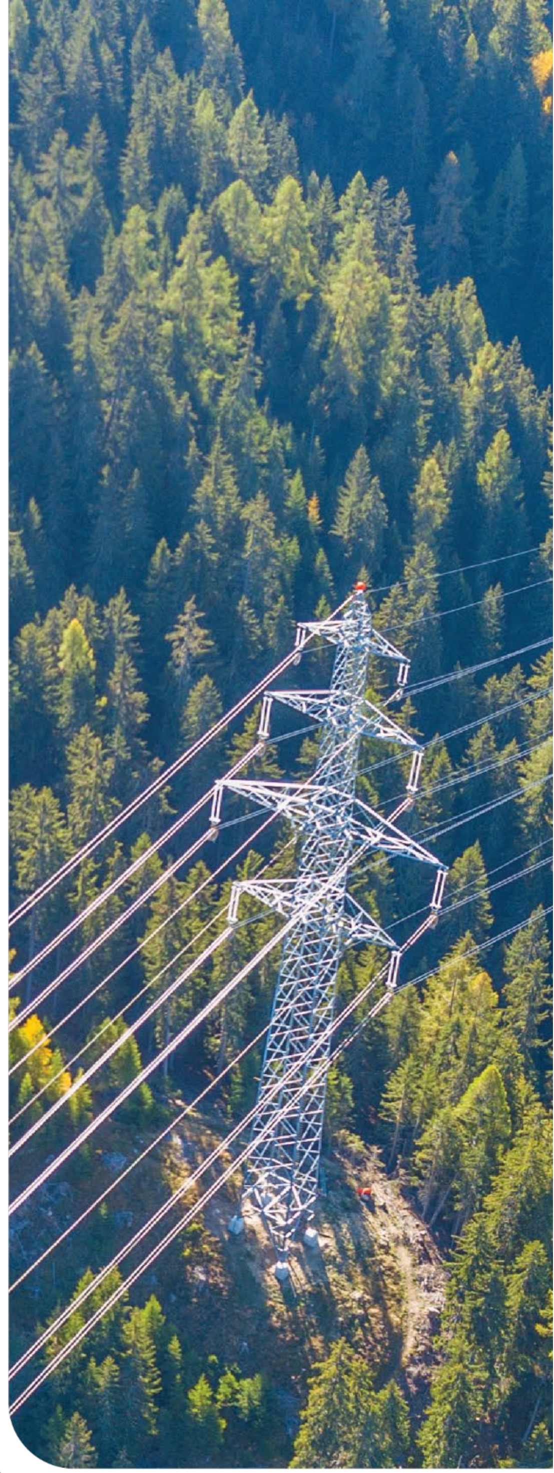
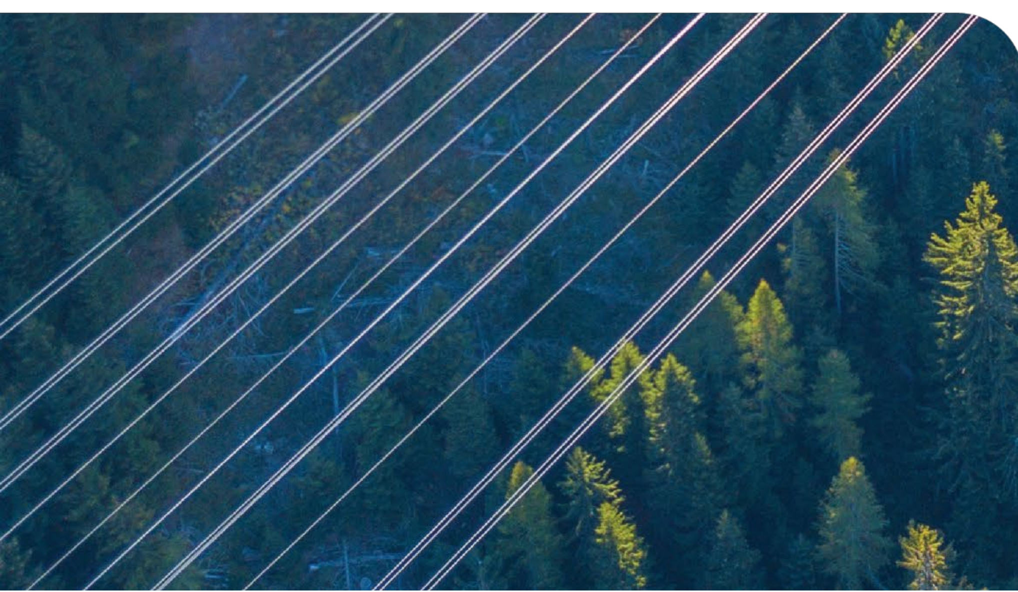
BRIDGING THE LOAD GAP:

A COLLABORATIVE PATH FOR UTILITIES, HYPERSCALERS AND CUSTOMERS





ALLIANCE TO SAVE ENERGY
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INTRODUCTION

Demand-side resources remain some of the most affordable, scalable capacity tools available, yet the nation deploys only a fraction of their potential. In 2023, the Alliance published our paper "Demand is the New Supply" which found that in the United States, demand-side solutions can create up to 200 GW of capacity quicker and for billions of dollars less than traditional generation and infrastructure.[1] Two years later, we need these solutions more than ever. Utilities are confronting unprecedented load growth driven by data centers, electrification, manufacturing, and new housing, while at the same time, customers are struggling with affordability.

Against this backdrop, the Alliance is exploring whether a collaborative model – **one in which a large load funds incremental, utility-directed demand-side management (DSM) investments that include both demand response (DR) and energy efficiency (EE) programs** – could unlock new capacity, reduce pressure on infrastructure timelines, and support improved affordability and resilience for customers.

To test the concept, which we have named the Bring Your Own Distributed Capacity (BYODC) model, the Alliance met with utilities across a range of regulatory environments, planning structures, and system conditions. While perspectives differed, several themes emerged:

- **Location and timing of capacity matter more than systemwide averages.**
- **Utilities are actively searching for bridge strategies** that offer near-term capacity relief while long-term upgrades are built.
- **Verification and accreditation must be robust** for any model to work.
- **Customer protection and fairness are non-negotiable.**

This paper summarizes what the Alliance has learned so far. It identifies potential benefits for customers, utilities, and large loads, and highlights the operational and regulatory questions that deserve continued, collaborative exploration. We do not present a single fully formed model, nor do we assume it will work in every jurisdiction. Instead, this paper opens a constructive inquiry – consistent with the Alliance's role as

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[1] Alliance to Save Energy. (2023). *Demand is the new supply: Affordable grid stability through demand-side solutions* [White paper]. https://www.ase.org/sites/ase.org/files/demand_is_the_new_supply-_white_paper__0.pdf

a convener – into whether and under what conditions this approach could support reliability, affordability, and responsible growth on a rapidly evolving grid.

CONCEPT OVERVIEW

The BYODC model is a commercial framework that requires collaboration between a large load, a utility, customers of the utility, and regulators to come to fruition.

In the BYODC model, a large load customer (e.g., a hyperscaler) seeking to add additional load to its existing facility and the local utility collaboratively design a portfolio of incremental investments to create capacity headroom. The large load customer then commits capital either into the utility's existing suite of commercial and residential distributed energy resource and/or energy efficiency solutions to support expanded reach, or toward the development of new demand-side management programs. The capital to fund this incremental portfolio is then deployed by the utility or a third-party implementer to utility customers. In return for this investment, the large load receives a capacity credit for the independently verified incremental capacity increases, which may represent the entirety or a portion of the large load's demand. This could enable an expedited position in the interconnection queue or a greater level of load reservation in a quicker timeline at the large load's existing site.

BUILDING THE FRAMEWORK: PROPOSED STEPS IN THE CONCEPT

1. **Geographically- and Technology-targeted Solution Portfolio**
   The utility and the large customer collaboratively design a portfolio of solutions (e.g. EE, DR, managed EV charging, battery deployment). These programs are not system-wide investments; the utility must be empowered to prioritize resources that offer the greatest value to the **specific transmission or generation constraint** associated with expected load growth.

2. **Risk Transfer and Capital Commitment**
   The large load customer commits to capital payments to fund the incremental deployment of these programs, shifting the early development and capital risk away from the general rate base.[2]

[2] *Note: The risk associated with capacity accreditation is introduced later in the paper, as part of the accreditation section.*

3. **Targeted Deployment**
   Investments from large load partners are directed into the portfolio of demand-side solutions according to a defined tariff or contract structure. This structure is publicly filed and available to all large loads to avoid preferential treatment. The tariff or contract provides for the utility to achieve specific operational or organizational goals, such as alleviating locational constraints near the large load or prioritizing investments toward hard-to-reach or low- and moderate-income (LMI) customers to ensure equitable benefits.

4. **Capacity Accreditation**
   The resulting capacity savings would be independently verified to ensure the resources are real, effective, and can be formally accredited by the utility, the regulator, and, where necessary, the Regional Transmission Organization (RTO).

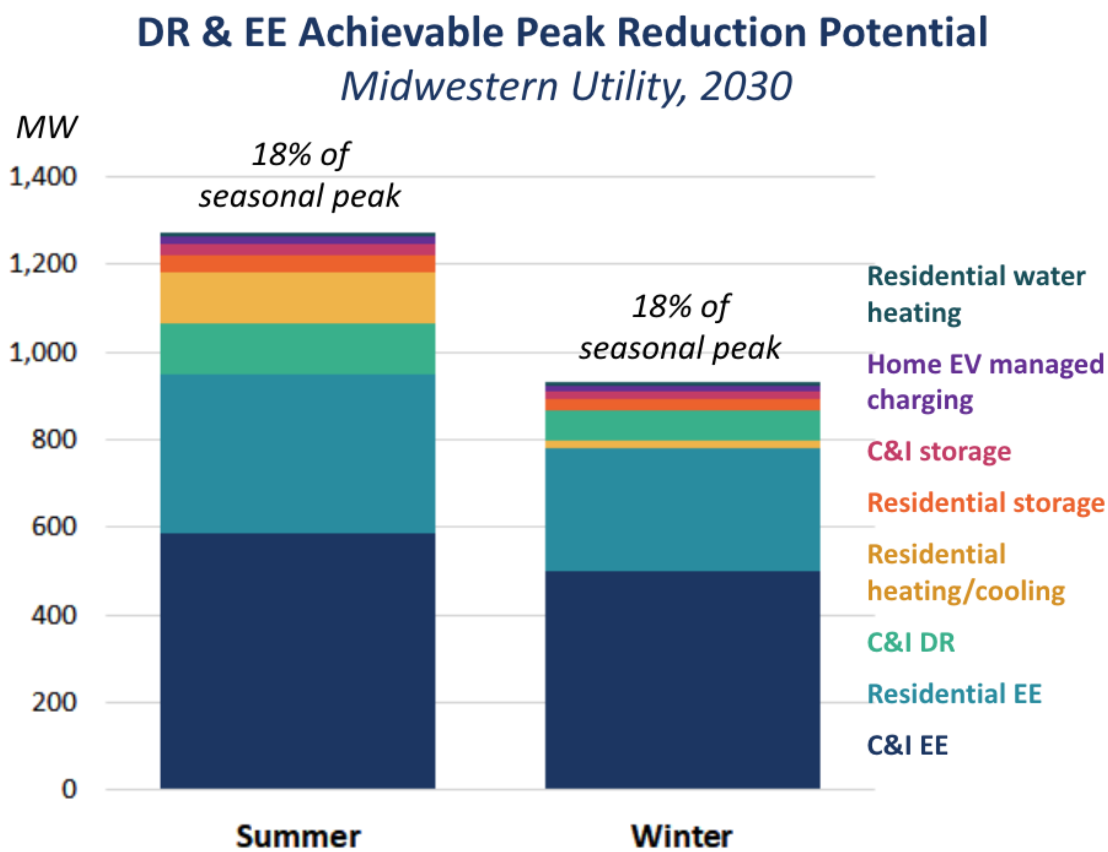
5. **System and Site Benefits**
   In return for investing upfront capital, the large load receives a defined commercial benefit, such as an increased capacity reservation on a shorter timeline, creating the investable certainty they require. The utility benefits from improved distribution system operations and customer satisfaction, as well as the ability to serve more load sooner, due to the quicker availability of capacity.

The program creates a triple-win for utilities seeking capacity certainty, large loads looking to decrease interconnection timelines, and customers who are sensitive to rising energy costs.

BACKGROUND

A growing body of research and policy models support the view of large loads not just as consumers, but as critical partners in capacity creation.

Foundational analysis from The Brattle Group for a single representative midwestern utility system demonstrates the peak reduction potential for demand-side resources, finding that a curated portfolio of demand response (DR) and energy efficiency (EE) measures could meet up to 18% of the utility's 2030 seasonal peak load[3].

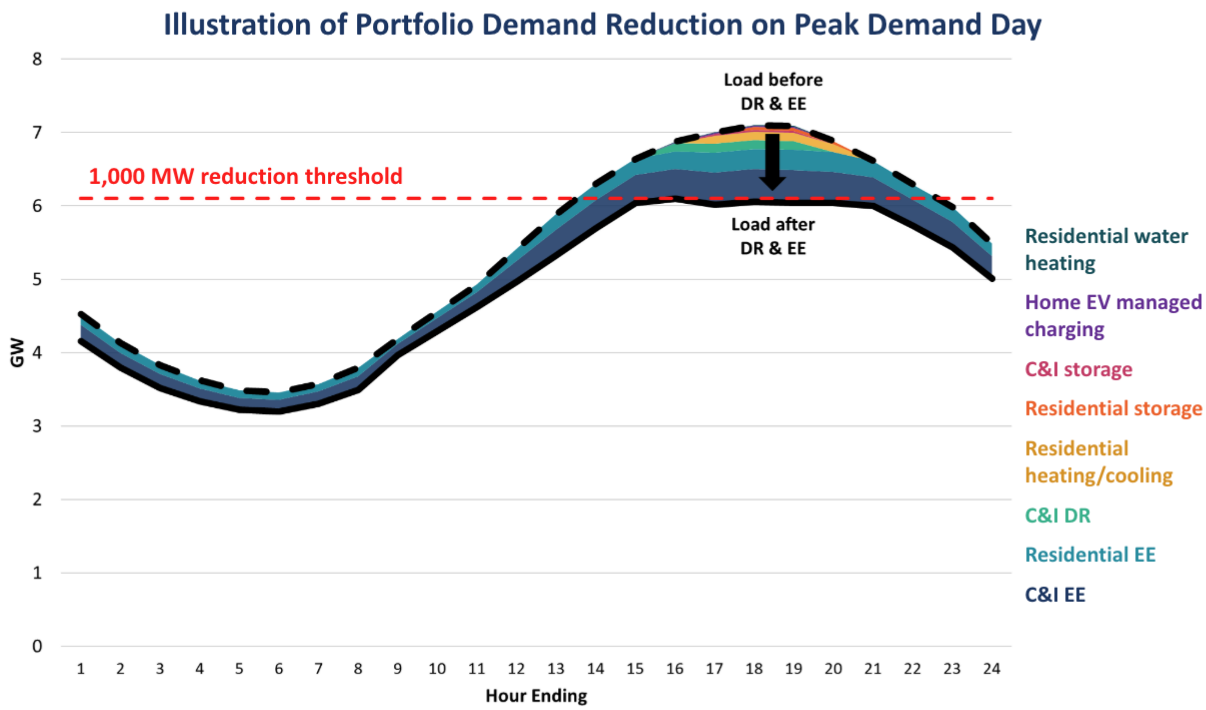


Note: Potential MW reported based on accredited MWs calculated as the average reduction during the top 65 system gross load hours per season. MISO experiences 65 resource adequacy hours per season, and we are using that quantity as a proxy. For simplicity we illustrate potential in two seasons as opposed to MISO's four-season construct.

Crucially, significant capacity remains available even under stress. When assessed against the most challenging system conditions of the past decade, the results showed that the portfolio has the capability to reliably reduce system peak demand by approximately 1 GW across all necessary hours of the year, representing 14% of the utility's 2030 seasonal peak load. These results confirm that demand-side solutions, even when accounting for load building and customer behavior, can function as a

[3] Findings from a study by Ryan Hledik, Kate Peters, Sophie Edelman, and Alison Savage Brooks (The Brattle Group) on behalf of Google that quantified the cost-effective DR and EE potential for a midwestern utility for select measures in 2030.

planning-grade tool to enhance reliability, serving as a critical bridge strategy while long-term infrastructure projects are developed.



Note: For simplicity, load building associated with DR programs has been netted out of EE savings in the figure.

This approach can also directly address the critical challenge of affordability. The analysis revealed that the average cost of the entire DR and EE portfolio – net of the energy value it provides – for this individual utility is approximately $33/kW-year, which is less than half the cost of recently observed capacity market prices in the Midcontinent Independent System Operator (MISO) territory and a fraction of the cost of new thermal generation.

Complementing this utility-specific analysis, broader market research highlights the significant potential impact of residential electrification. Rewiring America's report *Homegrown Energy*[4] found that household upgrades like heat pumps, rooftop solar, and batteries could collectively provide enough capacity to meet 100% of the projected electricity demand growth from data centers. Rewiring America asserts that

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[4] Wyent, C., Verma, M., & Kanj, W. (2025, September 18). *Homegrown energy: How household upgrades can meet 100 percent of data center demand growth* [White paper]. Rewiring America. https://www.rewiringamerica.org/research/homegrown-energy-report-ai-data-center-demand

if hyperscalers commit to paying for a portion of the upfront cost of these residential upgrades, they could secure grid capacity at a cost comparable to building new fossil-fuel generation.

Further supporting the reframing of large loads as active system participants, a report from The Rocky Mountain Institute (RMI) report *How Virtual Power Plants Can Help the United States Win the AI Race*[5] identifies virtual power plants (VPPs) as a solution that could meet up to 20% of US peak demand in 2030, reaching a market size that is on par with projected data center growth. RMI's research details three commercial frameworks between utilities/market operators, large loads, and VPPs to help accelerate the deployment of VPPs and, as a result, large loads.

Similarly, the Piclo *"Clubbing"* Model[6] proposes that data centers should move beyond consideration of creating flexibility internally and instead procure resource adequacy from local VPPs. This "Flex-as-Firmness" strategy uses localized DERs to directly relieve the specific feeder or substation constraints that can delay new interconnections, effectively meaning that the large load is not simply a utility customer, but is also a partner in local reliability.

In the regulatory space, numerous states are already exploring the nexus between large customer investment and energy goals that serve as precedents for channeling large customer capital into system-wide energy solutions:

- **In Minnesota**, HF16[7] provides large-scale data centers with sales and use tax exemptions in exchange for an annual fee structure dedicated to energy conservation and weatherization programs.
- **In Kansas**, Evergy and the Kansas Corporation Commission have signed a Joint Settlement Agreement[8] for a new large load tariff that creates a Clean

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[5] Cohen, J., Shwisberg, L., & Dyson, M. (2025, November 6). *How virtual power plants can help the United States win the AI race*. The Rocky Mountain Institute. https://rmi.org/how-virtual-power-plants-can-help-the-united-states-win-the-ai-race

[6] Johnston, J. (2025, August 20). Everyone's talking about data center flex, nobody's talking about clubbing. *Piclo blog*. https://www.piclo.com/blog/everyones-talking-about-data-center-flex-nobodys-talking-about-clubbing

[7] H.F. 16, 94th Minn. Leg. (2025). https://www.revisor.mn.gov/bills/94/2025/1/HF/16/versions/0/pdf/

[8] Evergy Kansas Central, Inc. (2025, August 18). *Application of Evergy Kansas Central, Inc., Evergy Kansas South, Inc. and Evergy Metro, Inc. d/b/a Evergy Kansas Metro for an*

Energy Choice Rider, which enables customers to directly support the procurement of distributed energy resources, including demand-side management, energy efficiency, and battery storage.

- **In Nevada**, the Public Utilities Commission approved a partnership between NV Energy and Google[9] to bring new, clean capacity under the Clean Transition Tariff. In a separate proceeding, Google proposed a Large Customer Offsite DSM Program for incorporation in NV Energy's latest Integrated Resource Plan docket[10]. While the Nevada Public Utilities Commission did not approve the proposal, it encouraged Google to continue to work with NV Energy to refine its proposal for future consideration, indicating an openness to considering this type of program in the future.

METHODOLOGY

To move beyond theoretical modeling, the Alliance conducted a series of in-depth interviews with utility stakeholders over several months to pressure-test the feasibility of large loads funding offsite demand-side solutions.

We engaged **nine investor-owned and public power utilities**, representing a broad cross-section of the U.S. energy market.

The study cohort included:

- **Geographic Breadth**
  Participants spanned the West/Southwest, Southeast, Midwest, and Northeast.

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accounting order to defer and amortize certain costs related to the development of a data center coalition [Docket No. 24-EKME-551-GIE]. Kansas Corporation Commission. https://estar.kcc.ks.gov/estar/ViewFile.aspx/S202508181202168915.pdf?Id=9e907841-85a6-49d2-8321-59acf777cfd6

[9] Peterson Corio, A., & Kobor, B. (2024, June 11). *How we're working with utilities to create a new model for clean energy*. Google Blog. https://blog.google/feed/nevada-clean-energy/

[10] Public Utilities Commission of Nevada. (2025, March 11). *Application of Nevada Power Company d/b/a NV Energy, filed under Advice Letter No. 547, to implement Clean Transition Tariff Schedule No. CTT to allow eligible customers to receive bundled electric service from new clean energy resources* [Order, Docket No. 24-05022]. https://ob.nv.gov/puc/api/Document/AYLdOvEpSBLA76HTzSdCHUx%C3%81Seb9ivY5bgSFeDhGB8Auoygjzgc4WQULdsSKA8mI8fCvDdX93cakTnja60P0%C3%811M%3D/?OverlayMode=View

- **Diverse Regulatory Structures**
  The group included utilities operating in vertically integrated markets (e.g., the Carolinas, Arizona, Georgia) as well as those in restructured ISO/RTO markets (e.g., PJM, NYISO, MISO, SPP).
- **Senior-Level Expertise**
  Interviews were conducted with leadership across Resource Planning, Transmission Planning, Customer Solutions, and Regulatory Affairs to reflect the technical, operational, and political realities shaping utility decision-making.

To ensure comparability across perspectives, interviews followed a semi-structured format that explored both operational considerations (e.g., DR saturation levels, winter vs. summer peak constraints, effective load carrying capability limitations) and institutional factors (e.g., regulatory posture, interconnection dynamics, cost-causation concerns).

Across utilities, several clear themes consistently emerged around regulatory feasibility, potential implementation pathways, and the limits of data-center flexibility.

KEY INTERVIEW FINDINGS

The Alliance's engagement with utility stakeholders yielded key themes and essential considerations for utilities, regulators, and large loads as they collaborate to bring the concept to market.

1. THE BYODC MODEL COULD OFFER SIGNIFICANT BENEFITS TO CUSTOMERS AND UTILITIES

The BYODC model improves affordability for customers by allowing utilities to defer costly capital investments while simultaneously enabling adoption of solutions that reduce home energy costs. For utilities, it provides a flexible risk-management tool to handle rapid growth, bridging the gap created by the long lead times of traditional infrastructure projects. Ultimately, this model helps elevate demand-side resources into location-specific, planning-grade assets that contribute to resolving grid constraints and improving overall grid reliability.

2. THE FRAMEWORK MUST ALIGN WITH CORE UTILITY BUSINESS GOALS

Given that the traditional utility business model relies on generating profits through capital investment and recovering costs through rates, it seems counterintuitive for a utility to embrace a model that initially appears to displace capital investment in new infrastructure. However, the proposed concept directly supports crucial utility goals[11]: securing high-value large loads within their territory, enhancing grid reliability, improving customer affordability, and in many cases, advancing carbon-free energy goals.

When applied strategically across a utility's territory, the Alliance's proposed framework improves the attractiveness of a utility's territory to large load customers by enabling utilities to quickly integrate major new facilities without the need for lengthy, capital-intensive infrastructure build-outs. On the customer side, the concept can also address growing affordability concerns by spreading existing system costs across a significantly larger customer base due to the addition of the new large load without introducing net new costs that are passed on to customers. Lastly, these investments have the added benefits of enhancing grid reliability by helping manage peak demand and congestion challenges.

3. CATERED PROGRAM DESIGN IS REQUIRED FOR DIVERSE UTILITY SYSTEMS AND MARKETS

A clear theme that emerged from the Alliance's research is that a singular, prescriptive demand-side portfolio mix cannot work across diverse regulatory environments, utility structures, and climatic needs.

The Alliance proposes a framework over a fixed blueprint. The framework establishes the foundational principles—like the requirement for incremental funding and capacity accreditation—but empowers the utility and large customer to collaboratively design the program portfolio. This design freedom allows them to prioritize high-value resources and to identify and pursue the right mix of energy

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[11]Allsup, M. (2025, September 30). *Inside the first 'bring your own' VPP program for data centers*. Latitude Media. https://www.latitudemedia.com/news/inside-the-first-bring-your-own-vpp-program-for-data-centers/

efficiency, managed EV charging, battery storage, or other demand-side solutions that best meet their specific system and locational needs. Beyond investing in the technology solutions themselves, the Alliance's research indicated utility interest in building a framework that allows for investment specifically targeted at driving customer enrollment through program marketing and customer education, ultimately helping to shorten the adoption cycle.

4. TIMELINES MUST DELIVER SUFFICIENT NEAR-TERM CAPACITY

Utility stakeholders identified two key timing considerations that utilities and large loads will need to consider when pursuing this framework.

First, in order for the concept to have a measurable impact on speed to power and help ensure that generation sources for new large loads are aligned with hyperscaler and/or state goals, there must be sufficient adoption of demand-side solutions on a relevant time scale, relative to alternative capacity resources.

While there may be a broad suite of demand-side solutions available to implement in a way that is tailored to individual utility territories, it can take significant time for utility customers to adopt these solutions at a meaningful scale. A 2022 study[12] from the National Renewable Energy Lab found that the overall adoption process for residential solar typically takes 10-16 weeks from contract signing to receiving permission to operate. This estimate does not include the customer acquisition process, which can add additional weeks or months to the process. While other DSM solutions may have shorter adoption cycles, speed-to-adoption is still a significant factor that must be weighed by both planning and commercial teams to deeply understand the timeline by which supplemental capacity may become available.

Adding complexity to this consideration, the Alliance's research revealed that in certain utility territories, the residential housing stock requires significant investment in pre-weatherization activities (roof or foundation repair, mold/asbestos abatement, etc.) to prepare homes for even basic weatherization improvements. This reduces the number of homes that can participate in the BYODC model in a given time frame,

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[12] Cruce, J. R., O'Shaughnessy, E., Harmon, J., Geiger, J., & Cook, J. J. (2022, September). *Residential solar adoption timelines and impacts from the COVID-19 pandemic* (Report No. NREL/TP-6A20-83529). National Renewable Energy Laboratory. https://docs.nrel.gov/docs/fy22osti/83529.pdf

ultimately lengthening the time required to aggregate meaningful capacity from this approach.

Second, the Alliance heard from some utilities that this model could act as a "bridge to capacity" during the ramp up periods for new large loads. In this scenario, large loads could potentially align build-out with best estimates of adoption cycles for DERs, using DERs as a proportionally larger amount of demand while they add incremental on-site resources or utility-scale generation, which take longer to bring online.

This creates a question of what the appropriate length is for an agreement between the large load and utility, as well as what the implications are for customers once the agreement ends. For example, customers that enroll in demand response programs as a result of incremental investments from large loads may wish to continue participating after the incremental bridge capacity is no longer needed. Depending on the investment framework agreed to with the large load, utilities may need to plan for ongoing funding of those incentives after agreements with large loads expire.

5. UTILITIES WILL REQUIRE TIGHT COORDINATION, BOTH INTERNALLY AND EXTERNALLY

Success requires broad internal and external alignment, starting with getting buy-in from the right utility teams. Through conversations with a wide range of utilities, the Alliance identified at least five groups within a utility that will require buy-in, including: generation, transmission, and distribution planning; customer teams; commercial operations; and regulatory teams. Coordination between transmission and distribution planning will be of particular importance, given that the portfolio of DSM solutions will be applied at distribution level while large loads receive transmission level service.

Additionally, utilities will rely on a network of implementers and service providers that can efficiently and effectively shepherd customers through the adoption cycle, from initial interest and customer education to technology installation and completion of any closeout documentation with the utility. Utilities in some jurisdictions are already leveraging specific "energy navigator" roles focused on educating customers on the available portfolio of solutions, helping them weigh the benefits of each and create a tailored approach to adoption.

6. ACCURATE CAPACITY ACCREDITATION IS REQUIRED TO JUSTIFY DEFERRED INFRASTRUCTURE INVESTMENTS

Another critical consideration is accurate capacity accreditation of demand-side investments so that any contribution can legitimately offset the incremental peak demand driven by a large load. Utilities must demonstrate to regulators that these resources are incremental, verifiable, and reliable, and that the resulting capacity reductions are sufficient to justify avoided or deferred infrastructure investments.

Capacity accreditation is not a new problem. Energy efficiency evaluators and innovative companies such as WattCarbon, Recurve, EnergyHub, Piclo, and Voltus already provide specialized components of the capacity accreditation toolkit, including meter-based M&V, fleet performance analytics, and flexibility procurement/dispatch tools. With these options, utilities must select the approach that aligns with their planning standards, operational constraints, and regulatory requirements, ensuring that the methodology is technically defensible and can be integrated into existing workflows.

7. THE MECHANISM FOR TRANSFERRING CAPACITY MUST DEMONSTRATE COMMERCIAL VALUE AND EQUITY

Once capacity is verified through an established accreditation framework, there must be a mechanism for large load customers to claim a defined commercial benefit, such as an expedited interconnection position, for the headroom created through their offsite investments. Regulators will need to be comfortable with the structure, ensuring that any implications on customers are understood, that costs are not shifted from large loads to other customers, and that all participating large loads are treated equitably, preventing any participant from gaining disproportionate advantage (such as the ability to move farther ahead in the interconnection process than another).

These mechanisms could take the form of bilateral contracts between utilities and large loads, and could potentially also involve third-party aggregators, as outlined by RMI[13].

[13] Cohen, J., Shwisberg, L., & Dyson, M. (2025, November 6). *How virtual power plants can help the United States win the AI race*. The Rocky Mountain Institute. https://rmi.org/how-virtual-power-plants-can-help-the-united-states-win-the-ai-race

WHAT'S NEXT

Pairing large load utility customers with demand-side solutions represents one of the greatest capacity-building opportunities of this decade. However, putting the BYODC model into practice requires extensive collaboration between utilities, large loads, and regulators to identify the policy and regulatory details that can enable the concept to achieve maximum impact. Key questions still remain, such as:

- What does an inclusive participation model that addresses the potential for any unfair preferential treatment look like?
- What are the appropriate funding and capacity credit mechanisms?
- How should the BYODC program be incorporated into capacity planning?
- In what markets or jurisdictions will the BYODC concept work best?

The Alliance is committed to working as a **convener and thought leader** to bring together utilities, regulators, grid operators, large customers, and other stakeholders to ensure the opportunity is realized in ways that balance customer needs, utility responsibilities, and system benefits. This is not just about efficiency — it is about building a more affordable, reliable, and resilient energy future.

ABOUT ALLIANCE TO SAVE ENERGY

Founded in 1977 by Sens. Charles H. Percy (R-Ill.) and Hubert Humphrey (D-Minn.), the Alliance to Save Energy was launched following the oil embargo of the 1970s – a pivotal time in our nation's history that exposed fundamental weaknesses in our nation's economic security and challenged us to develop innovative energy solutions. Decades later, it continues its mission to create a more energy-productive world.

ABOUT THE AD HOC GROUP

The Ad Hoc Group (AHG) is a specialized consulting firm that accelerates growth for start-ups and innovative companies operating in a complex and highly-regulated energy sector. We source opportunities, advance deals, and shape regulations to ensure that our clients scale with the urgency that today's energy and climate challenges demand. AHG supported the Alliance to Save Energy in researching, synthesizing findings, and producing this report.

ACKNOWLEDGMENTS

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