consumer behavior studies. Reviewed smart grid pilot designs and provided guidance to improve their likelihood of success. Participated in meetings with the utilities on behalf of the DOE to monitor progress.
- Served as lead architect of Brattle's *iGrid* model for assessing the costs and benefits of smart grid deployment strategies over a long-term (i.e., 50-year) forecast horizon. The model was used to evaluate seven distinct smart grid programs and technologies (e.g., dynamic pricing, energy storage, plug-in hybrid electric vehicles) against seven key metrics of value (e.g., avoided resource costs, improved reliability).
- Supported an expert witness in litigation regarding a contractual dispute between two smart grid companies. Assessed the likely market size for a new smart grid product using top-down and bottom-up modeling approaches. Drafted expert testimony.
- For the five Vietnamese distribution utilities, developed a 10-year roadmap for smart grid deployment across the country. The project began with a series of in-country stakeholder interviews and an initial assessment of the state of the Vietnamese grid. This information was used to develop preliminary recommendations for smart grid investment, which was presented and discussed during a one-day workshop with industry stakeholders. Feedback was incorporated into a final report titled *Vietnam's 10-year Smart Grid Roadmap*. The project was funded by the World Bank.
- For a firm investing in emerging energy technologies, developed an overview of key smart grid market developments. Topics included new non-traditional entrants to the utilities space, factors driving the decline in utility sales growth, and emerging regulatory constructs that could lead to new investment opportunities.
- For Pepco Holdings, established a universal list of metrics through which to track the impact of their smart grid rollout. Reviewed existing metric reporting requirements and proposed additional metrics that would be useful to report in future regulatory proceedings.

- For a smart grid technology startup, provided strategic advice on how to design a smart grid pilot that would best demonstrate the value of their products. Authored a whitepaper summarizing key recommendations and assisted the company in effectively articulating the full value proposition of their integrated approach to home energy management.
- For Oak Ridge National Lab (ORNL) and the Electric Power Research Institute (EPRI), contributed to a report for evaluating the cost-effectiveness of smart grid investments. The report was published under the title *Methodological Approach for Estimating the Benefits and Costs of Smart Grid Demonstration Projects*.
- For the Connecticut Department of Energy and Environmental Protection (DEEP), contributed to the state's annual Integrated Resource Plan (IRP). Developed a chapter on emerging technologies (such as AMI, energy storage, and advanced waste-to-energy) and their potential future role in the state's mix of energy resources.

OTHER ENGAGEMENTS

- For a Western utility, supported the development of a presentation to the utility's Board of Directors on key trends at each point in the electricity industry value chain.
- For a large Canadian utility, developed long-run projections of marginal energy and capacity prices under a variety of scenarios (which were defined by different assumptions about fuel prices, demand, carbon prices, etc.). To help explain trends in the prices, these forecasts were accompanied by scenario-specific detail about capacity additions and retirements, emissions, unit dispatch, and other outputs.
- Developed energy and capacity price forecasts under a range of market conditions to assist a large investor-owned utility in developing a strategy related to the decision to potentially retire a nuclear generating facility.
- Worked with an independent system operator (ISO) to integrate DR into its resource adequacy requirements. Reviewed existing utility DR programs to identify those that would meet resource adequacy criteria. Developed a forecast of the potential for new demand response for the ISO's planning purposes.
- For a large transmission company, contributed to analysis using Brattle's Regional Capacity Model (RECAP) model to assess the value that new transmission lines would have from the perspective of bringing more renewables into the power market. The model quantified the impact of an increased market penetration of wind generation on system costs.
- For projects with multiple utilities, developed wholesale electricity price forecasts for regions across the US using commercially licensed linear optimization models. Model

forecasts were driven by assumptions about the outlook of fossil fuel prices and regional electricity demand levels, among other variables. Forecasts were developed using multiple data sources to create a range of price forecasts encompassing the varying assumptions established in the industry. Researched the inputs, set up and calibrated the model, and analyzed the resulting forecasts.

- For power marketers in California during the Western Energy Crisis, analyzed historical hourly California electricity bid data to quantify the potential economic impacts of the bidding strategies on regional electricity markets. Analysis included bids into the ISO's day ahead and real-time energy markets and ancillary services markets, as well as the California PX markets.
- For the New York Department of Public Service (DPS), contributed to a model that would illustrate the impact of the state's Renewing the Energy Vision (REV) policy on utility financials. The analysis included pricing structures for customers with distributed energy resources (DERs) as key inputs. The model could be used to assess the impacts of a range of DER market penetration scenarios on utilities, rates, and bills.
- Lead developer of the Regional Capacity Model (RECAP), an optimization model for forecasting the mix of generating capacity necessary to meet US electricity demand. The model closely calibrated to Annual Energy Outlook forecasts and was used in a whitepaper for the Edison Electric Institute to quantify the amount of generation and transmission capital investment that could be avoided through demand-side management.
- Worked with a team to develop a linear optimization model for forecasting the economic impact of various emission control policies. The model was used to provide strategic emissions compliance advice to large electric utilities and for forecasting generator-specific environmental decisions.
- Created a tool for determining the optimal dispatch of energy storage technologies against given price series (energy and ancillary service markets), subject to the device's specific operating constraints. The tool was used to develop an economic valuation of a pumped storage plant in New England and to assess the potential value of a large-scale battery for a technology manufacturer.
- Developed a general equilibrium model for forecasting trends in international natural gas markets. The model was used in a study on the potential impacts of liquefied natural gas (LNG) adoption in the US.
- Participated as a research assistant with Stanford University's Energy Modeling Forum (EMF). Presented an overview of participating models for an EMF study on issues in international natural gas markets.

- For an infrastructure investment fund, provided due diligence support on potential fuel cell project investments in New York. Analysis included a forecast of potential project revenues and an assessment of regulatory risks facing the project.
- For the National Rural Electric Cooperative Association (NRECA) and the Natural Resources Defense Council (NRDC), assessed the costs and benefits of rooftop versus community solar in the context of zero net energy building policy. The study considered different solar PV configurations and market scenarios.
- For a foreign investor, assessed the likely future value of an investment in a new gas-fired combined cycle power plant in western Pennsylvania. Projected gas, energy, and capacity prices under a range of plausible scenarios. Simulated the dispatch of the unit against these hourly price series to estimate potential earnings. Benchmarked the results against the performance of comparable units in the region.
- For one of the largest electricity consumers in the US, conducted due diligence on the potential purchase of a large gas-fired combined cycle plan. Determined how a purchase of the plant would affect the firm's energy portfolio. Used the Electric Power research Institute's Energy Book System (EBS) to estimate the plant's energy value given uncertainty in future electricity and fuel prices. Researched capacity and ancillary services markets to assess the plant's potential for providing additional value in those areas. Investigated California LMP studies to determine whether the plant would have a price advantage or disadvantage due to transmission constraints when California transitioned to the MRTU market structure. Supplemented the LMP analysis with independent forecasts of nodal market prices in California using a large-scale production cost model. Analyzed the plant's historical operations using publicly available data to determine how it was dispatched against market prices and to identify any additional synergistic benefits that might be achieved if the firm were to own the plant.
- Conducted a detailed audit of the Federal Energy Regulatory Commission's (FERC) merger filing between Duke Energy and Progress Energy, which created the largest regulated utility in the US. Updated data in the market power assessment and estimated Herfindahl-Hirschman Indices (HHI). Explored new mitigation strategies that would alleviate screen failures that arose from the update.
- For several large electric utility mergers, aided electric utilities and their counsel in FERC regulatory filings. Performed analyses to measure the impacts on market concentration of proposed mergers between large electric utilities in the US. Utilized a proprietary linear optimization model to calculate market shares before and after the mergers and suggested divestitures that would minimize the potential impacts of the mergers.

- "Efficiency and Flexibility: Keys to Affordable Electrification," with Sanem Sergici, Akhilesh Ramakrishnan, and J. Michael Hagerty, *Electrification and the Future of Decentralized Electricity Supply*, edited by Fereidoon Sioshansi, Elsevier, p. 197-213 (2025).
- "Demand-side solutions in the US building sector could achieve deep emissions reductions and avoid over $100 billion in power sector costs," with Jared Langevin, Aven Satre-Meloy, Andrew J. Satchwell, Julia Olszewski, Kate Peters, and Handi Chandra-Putra, *One Earth*, Volume 6, Issue 8 (August 18, 2023).
- "Virtual Power Plants: Resource Adequacy without Interconnection Delays," with Kala Viswanathan and Kate Peters, *Utility Dive* Op-Ed (August 17, 2023).
- "Load Flexibility: Market Potential and Opportunities in the United States," with Tony Lee, *Variable Generation, Flexible Demand*, edited by Fereidoon Sioshansi, Academic Press, p. 195-210 (2021).
- "Avoiding Blackouts in California Through Load Flexibility," with Ahmad Faruqui, *Utility Dive* Op-Ed (September 14, 2020).
- "A New Paradigm for Utilities: Electrification of the Transportation and Heating Sectors," with Ahmad Faruqui, Jurgen Weiss, J. Michael Hagerty, and Long Lam, *American Bar Association's Energy Infrastructure, Siting and Reliability Newsletter* (November 13, 2019).
- "Emerging Landscape of Residential Rates for EVs: Creative Design Ahead," with John Higham and Ahmad Faruqui, *Public Utilities Fortnightly* (May 2019).
- "Two Paths for Advancing the Smart Metering Programme," *Utility Week* (December 2018).
- "Status of Residential Time-of-Use Rates in the US: Progress Comes Slowly," with Cody Warner and Ahmad Faruqui, *Public Utilities Fortnightly* (November 2018).
- "Storage-Oriented Rate Design: Stacked Benefits or the Next Death Spiral?" with Jake Zahniser-Word and Jesse Cohen, *The Electricity Journal* (October 2018).
- "Nothing Worth Having Comes Easy: Capturing the Stacked Benefits of Energy Storage," *RTO Insider* (December 19, 2017).
- "The Electrification Accelerator: Understanding the Implications of Autonomous Vehicles for Electric Utilities," with Jurgen Weiss, Roger Lueken, Tony Lee, and Will Gorman, *The Electricity Journal* (December 2017).

- "The Distributional Impacts of Demand Charges," with Gus Greenstein, *The Electricity Journal* (July 2016).
- "Competing Perspectives on Demand Charges," with Ahmad Faruqui, *Public Utilities Fortnightly* (September 2016).
- "Trends and Emerging Opportunities in Demand Response," with Lucas Bressan and Ahmad Faruqui, *Recursos Energeticos Distribuidos* (May 2016).
- "Understanding the UK's Potential for Demand Response," with Jurgen Weiss and Serena Hesmondhalgh, *Utility Week* (December 12, 2015).
- "The Emergence of Organic Conservation," with Ahmad Faruqui and Wade Davis, *The Electricity Journal* (June 2015).
- "The Paradox of Inclining Block Rates," with Ahmad Faruqui and Wade Davis, *Public Utilities Fortnightly* (April 2015).
- "Rediscovering Residential Demand Charges," *The Electricity Journal* (August/September 2014).
- "Smart by Default," with Ahmad Faruqui and Neil Lessem, *Public Utilities Fortnightly* (August 2014).
- "Analytical Frameworks to Incorporate Demand Response in Long-Term Resource Planning," with Andy Satchwell, *Utilities Policy* (March 2014).
- "Benchmarking Your Rate Case," with Ahmad Faruqui, *Public Utilities Fortnightly* (July 2013).
- "Drivers of Demand Response Adoption: Past, Present, and Future," with Kelly Smith, *Public Utilities Fortnightly* (January 2012).
- "Smart Pricing, Smart Charging," with Ahmad Faruqui, Armando Levy, and Alan Madian, *Public Utilities Fortnightly* (October 2011).
- "The Energy Efficiency Imperative," with Ahmad Faruqui, *Middle East Economic Survey* (September 2011).
- "Unlocking the €53 Billion Savings from Smart Meters in the EU: How increasing the adoption of dynamic tariffs could make or break the EU's smart grid investment," with Ahmad Faruqui and Dan Harris, *Energy Policy* (October 2010).
- "Rethinking Prices," with Ahmad Faruqui and Sanem Sergici, *Public Utilities Fortnightly* (January 2010).

- "Fostering Economic Demand Response in the Midwest ISO," with Ahmad Faruqui, Attila Hajos, and Sam Newell, *Energy Journal,* Special Issue on Demand Response Resources (October 2009).
- "Piloting the Smart Grid," with Ahmad Faruqui and Sanem Sergici, *The Electricity Journal* (August 2009).
- "Smart Grid Strategy: Quantifying Benefits," with Ahmad Faruqui and Peter Fox-Penner, *Public Utilities Fortnightly* (July 2009).
- "How Green is the Smart Grid?" *The Electricity Journal* (April 2009).
- "The Power of Dynamic Pricing," with Ahmad Faruqui and John Tsoukalis, *The Electricity Journal* (April 2009).
- "Transitioning to Dynamic Pricing," with Ahmad Faruqui, *Public Utilities Fortnightly* (March 2009).
- "The Power of Five Percent," with Ahmad Faruqui, Samuel A. Newell, and Johannes P. Pfeifenberger, *The Electricity Journal* (October 2007).

SELECTED WHITEPAPERS AND REPORTS

- "The Demand Side Grid Support Program: An Assessment of Scale and Value," with Kate Peters and Purvaansh Lohiya, prepared for Sunrun and Tesla (August 2025).
- "Optimizing Grid Infrastructure and Proactive Planning to Support Load Growth and Public Policy Goals," with Johannes Pfeifenberger, Long Lam, Kailin Graham, and Natalie Northrup, prepared for Clean Air Task Force (July 2025).
- "Affordability, Rates, and Clean Capital Efficiency: A Path for the Power Industry's Turbulent Next Decade," with Peter Fox-Penner, Shannon Paulson, and Xander Bartone, Brattle whitepaper (May 2025).
- "State regulatory opportunities to advance distributed energy resources aggregations in wholesale markets," with Sydney Forrester, Adam Bigelow, Natalie Mims Frick, Kala Viswanathan, prepared for Berkeley Lab (January 2025).
- "Electricity Rate Designs for Large Loads: Evolving Practices and Opportunities" with Andrew Satchwell, Natalie Mims Frick, Peter Cappers, Sanem Sergici, Goksin Kaylak, Glenda Oskar, prepared for Berkeley Lab (January 2025).
- "Deliberate Design: Creating Electricity Rates with Purpose," with Sanem Sergici, Sai Shetty, Peter Cappers, prepared for Berkey Lab (January 2025).

- “Distributed Energy, Utility Scale: 30 Proven Strategies to Increase VPP Enrollment,” with Akhilesh Ramakrishnan, Serena Patel, Andrew Satchwell, prepared for Berkeley Lab (December 2024).
- “California’s Virtual Power Potential: How Five Consumer Technologies Could Improve the State’s Energy Affordability,” with Kate Peters and Sophie Edelman, prepared for GridLab (April 2024).
- “Incentivizing Behind-the-Meter Storage: A Jurisdictional Review,” prepared for Sunrun (December 2023).
- “Unlocking the Value of Community Scale Storage for Consumers,” with Toby Brown, Averlie Wang, and Adam Bigelow, prepared for Energy Consumers Australia (November 2023).
- “Water Heating Economics in a Dynamic Energy Landscape,” with Long Lam, Shreeansh Agrawal, and Rich Hasselman, prepared for the Beneficial Electrification League (May 2023).
- “Real Reliability: The Value of Virtual Power,” with Kate Peters, prepared for Google (May 2023).
- “Making Grid-interactive Efficient Buildings a ‘Win’ for Both Customers and Utilities,” with Andrew Satchwell, prepared for 2022 ACEEE Summer Study on Energy Efficiency in Buildings proceedings (August 2022).
- “Valuing Residential Energy Efficiency: Analysis for a Prototypical Southeastern Utility,” with Andrew Satchwell, Oleksandr Kuzura, Oluwatobi Adekanye, and Chioke B Harris, prepared for Lawrence Berkeley National Lab (July 2022).
- “The Customer Action Pathway to National Decarbonization,” with Sanem Sergici, Michael Hagerty, Ahmad Faruqui, and Kate Peters, prepared for Oracle (September 2021).
- “A National Roadmap for Grid-Interactive Efficient Buildings,” with Lawrence Berkeley National Lab, Energy Solutions, and Wedgemere Group, prepared for the US Department of Energy (May 2021).
- “Decarbonized Resilience: Assessing Alternatives to Diesel Backup Power,” with Peter Fox-Penner, Roger Lueken, Tony Lee, and Jesse Cohen, prepared for Enchanted Rock, LLC (June 2020).
- “FixedBill+: Making Rate Design Innovation Work for Consumers, Electricity Providers, and the Environment,” with Peter Fox-Penner and Andy Lubershane, The Brattle Group and Energy Impact Partners Working Paper (June 2020).

- "Identifying Likely Electric Vehicle Adopters," with Dan McFadden, Kenneth Train, Armando Levy, Jurgen Weiss, and Nicole Irwin, prepared for the Electric Power Research Institute (December 2019).
- "Solar-Plus-Storage: The Future Market for Hybrid Resources," with Roger Lueken, Judy Chang, Hannes Pfeifenberger, Jesse Cohen, and John Imon Pedtke (December 2019).
- "Residential Electric Vehicle Rates That Work," with Erika H. Myers, Jacob Hargrave, Richard Farinas, and Lauren Burke, prepared for the Smart Electric Power Alliance (November 2019).
- "The Total Value Test: A Framework for Evaluating the Cost-Effectiveness of Efficient Electrification," with Ahmad Faruqui, Michael Hagerty, and John Higham, prepared for the Electric Power Research Institute (August 2019).
- "The National Potential for Load Flexibility: Value and Market Potential Through 2030," with Ahmad Faruqui, Tony Lee, and John Higham, The Brattle Group Report (June 2019).
- "Two Paths for Advancing Great Britain's Smart Metering Programme," with Pinar Bagci and Saurab Chhachhi, The Brattle Group Whitepaper (December 2018).
- "Facilitating Electric Vehicle Fast Charging Deployment," with Jurgen Weiss, prepared for the Edison Electric Institute (October 2018).
- "Stacked Benefits: Comprehensively Valuing Battery Storage in California," with Roger Lueken, Colin McIntyre, and Heidi Bishop, prepared for EOS Energy Storage (September 2017).
- "The Value of TOU Tariffs in Great Britain: Insights for Decision-makers," with Will Gorman and Nicole Irwin, prepared for Citizens Advice (July 2017).
- "Beyond Zero Net Energy? Alternative Approaches to Enhance Consumer and Environmental Outcomes," prepared for the National Rural Electric Cooperative Association (NRECA) and the Natural Resources Defense Council (NRDC) (June 2018).
- "Electrification: Emerging Opportunities for Utility Growth," with Jurgen Weiss, Michael Hagerty, and Will Gorman, The Brattle Group Whitepaper (January 2017).
- "Distribution System Pricing with Distributed Energy Resources," with Jim Lazar, prepared for Lawrence Berkeley National Laboratory's Future Electric Utility Regulation series (May 2016).
- "The Tariff Transition: Considerations for Domestic Distribution Tariff Redesign in Great Britain," with Ahmad Faruqui, Jürgen Weiss, Toby Brown, and Nicole Irwin, prepared for Citizens Advice (April 2016).

- "The Hidden Battery: Opportunities in Electric Water Heating," with Judy Chang and Roger Lueken, prepared for the National Rural Electric Cooperative Association (NRECA), the Natural Resources Defense Council (NRDC), and the Peak Load Management Alliance (PLMA) (January 2016).
- "An Evaluation of SRP's Electric Rate Proposal for Residential Customers with Distributed Generation," with Ahmad Faruqui, prepared for Salt River Project (January 5, 2015).
- "Valuing Demand Response: International Best Practices, Case Studies, and Applications," prepared for EnerNOC (January 2015).
- "Exploring Natural Gas and Renewables in ERCOT, Part III: The Role of Demand Response, Energy Efficiency, and Combined Heat & Power," prepared for The Texas Clean Energy Coalition (May 29, 2014).
- "Demand Response Market Potential in Xcel Energy's Northern States Power Service Territory," with YouGov America, prepared for Xcel Energy (April 2014).
- "Incorporating Demand Response Into Western Interconnection Transmission Planning," with Andy Satchwell, Glen Barbose, Ahmad Faruqui, and Charles Goldman, Lawrence Berkeley National Lab Report, (July 2013).
- "Estimating Xcel Energy's Public Service Company of Colorado Territory Demand Response Market Potential," with YouGov America, prepared for Xcel Energy (June 2013).
- "Time-Varying and Dynamic Rate Design," with Ahmad Faruqui and Jenny Palmer, prepared for the Regulatory Assistance Project (July 2012).
- "Vietnam's 10-year Smart Grid Roadmap," prepared for Northern Power Corporation and The World Bank (December 2011).
- "Bringing Demand Side Management to the Kingdom of Saudi Arabia," with Global Energy Partners and PacWest Consulting Partners, prepared for ECRA (May 2011).
- "National Action Plan on Demand Response," with GMMB, Customer Performance Group, and Definitive Insights, prepared for the Federal Energy Regulatory Commission (June 2010).
- "A National Assessment of Demand Response Potential," with Freeman, Sullivan & Co. and Global Energy Partners, prepared for the Federal Energy Regulatory Commission (June 2009).

- “Assessment of Achievable Potential from Energy Efficiency and Demand Response Programs in the U.S.,” with Global Energy Partners, prepared for the Electric Power Research Institute (January 2009).
- “Transforming America’s Power Industry: The Investment Challenge,” prepared for the Edison Electric Institute (November 2008).
- “Rethinking Rate Design: A Survey of Leading Issues Facing California’s Utilities and Regulators,” prepared for the Demand Response Research Center, Lawrence Berkeley National Laboratory (August 2007).
- “California’s Next Generation of Load Management Standards,” prepared for the California Energy Commission (May 2007).
- “The State of Demand Response in California,” prepared for the California Energy Commission (April 2007).

PRESENTATIONS & SPEAKING ENGAGEMENTS

- “Energy Efficiency and Consumer Affordability: Reducing Costs for Families and Businesses,” Alliance to Save Energy webinar (July 16, 2025).
- “Distributed Batteries: Why Stick Them Behind the Meter?” IEA EU4Energy Policy Forum, Copenhagen, Denmark (June 11, 2025).
- “Affordability and Resilience Through a Decentralized Power Grid” IEA “Empowering Ukraine” Workshop, Copenhagen, Denmark (June 10, 2025).
- “Gaps, Barriers, and Solutions to Demand Response Participation in Wholesale Markets,” ESIG webinar (April 22, 2025).
- “An Incomplete and Oversimplified History of Demand Flexibility, in 10 Mins (and Where We’re Headed),” Uplight CustomerConnect 2025, Denver, CO (May 21, 2025).
- “Grid Edge Innovation: Driving VPP and DR Growth and Enrollment,” Virtual Peaker webinar (December 12, 2024).
- “Data Center Demand: Problem or Opportunity?” presentation at Peak Load Management Alliance 50th Conference, Brooklyn, NY (November 11, 2024).
- “New York’s Grid of the Future: Background and Initial Insights” presentation at Peak Load Management Alliance 50th Conference, Brooklyn, NY (November 11, 2024).

- “Real Reliability: The Value of Virtual Power,” presentation at Alberta Market Surveillance Administrator Fall Economics Symposium, Calgary, Alberta, CA (October 30, 2024).
- “How Virtual Power Plants Could Strengthen the Electrical Grid,” interview for Energy Policy Now podcast (air date October 22, 2024).
- “Real Reliability: The Value of Virtual Power,” seminar for University of Pennsylvania Kleinman Center for Energy Policy, Philadelphia, PA (October 15, 2024).
- “Shaping the Future of Home Energy Management,” panel at Sidewalk Infrastructure Partners Unlocking the Power of Residential VPPs Summit, Mountain View, CA (June 4, 2024).
- “Big Savings for California Power Grid from Virtual Power Plants,” interview for Energi Talks podcast (air date April 11, 2024).
- “Winter is Coming: The Growing Need for Year-round Demand Flexibility,” presentation at Peak Load Management Alliance 49th Conference, Portland, OR (May 8, 2024).
- “Unlocking the Value of Community Scale Storage for Consumers,” Energy Consumers Australia webinar (April 12, 2024).
- “Real Reliability: The Value of Virtual Power,” ESIG 2024 Spring Technical Workshop, Tucson, AZ (March 26, 2024).
- “New Approaches to Address the Growing Use of Electricity in Buildings, and How to Protect Power System Reliability and Affordability,” interview for United States Energy Association Power Sector podcast (air date December 6, 2023).
- “Real Reliability: The Value of Virtual Power,” lecture for Yale Energy Systems Analysis course, New Haven, CT (November 29, 2023).
- “Flexibility and Distributed Generation,” fireside chat at Energy Impact Partners Customer Solutions Executive Roundtable, New York, NY (November 28, 2023).
- “Rediscovering Efficiency: Value for a Decarbonizing Power Grid,” presentation at California Efficiency + Demand Management Council Annual Meeting, Oakland, CA (November 8, 2023).
- “Real Reliability: The Value of Virtual Power,” lecture in Stanford Energy Seminar series, Stanford, CA (November 6, 2023).
- “Virtual Power Plants,” interview for Living on Earth podcast (air date November 3, 2023).

- "Subscription Pricing Plus: Rate Design Innovation for Consumers, Providers, and the Environment," presentation at GridFWD 2023, Skamania, WA (October 18, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at E Source Forum 2023, Denver, CO (September 22, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at PNUCC System Planning Committee meeting (September 15, 2023).
- "Can Virtual Power Plants Replace Peaker Plants?" presentation at Clean Energy Group webinar (August 3, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at MISO DER Task Force meeting (July 27, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at Washington UTC resource adequacy meeting (July 24, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at SEPA Virtual Power Plant webinar (July 24, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at RMI/VP3 webinar (June 22, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at NARUC-NASEO Financial Toolbox Webinar (June 21, 2023).
- "Real Reliability: The Value of Virtual Power," presentation at Uplight Customer Connect, Denver, CO (May 23, 2023).
- "Virtual Power, Real Reliability: The Economics of Virtual Power Plants," presentation at 47th PLMA Conference, Memphis, TN (May 9, 2023).
- "Water Heating Economics in a Dynamic Energy Landscape," presentation at BEL Electric Water Heating Summit (May 4, 2023).
- "Yoga for the Decarbonized Power Grid," presentation at 2022 NARUC Annual Meeting, New Orleans, LA (November 15, 2022).
- "The National Potential for Load Flexibility," presentation at Connecticut DEEP Technical Session on Active Demand Response (November 3, 2022).
- "Making Grid-interactive Efficient Buildings a 'Win' for Both Customers and Utilities," 2022 ACEEE Summer Study on Energy Efficiency in Buildings (August 22, 2022).

- “Achieving Reliable Decarbonization: The Role of Energy Efficiency and Load Flexibility,” PLMA Dialogue (August 11, 2022).
- “Achieving the ‘Other’ Washington’s Decarbonization Goals with Energy Efficiency and Load Flexibility,” Efficiency Exchange 2022 (April 15).
- “The Energy Future Is Smart: Grid-Interactive Efficient Buildings,” panel at Los Angeles Better Buildings Challenge (LABBC) webinar (July 29, 2021).
- “A National Roadmap for Grid-Interactive Efficient Buildings,” presentation at Grid Forward’s “Building the Decarbonized Grid” Summit (June 9, 2021).
- “Flexibility: The New Grid Zeitgeist,” panel at Microgrid 2020 Global Conference (November 18, 2020).
- “How Pricing is Playing a Greater Role in Grid Transitions,” panel at Peak Load Management Alliance (PLMA) 2020 Fall Conference (November 10, 2020).
- “The National Potential for Load Flexibility,” Rocky Mountain Utility Exchange, Keynote Session (September 30, 2020).
- “Load Flexibility: Yoga for the Power Grid,” SEPA Virtual Grid Evolution Summit (August 12, 2020).
- “The Potential for Load Flexibility,” Washington Utilities and Transportation Commission Workshop on Demand Response Potential and Target Setting (June 8, 2020).
- “The National Potential for Load Flexibility,” 2020 ASHRAE Virtual Conference (June 5, 2020).
- “Electric Vehicle Managed Charging: Considerations for an Emerging Opportunity,” NARUC EV Working Group Meeting (April 28, 2020).
- “The National Potential for Load Flexibility,” panel at NARUC 2020 Winter Policy Summit, Washington, DC (February 20, 2020).
- Participant, “Demand Flexibility and Control,” panel at North America Smart Energy Week, Salt Lake City, Utah (September 24, 2019).
- Participant, “Load Flexibility Potential in US by 2030,” PLMA Dialogue with Rich Barone, (September 5, 2019).
- Participant, “Transportation Electrification: Smart Strategies to Manage New Electric Vehicle Loads,” panel at the SEPA Grid Evolution Summit, Washington, DC (July 29, 2019).

- "The Potential for Load Flexibility in Northern States Power's Service Territory," Peak Load Management Alliance (PLMA) 2019 Spring Conference, Minneapolis, MN (May 14, 2019).
- "Incorporating DERs into Resource Planning: Energy Efficiency," with Sanem Sergici and DL Oates, EPRI Winter 2019 Advisors Meeting, Tucson, Arizona (February 26, 2019).
- "Determining Optimal Storage Deployment Levels: Insights from Nevada," with Roger Lueken, Energy Storage Association Webinar (December 11, 2018).
- "Behind-the-Meter Storage: Stacked Benefits or the Next Death Spiral?" EEI Strategic Issues Roundtable, Pittsburgh, PA (October 12, 2018).
- "The Value of TOU Tariffs in Great Britain," Citizens Advice Public Workshop, London, UK (July 10, 2017).
- "The Hidden Battery," 3rd Annual Ancillary Services and DR Management Forum, Frankfurt, Germany (May 11, 2017).
- "The Hidden Battery," Smart Energy Summit, Brussels, Belgium (April 6, 2017).
- "Distribution System Pricing With Distributed Energy Resources," Lawrence Berkeley National Lab Future Electric Utility Regulation Series Webinar (May 31, 2016).
- "The Emergence of Residential Demand Charges," 2016 EEI Rate Analysts Meeting, Baltimore, MD (May 23, 2016).
- "Electricity Pricing for the Consumer of the Future," International Congress of Energy Science and Industry, Energi@21, Poznan, Poland (May 11, 2016).
- "Community Storage Initiative and Hidden Battery Report," PLMA Dialogue with Keith Dennis (March 24, 2016).
- "A Path Forward for Residential Demand Charges," 2015 NASUCA Annual Meeting, Austin, TX (November 10, 2015).
- "The National Landscape of Residential Rate Reform," 2015 SNL Utility Regulation Conference, Washington, DC (December 10, 2015).
- "The Top 10 Questions about Residential Demand Charges," EUCI Residential Demand Charges Symposium, Los Angeles, CA (August 31, 2015).
- "Residential Rate Design: Emerging Issues," EEI WebTalks webinar (August 27, 2015).
- "The Top 10 Questions about Residential Demand Charges," EUCI Residential Demand Charges Symposium, Denver, CO (May 14, 2015).

- “Rolling out Residential Demand Charges,” EUCI Residential Demand Charges Symposium Pre-Conference Workshop, Denver, CO (May 13, 2015).
- “Residential Demand Charges: An Emerging Opportunity in Rate Design,” EUCI webcast (December 16, 2014).
- “Residential Demand Charges: A Rate Design Revolution?” Center for Research in Regulated Industries 27th Annual Western Conference, Monterey, CA (June 26, 2014).
- “Rediscovering Residential Demand Charges,” 2014 EEI Rate and Regulatory Analysts Meeting, San Francisco, CA (May 20, 2014).
- “The New Direction of Home Energy Management,” 2014 Comverge Utility Conference, New Orleans, LA (May 7, 2014).
- “Surviving Sub-One Percent Growth,” 2014 Institute for Regulatory Policy Studies Conference, Springfield, IL (April 16, 2014).
- Panelist, Wharton Energy Conference, Smart Grid Panel, Philadelphia, PA (November 8, 2013).
- “The Smart Grid and the Future of Demand Response,” presented at Energy Central webinar titled “Integrated Demand Response - How Utilities Leverage Data for Intelligent Decisions” (September 18, 2013).
- “Analytical Frameworks to Incorporate Demand Response in Long-term Resource Planning,” with Andy Satchwell, CRRI Western Conference (June 21, 2013).
- “The Future of Rate Design,” EEI Rate Analysts Meeting, Orlando, Florida (May 21, 2013).
- “Demand Response: Lessons Learned from Across the Border,” presented at the CAMPUT Energy Regulation Course, Kingston, Ontario (August 1, 2012).
- “The Current State of US Demand Response,” presented as moderator at Energy Bar Association Annual Event, Washington, DC (April 26, 2012).
- “Vietnam’s 10-year Smart Grid Roadmap,” presented at World Bank stakeholder workshop in Hanoi (December 8, 2011).
- “Bringing DSM to the Kingdom of Saudi Arabia,” presented at AESP webinar (October 13, 2011).
- “Dynamic Pricing Pilots: Past, Present, and Future,” presented at EEI Rate Analysts Meeting (May 17, 2011).

- "Inclining Block Rates – Are They a Good or Bad Thing?" presented at EEI webinar (August 5, 2010).
- "Do Customers Respond to Dynamic Pricing?" presented at the Brookings Institution Behavior Insights for Smart Grid Policy Workshop, Washington, DC (July 28, 2010).
- "Innovative Pricing for a Smarter Grid," presented at TechConnect 2010 (June 24, 2010).
- "The Geography of Demand Response," presented at the 2010 Southern California Edison Demand Response Forum (June 3, 2010).
- "Fairness and Equity in Dynamic Pricing," presented at the 2010 EEI Rate Analysts Meeting (May 18, 2010).
- "A National Assessment of Demand Response Potential," presented at an AESP webinar (October 15, 2009).
- "A National Assessment of Demand Response Potential," presented at the ALCA 2009 Fall Meeting, Los Angeles, CA (October 8, 2009).
- "How Green is the Smart Grid?" presented at an EUCI webinar (July 23, 2009).
- "Sizing up the Smart Grid," presented at the ConnectivityWeek GridWise Expo, San Jose, CA (June 11, 2009).
- "Integrating Dynamic Pricing and Inclining Block Rates," presented at the Stanford Energy & Feedback Workshop, Palo Alto, CA (September 5, 2008).
- "Evaluating Alternative Dynamic Pricing Designs," presented at the CRRI 21st Annual Western Conference, Monterey, CA (June 19, 2008).
- "The Coming Wave of Price-Based Demand Response," presented at the ConnectivityWeek DR Expo, San Jose, CA (May 22, 2008).

PRESS MENTIONS

- California's biggest virtual power plant may get a funding reprieve," Jeff St. John, *Canary Media* (August 21, 2025).
- "New York could reach 8.5 GW of grid flexibility in 2040 zero-emissions scenario: Brattle Group," Brian Martucci, *Utility Dive* (February 5, 2025).
- "EPRI, Kraken advance DER interoperability standards to boost virtual power plant deployment," Herman Trabish, *Utility Dive* (November 27, 2024).
- "US to add 217 GW of distributed energy resource capacity through 2028, Wood Mackenzie projects," Brian Martucci, *Utility Dive* (July 3, 2024).

- “VPPs could boost utilities’ credit profiles, but it’s ‘premature’ to consider impact: Morningstar DBRS,” Brian Martucci, *Utility Dive* (May 6, 2024).
- “Tackling 3 key issues can help scale virtual power plants and spur a wave of benefits, analysts say,” Herman Trabish, *Utility Dive* (April 17, 2024).
- “Virtual power plant adoption could save California ratepayers $550M annually: Brattle report,” Brian Martucci, *Utility Dive* (April 15, 2024).
- “California weighs virtual power plant mandate; 7.7 GW of potential seen by 2035,” Garrett Hering, *S&P Global Market Intelligence* (April 12, 2024).
- “Virtual power plants poised to grab California market share – study,” Brian Dabbs, *POLITICO’S E&E News* (April 11, 2024).
- “Report highlights the power of VPPs,” Katie Fehrenbacher, *Axios Pro* (April 11, 2024).
- “A new era of price-based demand response emerges, but utilities and regulators need proof of its potential,” Herman Trabish, *Utility Dive* (March 27, 2024).
- “The opportunities and challenges of VPPs,” Katie Fehrenbacher, *Axios Pro* (December 20, 2023).
- “Why efficient buildings are key to decarbonizing the power grid,” Jeff St. John, *Canary Media* (August 22, 2023).
- “You and your neighbors, a virtual power plant? Growing effort is money-saving and climate friendly,” Tom Kertscher, *PolitiFact* (August 8, 2023).
- “Clean Energy Group urges utilities to replace peaker plants,” James Downing, *RTO Insider* (August 3, 2023).
- “Momentum builds for virtual power plants as alternatives to gas, battery peakers,” Garrett Herring, *S&P Global Market Intelligence* (May 10, 2023).
- “VPPs provide same resource adequacy as gas peakers, large batteries at up to 60% less cost: study,” Patrick Cooley, *Utility Dive* (May 5, 2023).
- “Demand Response: A win-win solution to climate and energy price crises,” Joe Lo, *Climate Change News* (October 5, 2022).
- “NextEra’s ‘game changing’ Real Zero emissions goal spurs questions about hydrogen, demand-side management,” Herman Trabish, *Utility Dive* (August 3, 2022).
- “The Big Picture on Emerging Technologies: Virtual Power Plants Advance in California,” Herman Trabish, *California Current* (February 14, 2022).
- “State of the Electric Utility 2021: Despite sharp drop, cost remains key obstacle to more storage, some say,” Kavya Balaraman, *Utility Dive* (April 1, 2021).
- “Solar panels and batteries on your home could help prevent the next grid disaster,” Alejandra Borunda, *National Geographic* (February 25, 2021).
- “2021 Outlook: The DER boom continues, driving a 'reimagining' of the distribution system,”

Herman Trabish, *Utility Dive* (January 12, 2021).

- "Two barriers to utility and customer savings with flexible loads and how regulators can help," Herman Trabish, *Utility Dive* (January 6, 2021).
- "California Considers Landmark Appliance Rule to Ease Grid Demand," Emily C. Dooley, *Bloomberg Law* (October 23, 2020).
- "Demand Response Failed California 20 Years Ago; the State's Recent Outages may have Redeemed it," Herman Trabish, *Utility Dive* (September 28, 2020).
- "Smart Meters Giving Missouri Customers Incentive to Save Energy During Peaks," Karen Uhlenhuth, *Energy News Network* (September 28, 2020).
- "Tesla Promises Cars that Connect to the Grid, even if Elon Musk Doesn't Really Want Them to," Justine Calma, *The Verge* (September 23, 2020).
- "Virtual Power Plants are Coming to California Apartment Buildings," Justine Calma, *The Verge* (August 27, 2020).
- "Momentum Grows for Piloting Netflix-like Fixed Subscription Rates, but not Everyone's on Board," Herman Trabish, *Utility Dive* (July 7, 2020).
- "Battery Energy Storage is Getting Cheaper, but How Much Deployment is too Much?" Herman Trabish, *Utility Dive* (June 30, 2020).
- "Tesla's Ex-storage Chief on Trump, Musk and the 'Holy Grail'," David Iaconangelo, *E&E News* (May 15, 2020).
- "Calif. Inks Largest U.S. Battery Purchase in History," David Iaconangelo, *E&E News* (May 5, 2020).
- "Biding One's Utility Time," Chuck Ross, *Electrical Contractor Magazine* (March 2020).
- "Want Cheaper Electricity? Xcel Energy Wants to Help – if You're Willing to do Your Laundry at 2 a.m.," Mark Jaffe, *Colorado Sun* (February 20, 2020).
- "Time-of-Use Electricity Rates May Hit Vulnerable Groups Harder, Study Finds," Maria Gallucci, *IEEE Spectrum* (December 16, 2019).
- "EV-specific rates are the gateway to direct load management, SEPA report finds," Robert Walton, *Utility Dive* (November 14, 2019).
- "A Utah Housing Development is Just the Start of Sonnen's US Solar Ambitions," Wolfgang Kerler, *The Verge* (August 28, 2019).
- "Renewables' Variability Sends Wary Utilities from Traditional DR to DER and Load Flexibility," Herman K. Trabish, *Utility Dive* (August 14, 2019).

- “Using Electricity at Different Times of Day Could Save Us Millions of Dollars,” David Roberts, *Vox* (August 7, 2019).
- “Rise of Net Zero Energy Homes Could Boost Utility-Led Community Solar,” Herman K. Trabish, *Utility Dive* (July 19, 2018).
- “Stacking Energy Storage Values to Make Batteries More Profitable: Brattle Report,” *MicroGrid Knowledge*, September 18, 2017).
- “Brattle: Regulatory Barriers Prevent Stacking of Battery Benefits,” Peter Maloney, *Utility Dive* (September 13, 2017).
- “Batteries Hold Value in Various Applications: Study,” *MW Daily* (September 12, 2017).
- “Utilities in hot water: Realizing the benefits of grid-integrated water heaters,” Herman K. Trabish, *Utility Dive* (June 20, 2017).
- “ComEd jumps on the demand charge train with new Illinois proposal,” Peter Maloney, *Utility Dive* (May 9, 2016).
- “Your home water heater may soon double as a battery,” Chris Mooney, *The Washington Post* (February 24, 2016).
- “Move over, fixed fees—utilities see demand charges as revenue cure,” Kari Lydersen, *Midwest Energy News* (December 2, 2015).
- “Using Telecom Tech, eCurv Looks to Lower Energy Bills, Raise Money,” Thomas Miller, *Xconomy* (May 4, 2015).
- “Questions swirl around possible rates under a Boulder utility,” Erica Meltzer, *Daily Camera* (January 31, 2015).
- “After SONGS: Forecasting the fate of demand response in California,” Lisa Weinzimer, *Utility Dive* (March 21, 2014).
- “A National ‘Smart Grid’ Remains a Vision with Many Gaps,” Peter Behr, *The New York Times* (October 22, 2009).

LARGE LOAD TARIFF COMPARISON

The table below compares Ameren's and Evergy's large load tariff proposals to prominent large load tariffs that have been adopted and/or proposed by United States investor-owned utilities in 2025. AEP Ohio's Data Center Tariff,[1] AEP I&M's Industrial Power Tariff[2] and NV Energy's Clean Transition Tariff[3] were each approved by their respective commissions earlier this year and are included in the comparison to represent emerging trends in approved large load tariffs across the country. Dominion proposed the new GS-5 tariff for large loads in April 2025, and while it has not yet been approved, it was included in this review due to the scale of large load development in Dominion's service territory.[4] Finally, the Missouri PSC Staff's proposal in Evergy's LLPS proceeding is included given its direct jurisdictional relevance.[5]

This comparison is structured around the three large load tariff objectives described throughout my testimony. Each horizontal panel of the table corresponds to one of these objectives. Within each panel, the rows represent tariff elements featured in one or more of the reviewed tariffs. I have marked the tariffs that include each element with a circle that is color-coded based on the prevalence of the given tariff element across the broader large load tariff landscape (including in jurisdictions not covered in the table). Green circles indicate that a tariff contains an element that I have observed in other tariffs offered in Missouri or by Evergy (besides the newly proposed large load tariffs). For example, Evergy offers a Renewable Energy Program Rider in Kansas, so tariffs with optional clean energy credit riders are coded as green. Gray circles indicate that while an element does not have precedent in other Missouri or Evergy tariffs, there are other jurisdictions where I have observed similar features. Finally, red circles indicate that I have not observed a given element in any other jurisdiction.

[1] Ohio Power Company, AEP Ohio Tariff Book, Schedule DCT, Sheet No. 223.

[2] Indiana Michigan Power Company, AEP Indiana Michigan Tariff Book, Tariff I.P. (Industrial Power), Sheet No. 21.

[3] NV Energy Clean Transition Tariff, Schedule No. CTT, Advice Letter No. 547-E (Nevada Power Company)/ No. 674-E (Sierra Pacific Power Company), Docket Nos. 24-05022 and 24-05023, filed May 1, 2024, approved on March 11, 2025.

[4] Direct Testimony of Timothy P. Stuller, Case No. PUR-2025-00058, filed March 31, 2025.

[5] Missouri Public Service Commission Staff Recommendation, Evergy Missouri Metro / Evergy Missouri West, Case No. Case No. EO-2025-0154.

Comparison of Ameren's and Evergy's Tariffs within the Broader Large Load Tariff Landscape

Rate Features	**Ameren** (Large Power Service)	**Evergy** (Large Load Power Service)	**Ohio Power** (Data Center Tariff)	**Indiana Michigan** (Industrial Power Tariff)	**NV Energy** (Clean Transition Tariff)	**Dominion** (Schedule GS-5)	**MO Staff Recomm-endation**
Mechanisms to Attract New Large Loads							
Optional Clean Energy Credit Riders	🟢	🟢		🟢		🟢	
Mechanism(s) for Customer to Pay for Incremental Clean Generation	🟢	🟢			🟢		
Demand Response or Local Generation Program Eligibility		🟢	🟢	🟢			
Mechanism(s) for Customer to be Credited for Resource Capacity Rights		⚫			⚫		
Other Mechanisms for Customer to Financially Support Clean Technologies	🔴						
Mechanisms to Mitigate Stranded Asset Risk							
Minimum Monthly Bill	🟢	🟢	🟢	🟢		🟢	
Minimum Contract Term	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Termination Fees	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Collateral Requirements	⚫	⚫	⚫	⚫		⚫	⚫
Capacity Reduction Restrictions	⚫	⚫		⚫		⚫	
Charge(s) for Differences between Initial Capacity Requirements and Capacity Requirements in Annual IRP Update							🔴
Charge(s) for Differences between Monthly Projected Peak Demand and Actual Peak Demand							🔴
Mechanisms to Mitigate Cost-Shift Risk*							
Customer Unable to Reduce Total Charges through Economic Development Discounts**	🟢	🟢	*NA*	🟢	*NA*	🟢	🟢
Interim Capacity Charge for Near-Term Capacity Needs	⚫	⚫					⚫
Recovery of Accelerated Infrastructure Investment Costs		⚫					
Recovery of Incremental Cost of Generation Capacity			⚫		⚫		⚫
Charge(s) to Recover Additional Fixed Costs					⚫		⚫
Charge(s) to Recover Costs from RTO Capacity Shortfall Penalties							🔴
Charge(s) to Recover Additional Real-Time Energy and Ancillary Service Costs due to Customers' Differences in Day-Ahead Load Forecasts and Actual Load							🔴
Additional Charge(s) to Offset Economic Development Discounts***							🔴

🟢 **Feature has precedent in other Missouri or Evergy tariffs**

⚫ **Feature has no precedent in other Missouri or Evergy tariffs, but has precedent in another jurisdiction**

🔴 **Feature has no precedent**

Notes:

RTO = Regional Transmission Organization

* This panel refers to mechanisms beyond those to mitigate stranded asset risk.

** *NA* indicates that economic development discounts are not available in a given jurisdiction.

*** This features refers to additional charges not captured in the previous economic development discount exclusion rate feature.

Sources for table:

- Wills Direct Testimony, Schedule SMW-D1, p. 13, Case No. ET-2025-0184
- Direct Testimony of Brad Lutz, p. 33, Case No. EO-2025-0154
- Ohio Power Company, AEP Ohio Tariff Book, Schedule DCT, Sheet No. 223
- Indiana Michigan Power Company, AEP Indiana Michigan Tariff Book, Tariff I.P. (Industrial Power), Sheet No. 21
- NV Energy Clean Transition Tariff, Schedule No. CTT, Advice Letter No. 547-E (Nevada Power Company)/No. 674-E (Sierra Pacific Power Company), Docket Nos. 24-05022 and 24-05023, filed May 1, 2024, approved on March 11, 2025.
- Direct Testimony of Timothy P. Stuller, Case No. PUR-2025-00058, filed March 31, 2025
- Missouri Public Service Commission Staff Recommendation, Evergy Missouri Metro / Evergy Missouri West, Case No. Case No. EO-2025-0154.