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Policy Brief

Community-Integrated Virtual Power Plants

State Policy Considerations for Aligning Large Load Growth with Grid and Community Benefits

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EXECUTIVE SUMMARY

Rapid growth in electricity demand from data centers and other large new loads is straining the grid, raising reliability and resilience concerns, and increasing cost pressures on customers.

Virtual power plants (VPPs) offer a fast and cost-effective solution. A VPP links many distributed energy resources (DERs) located in homes and businesses, such as batteries, smart thermostats, water heaters, electric vehicles, and solar panels paired with storage. Coordinated together, these resources can provide demand flexibility, generate electricity, store energy, or deliver other energy services. Much like a conventional power plant, a well-designed VPP can help to balance electricity demand and supply and provide utility-scale grid services. VPPs are not new, but data centers can provide momentum and resources to accelerate their deployment. In this way, a major source of load growth can also become a source of support for demand-side resources, helping VPPs scale.

Some hyperscale data centers have already taken notice and acted. For example, one emerging pathway is for data centers to voluntarily fund or procure a portfolio of demand-side resources designed to pair credible grid value with tangible community benefits. In addition to potential direct benefits to the community, such as lower bills, home upgrades, and improved resilience, this practice may in turn give data centers faster access to power and greater public acceptance. This route has potential, but actualizing it requires deliberate design.

For state policymakers considering such an approach, this brief develops a *community-integrated VPP framework*, applies it through a five-question checklist, and offers four policy recommendations.

Community-Integrated VPP Framework

This community-integrated VPP framework explicitly links data centers' interest in speed-to-power with investment in communities, a connection illustrated later in the brief by emerging initiatives involving hyperscalers across multiple states. The framework offers a flexible starting point for designing and assessing data-center-supported portfolios built around VPP-coordinated flexibility and durable energy efficiency. It distinguishes community benefits (such as lower bills) from grid value (such as lower peak demand), maps beneficiaries, and identifies points of connection for integrating community benefits with grid value in portfolio design.

Five-Question Checklist

The checklist guides the further decisions needed to tailor the framework's elements to context and is organized around five questions:

1. What is the portfolio intended to deliver, and to whom?
2. What portfolio can deliver those outcomes at sufficient scale and on the needed timeline?
3. Can that portfolio perform when and where needed?
4. How will delivery be demonstrated?
5. Who is accountable, and who bears the risk?

Recommendations

If policymakers wish to pursue this pathway, this brief identifies four key policy interventions to support community-integrated VPPs:

1. Build community benefits into the design from the start.
2. Align expectations for grid value with what the data-center-supported portfolio can credibly deliver.
3. Reward data centers only in proportion to proven grid value.
4. Hold data centers to a binding commitment, including what happens if things go wrong.

INTRODUCTION

US electricity demand is rising rapidly. This demand growth—driven largely by data center development, manufacturing expansion, and broader electrification—is straining the grid, raising reliability and resilience concerns, and putting upward pressure on customer rates. Virtual power plants (VPPs) are among the tools available to meet these challenges. They aggregate distributed energy resources (DERs)—small-scale assets located on or near end-use sites that can provide demand flexibility, generate electricity, store energy, or deliver other energy services—into a coordinated resource capable of balancing electricity demand and supply and providing utility-scale grid services (Downing et al. 2023), with the potential to lower system costs and deliver affordability benefits to customers (Hledik and Graham 2026). By drawing on existing resources and infrastructure, some VPP programs can be deployed at scale within months (Razdan et al. 2025). That speed is paired with an established technology base: VPPs have operated using commercially available technologies for years (Downing et al. 2023). The near-term challenge is therefore not invention, but disciplined scaling: expanding VPP deployment quickly and credibly enough to meet pressing grid needs and support customer affordability.

A Potential Alignment of Needs

The scaling question looks different once data centers enter the picture, creating the potential for a new alignment of needs across the electricity system:

- **Data centers** want faster access to power and realistic ways to address the grid and rate impacts associated with serving that demand. They are also keen to earn robust acceptance in host communities, as public sentiment grows more unfavorable and local opposition leads to an increasing number of project delays and cancellations (Kennedy 2026; Hall et al. 2026).
- The **aggregators and utility-run programs** that deliver VPPs need scale and more durable compensation—bankable revenue for aggregators, reliable cost recovery for utility programs—to grow beyond fragmented deployment (Razdan et al. 2025).
- **Utilities**, **grid operators** where relevant, and **regulators** need flexible tools to manage reliability and affordability without shifting undue costs or risks onto existing customers (NARUC 2026).

- Meanwhile, **communities hosting new data centers** or affected by the grid infrastructure required to serve them need tangible benefits associated with that expansion.

These needs do not automatically align, and meeting one does not ensure that the others are met. Faster access to power for a data center, for instance, does not ensure that communities receive the tangible benefits they need. Aligning the interests of relevant stakeholders is possible, but only through deliberate design. Arrangements in which data centers fund or procure demand-side resources offer one such opportunity; the supported resource portfolios can help scale VPP deployment, deliver grid value and, if deliberately designed to do so, provide tangible community benefits (Cohen et al. 2025; Rinaldi and Presley 2025). Data centers' participation in such arrangements is voluntary, but their contribution can be catalytic, enabling deployment at a scale that expands what these resources can deliver.

What those portfolios deliver can also serve data centers' own needs, encouraging their participation. Credible delivery of grid value relevant to serving the data center can help create a faster path to power where regulatory or service treatment reflects that value. Community acceptance follows a different logic: where portfolios deliver tangible benefits that host communities value, those benefits can contribute to the acceptance data centers need, but they cannot be purchased or substituted for addressing other community concerns. Neither outcome follows from data centers' participation alone—both depend on how the arrangements are designed and whether the intended outcomes are delivered.

Early Momentum and the Gap It Reveals

Emerging proposals and early practices show momentum, but they also point to a design gap. Multiple pathways through which data centers can help scale VPP deployment and demand-side portfolios are taking shape (Cohen et al. 2026).

In Nevada, Google proposed a Large Customer Offsite Demand-Side Management (DSM) Program during NV Energy's 2024 integrated resource planning proceeding, under which qualifying large-load customers could fund expanded utility demand-side programs in exchange for bill credits tied to the resulting capacity savings.[1] The state commission declined to adopt it at that time for lack of supporting detail and evidence, while encouraging further development.[2] In response, NV Energy and Google have continued developing the concept with stakeholders and are working toward a pilot proposal for a future DSM update or compliance filing.[3] In PJM, Google and VPP operator Voltus have announced an expanded agreement to develop a Google-funded, 1-gigawatt VPP. Voltus will aggregate flexible capacity from homes and businesses to help temporarily reduce electricity demand during peak periods and support grid reliability. Participating customers will receive financial benefits, including bill savings and cash payments (Google 2026).

1 Joint Application of Nevada Power Co. d/b/a NV Energy & Sierra Pacific Power Co. d/b/a NV Energy for Approval of their 2025–2044 Triennial Integrated Resource Plan & 2025-2027 Energy Supply Plan, Docket No. 24-05041, Order ¶¶ 374-77, at 136-38 (Nev. Pub. Utils. Comm'n Dec. 27, 2024).

2 *Id.* ¶ 380, at 139.

3 Nevada Power Co. d/b/a as NV Energy & Sierra Pacific Power Co. d/b/a NV Energy, Narrative—Demand Side Management Plan § 1.A.4, at 4–6, vol. 33, in Joint Application for Approval of the 2027-2046 Integrated Resource Plan, 2027-2029 Action Plan, and 2027-2029 Energy Supply Plan, Docket No. 26-05007 (Nev. Pub. Utils. Comm'n filed May 6, 2026).

In California, Google is fully funding SHARE (Smart Home Assets for Reliability and Efficiency), a VPP proof-of-concept led by Pacific Gas and Electric Company (PG&E) that brings together Rewiring America and multiple technology partners to enroll nearly 21,000 existing flexible home energy devices and provide hundreds of discounted home energy upgrades, with the stated goals of expanding regional grid capacity, supporting reliability, and improving affordability, comfort, and resilience for participating households (PG&E 2026).

These examples illustrate multiple ways in which the entities involved and the roles they perform vary. This variation shows why no single arrangement should be presumed suitable for every market, utility structure, or regulatory context. Yet even a well-matched arrangement does not, on its own, ensure that grid value and community benefits travel together. For example, a portfolio may deliver energy or capacity value across a wide service territory without providing targeted benefits to communities hosting data centers or affected by the associated grid infrastructure. Customers, including those in host or affected communities, may enroll their eligible demand-side resources, but enrollment alone is not enough to make community benefits explicit, measurable, or backed by clear accountability.

Addressing the Design Gap

This brief develops a community-integrated VPP framework for state policymakers to evaluate whether—and under what conditions—data-center-supported portfolios can pair secured community benefits with achievable grid value. It defines the framework's core elements and applies them through a five-question checklist covering outcomes and beneficiaries, portfolio scale and timing, operational and locational credibility, evidence of delivery, and accountability and risk allocation. Together, the framework and checklist provide a disciplined basis for assessing different arrangements without presuming that one model will fit every context.

While this brief aims primarily to inform state policy and regulatory decisions, we recognize the challenges data center development presents for local officials, as reflected in local governments' increasing adoption of temporary moratoria to allow time to assess those challenges (Aton 2026). Although this brief does not address the full range of issues under review during such pauses, it may offer an additional perspective on data center development for consideration by local officials.

THE COMMUNITY-INTEGRATED VPP FRAMEWORK

Baseline Architecture: What the Framework Is

The community-integrated VPP framework is a structured but adaptable baseline for designing and assessing data-center-supported resource portfolios. It is not limited to the VPP aggregation itself, does not prescribe a single commercial or regulatory model, and does not denote a certification or designation. Rather, the framework provides a starting point that can be tailored to different community and grid needs, utility arrangements, market structures, and regulatory contexts.

The framework builds on arrangements in which data centers fund or procure DERs. It also goes further by treating a data center's support as extending beyond financing or procurement. The supporting data center should therefore bear a clearly defined and enforceable share of accountability for delivery of the promised grid performance and community benefits.

Within this arrangement, the portfolio is organized around two complementary resource components: dispatchable flexibility resources and durable energy efficiency resources. The flexibility component draws on DERs and flexible demand that can be aggregated and coordinated through a VPP to provide grid services in response to system needs. The efficiency component includes measures that produce lasting reductions in energy use, such as weatherization, building envelope improvements, and high-efficiency equipment.

The mix of flexibility and efficiency resources is not fixed. It should be tailored to the community benefits and grid outcomes sought, the available resource base, and the locational and operational conditions under which those outcomes can be actually delivered.

Two Outcome Categories: Defining Community Benefits and Grid Value

Community benefits are direct, identifiable outcomes delivered through the portfolio to participating customers and institutions, communities affected by data-center development or associated grid infrastructure, or both. Depending on design choices, they may include bill savings, participation payments, home or building upgrades, resilience and comfort improvements, and local economic benefits.

These outcomes should not be treated as incidental spillovers from a portfolio designed primarily for grid purposes. A community-benefit claim should identify who benefits, what is delivered, through which resource or mechanism, how benefits are measured and distributed, and who is accountable if delivery falls short. Participation in the portfolio or geographic proximity may create a channel for benefit, but neither alone establishes that a community benefit has been delivered.

Benefits that accrue broadly across the ratepayer base are not treated here as direct community benefits. For example, where portfolio resources avoid or defer transmission or distribution investment, they may reduce system costs that would otherwise be recovered through customer rates. Those broader ratepayer benefits are still important, but they are analytically distinct from targeted benefits delivered to identified participants or affected communities. Table 1 summarizes the community benefits examined in this framework and illustrates how each resource component may contribute.

Grid value refers to system-facing outcomes that can be credibly attributed to portfolio performance. Depending on its design and capabilities, a portfolio may reduce or shift energy use, support resource adequacy, relieve transmission or distribution constraints and, where sufficient, avoid or defer associated infrastructure investment, or provide grid-balancing services.

Table 2 outlines the types of grid value examined in this framework, the ways each resource component may contribute, and the locational and technical considerations associated with each type of value.

The evidence needed to support a grid-value claim depends on the outcome sought. Energy and capacity claims may, in some contexts, be demonstrated across broader geographic areas, while claims of transmission or distribution value tied to a particular constraint require evidence that portfolio resources are electrically relevant to that constraint (Frick et al. 2021). Grid-balancing claims depend especially on time-specific operational capabilities such as responsiveness, telemetry, and dispatch performance (EnergyHub 2026). Supporting

Table 1. Community Benefits and Resource Contributions

Community Benefit	Description	Resource Contribution
Bill savings	Lower energy bills or energy costs for participating customers and institutions through reduced consumption, load shifting, or DER use.	**Efficiency resources** reduce total energy use over time; **dispatchable VPP resources** may lower bills by shifting consumption or discharging during higher-cost periods, depending on applicable rates and program design.
Participation payments	Direct compensation for enrollment, availability, dispatch, or verified performance in VPP, demand-response, or managed-load programs.	Primarily provided through **dispatchable VPP resources**, including controllable DERs and flexible demand.
Home/building upgrades	Equipment or building improvements delivered through the portfolio that reduce energy use, improve building performance, or enable VPP participation.	**Efficiency resources** provide lasting building and equipment improvements; **dispatchable VPP resources** may add controllable devices, storage, or other eligible DERs.
Resilience and comfort improvements	Improved ability to maintain essential energy services during outages and safer or more comfortable indoor conditions during extreme weather.	**Dispatchable VPP resources**, particularly storage or other backup-capable DERs, may support essential loads where appropriately configured; **efficiency resources**, particularly weatherization and efficient equipment, may improve thermal performance and indoor comfort.
Local economic benefits	Local employment, contracting, workforce development, and business activity attributable to portfolio deployment.	Both **flexibility and efficiency deployment** may create local installation, operations, maintenance, customer-support, and program-administration activity.

** In Tables 1 and 2, dispatchable VPP resources refers to the portfolio's dispatchable flexibility component and efficiency resources refers to its durable efficiency component.*

evidence should therefore be suited to the temporal, operational, and locational conditions associated with the grid value claimed.

The types of grid value outlined here are distinct potential outcomes, not sequential stages. Providing grid value does not require progressing from one type to another or delivering every type.

Beneficiary Map: Who May Benefit and Where

Understanding where portfolio benefits accrue is necessary to distinguish targeted benefits delivered to participants or affected communities from broader benefits distributed across the ratepayer base. This framework identifies three beneficiary groups:

1. Participating customers and institutions
2. Communities affected by data-center development or associated grid infrastructure
3. Broader ratepayer base

The first two groups may receive direct community benefits, while the third generally receives more diffuse system or ratepayer benefits. A beneficiary may fall within more than one group, but each benefit should still be identified according to the group and mechanism through which it is delivered.

Table 2. Grid Value, Resource Contribution, and Locational and Technical Considerations

Grid Value	Description	Resource Contribution	Locational and Technical Considerations
Energy value	Reduces total energy consumption or shifts energy use away from high-cost or high-stress hours.	**Efficiency resources** mainly reduce total energy use; **dispatchable VPP resources** mainly shift energy use or discharge during high-cost or high-stress periods.	May often be measured at the customer, program, utility, or service-territory level, depending on the claim. Claims tied to particular hours require time-granular data and a defensible baseline.
Capacity/resource adequacy value	Reduces peak net load or provides dependable flexible capacity during critical system periods, reducing the amount of firm capacity the system must procure or reserve.	**Dispatchable VPP resources** may provide event-based or accredited capacity; **efficiency resources** may reduce the baseline peak that capacity planning must serve.	Must align with applicable planning or capacity-accreditation rules and demonstrate dependable performance, persistence, and measurement and verification.
Transmission value	Reduces loading or congestion on transmission infrastructure, or addresses constrained deliverability needs, potentially avoiding or deferring associated transmission investment.	**Dispatchable VPP resources** may reduce load or inject power during constrained periods; **efficiency resources** may reduce underlying demand within the constrained area.	Requires evidence that resources are electrically relevant to the transmission constraint and perform during the periods when relief is needed.
Distribution value	Reduces loading on local feeders, substations, transformers, or circuits, potentially avoiding or deferring associated distribution upgrades.	**Dispatchable VPP resources** may respond to local peaks or overloads; **efficiency resources** can reduce baseline load and create distribution headroom.	Highly location-specific. Requires feeder- or substation-level targeting, analysis of local grid conditions, and utility validation.
Grid-balancing value	Provides responsive services such as reserves, ramping support, frequency response, or other grid-balancing or ancillary services.	Primarily provided by **high-maturity dispatchable VPP resources** with sufficient telemetry, automation, and dispatch capability.	Highly time-specific and operationally demanding. May require market eligibility, control-room integration, telemetry, dispatch testing, performance verification, and settlement capability.

1. *Participating customers and institutions* are those that contribute eligible flexibility or efficiency resources to the portfolio. They may participate with resources already in place or through installations or upgrades financially supported by data centers, and may receive bill savings, participation payments, home or building upgrades, or resilience and comfort benefits.
2. *Communities affected by data center development or associated grid infrastructure* are place-based communities that experience direct effects from the data center or from infrastructure built or upgraded to serve it. This group includes the host community, where the data center is physically located, and other communities affected by related transmission or distribution infrastructure and construction. These two groups may overlap, but benefits delivered to individual participants should not automatically be treated as benefits to the wider affected community.
3. *Broader ratepayer base* refers to customers who may share in system cost savings through their rates. This group can include participants and nonparticipants within and outside affected communities. For example, where resources funded or procured by data centers avoid or defer transmission or distribution investment, they may reduce costs that would otherwise be recovered through customer rates. These broadly shared savings are important, but they are analytically distinct from targeted benefits delivered to identified participants, affected communities, or both.

Separately, the electrically relevant area is the grid location where resources must operate to provide a claimed locational service. It is not a fourth beneficiary group. It may overlap with participant locations or affected communities, but that overlap should not be assumed. Electrical relevance does not by itself establish that customers in the area participate in the portfolio or that affected communities receive targeted benefits. It may, however, create a locational opportunity to connect community benefit with grid value.

Points of Connection: How Community Benefits and Grid Value Interact

Community benefits and grid value are distinct outcomes, and evidence of one does not establish the other. Identifying where they can connect helps show how a portfolio can be designed so that grid performance and targeted community benefits are pursued together rather than assumed to travel together. This framework examines three such points of connection: location, measurement and verification, and resource-level design. While each may create a channel for connection, none makes evidence of grid performance sufficient to establish community-benefit delivery, or vice versa.

Location

Location provides a spatial point of connection, but its importance depends on the grid value claimed. Energy or capacity value may, in some cases, be demonstrated across broader geographic areas, whereas transmission and distribution value depends more directly on whether resources are electrically relevant to a particular constraint.

Assessing that relevance requires grid information on where resources could contribute—for example, the relevant feeder or substation service area for a distribution constraint—and on the amount, timing, and duration of the response needed. Comparing that area with potential participant locations and the locations of affected communities can reveal opportunities

to pursue locational grid value and targeted community benefits together. Assessing whether resources within that overlap can meet the identified grid need requires customer usage data to evaluate potential load flexibility, alongside information on resource capacity and availability (Costantini et al. 2023; NARUC 2025). Access to customer-level data should be governed by appropriate sharing arrangements, including customer authorization and privacy protections (NARUC 2025).

Measurement and Verification

Measurement and verification provide an evidentiary point of connection. For example, interval meter data for participating customers may provide a common input to measuring both customer bill savings and demand reductions during peak or dispatch periods. The claims still require different evidence beyond that shared input: bill savings depend on billing and tariff information, while capacity value may require a relevant baseline and applicable performance rules. Even so, shared data can support certain elements of each claim's measurement and verification process, making community benefits more explicit and measurable alongside grid performance.

Resource-Level Design

Resource-level design provides an operational point of connection. Some portfolio resources—such as smart thermostats, smart water heaters, and batteries—are installed mainly to serve customer needs, but can also provide grid services when aggregated and coordinated through a VPP. Where grid-directed operation affects a claimed community benefit, dispatch timing, frequency, duration, and depth should be set to preserve that benefit while enabling the claimed grid value. Resource-level design can therefore make preservation of the claimed community benefit an explicit condition of grid use, rather than leaving it as an incidental outcome.

The community-integrated VPP framework is limited to outcomes delivered through the data-center-supported portfolio. It does not replace separate review of siting, environmental, infrastructure, or environmental-justice impacts associated with the data center, and any resulting community benefits should not be treated as offsetting adverse effects or as a substitute for their mitigation. Moving from that baseline to application requires further decisions about how the framework's elements are tailored to a particular context and how that design is put into practice.

FROM FRAMEWORK TO APPLICATION: A FIVE-QUESTION CHECKLIST

The framework describes what a community-integrated VPP should include. The checklist laid out in this section helps put it into practice. It poses five questions that policymakers, utilities, and data centers can use to design a new portfolio or evaluate one already proposed.

The questions build on each other. The first sets out what the portfolio is supposed to deliver and to whom, and each question after it tests whether the portfolio can actually live up to that promise: whether it is big enough and ready in time, whether it works when and where the grid needs it, whether its results can be proven, and who is responsible if they fall short. The checklist does not prescribe one right answer. Instead, the best answers will depend on local grid needs, community priorities, and each state's regulatory setting.

Q1: What Is the Portfolio Intended to Deliver, and to Whom?

Outcomes, Beneficiaries, and Benefit Delivery

Everything else in the checklist depends on getting this first question right. A portfolio needs a clear statement of what it promises, who will benefit, and how those benefits will reach them. Later decisions can then be checked against that promise.

For grid value, this means identifying the specific benefit claimed (energy, capacity, transmission, distribution, or grid-balancing value) and the temporal, locational, and operational conditions needed to support that claim. For community benefits, this means clearly naming what will be delivered, who will receive it (participating customers and institutions, affected communities, or both), and how it will be delivered. Taken together, these elements provide a basis for assessing whether later decisions concerning portfolio configuration and deployment, operational and locational credibility, measurement and evidence, and accountability and risk allocation are aligned with the claims they are intended to support.

Benefit delivery design specifies how intended recipients can access and receive the promised outcomes. It encompasses eligibility criteria defining who may qualify, access mechanisms determining how qualifying customers or communities obtain the relevant resources or services, and allocation methods establishing what they receive and on what basis.

These design elements especially matter where formal eligibility does not necessarily ensure practical access—for example, where receiving the benefits requires a customer to already own a qualifying device, make an upfront investment, or navigate a complex enrollment process. Together, they also define the reach of the resulting claim: benefits delivered through individual enrollment may support a participant-level claim, while a broader affected-community claim requires a mechanism that extends the claimed benefits beyond enrolled participants.

NV Energy's developing Large Customer Offsite DSM concept illustrates both the opportunity and the remaining design work. The utility's 2026 filing states that a program funded through voluntary large-load customer contributions could broaden the reach of energy-efficiency and demand-response measures and direct additional resources to low-income customers and historically underserved communities. The filing identifies the compensation structure—including how value would be calculated and allocated among the large-load customer, utility, and participating residential customers—as an area for further development.[4] The concept therefore illustrates benefit delivery design relevant to a data-center-supported setting: it connects a potential funding source to intended beneficiary groups, and the compensation structure under development will shape how the resulting benefits reach them.

Q2: What Portfolio Can Deliver Those Outcomes at Sufficient Scale and on the Needed Timeline?

Portfolio Configuration, Achievable Scale, and Deployment Timing

Once a portfolio's goals are set, its configuration shapes what it can realistically deliver and at what scale. The configuration should include a mix of dispatchable VPP resources and

4 Nevada Power Co. d/b/a as NV Energy & Sierra Pacific Power Co. d/b/a NV Energy, Narrative—Demand Side Management Plan § 1.A.4, at 4–6, vol. 33, in Joint Application for Approval of the 2027-2046 Integrated Resource Plan, 2027-2029 Action Plan, and 2027-2029 Energy Supply Plan, Docket No. 26-05007 (Nev. Pub. Utils. Comm'n filed May 6, 2026).

efficiency resources, and how those resources enter the portfolio—through enrollment of existing eligible resources, financing and deployment of new resources, or a combination of the two.

These choices determine which resources are available, who can participate, and what grid and community benefits the portfolio can deliver. Achievable scale is therefore not a single estimate of technical potential—it also reflects the resources that can be reliably recruited or financed, installed where necessary, enrolled, and made operational under the proposed arrangement.

Timing matters as much as size. Deployment cycles can vary both by resource type and by whether the portfolio relies on existing eligible resources or newly financed resources. Existing eligible resources may be enrolled relatively quickly, while newly financed resources may require installation and, where applicable, permitting or interconnection approval before contributing to operational scale. A 2025 National Renewable Energy Laboratory study found that residential and small commercial solar-plus-storage projects installed in 2023 averaged eight to nine months from contract signing to permission to operate (Cruce et al. 2025). In some utility territories, homes may require structural repairs or environmental remediation before weatherization measures can be installed, reducing near-term participation and slowing the buildup of capacity. These differences may support staged deployment, with existing or shorter-cycle resources contributing earlier and slower-cycle investments adding scale and participation over time. Where the portfolio serves as a bridge during a data center's phased ramp-up, the outcomes claimed for each phase should be limited to those that the resources expected to be operational during that phase can realistically deliver (Alliance to Save Energy and The Ad Hoc Group 2026).

Q3: Can That Portfolio Perform When and Where Needed?

Operational and Locational Credibility

A portfolio's size does not guarantee it can deliver the claimed grid value when needed. Operational credibility therefore depends on whether the resources' operating characteristics match the conditions under which the portfolio is expected to provide that value. Massachusetts' ConnectedSolutions battery offering, for example, dispatches enrolled batteries during defined summer peak periods for events lasting two or three hours (Mass Save 2026). An evaluation of the 2023 season found that program batteries produced average statewide load reductions of 24.5 MW per event. At the device level, batteries discharged an average of 4.8 kW, equivalent to 57% of the average 8.38 kW enrolled capacity per device on event days (Guidehouse 2024).

Actual performance may therefore differ from enrolled capacity. For dispatchable VPP resources, operational fit includes availability during the relevant hours, response time, duration, event frequency, and, where relevant, constraints arising from customer overrides, rebound effects, or competing uses or commitments (Razdan et al. 2025; Ghodeswar and Sumathipala 2026; De Martini et al. 2024). Efficiency resources present a different performance profile: their contribution generally depends on the persistence, timing, and load shape of the resulting reductions rather than event-based dispatch (Li et al. 2018). Portfolio-level credibility therefore depends on the role assigned to each resource type, the constraints affecting its contribution, and whether those contributions can be coordinated to meet the required performance profile.

The locational requirements for portfolio resources depend on the grid value being claimed. Energy and capacity claims may, in some contexts, be supported across broader areas, while transmission and distribution claims require resources that are electrically relevant to the constraint or infrastructure need at issue.

Con Edison's Brooklyn-Queens Demand Management (BQDM) program illustrates this locational link. Within the BQDM area, defined by specified substations and electrically independent networks, it deployed utility-side solutions and a customer-side portfolio combining energy efficiency and distributed generation technologies, including battery storage, to address a reliability need during a targeted overload period and defer traditional infrastructure.[5] The same locational test matters especially in the data-center context. Portfolio resources may be located in the same community or utility territory as a data center yet be connected to different parts of the grid. They may therefore provide broader system value but not necessarily relieve the particular constraint or infrastructure need associated with that development.

Q4: How Will Delivery Be Demonstrated?

Measurement, Verification, and Evidence

Demonstrating delivery begins by identifying the evidence needed to establish each claimed outcome. For grid value, the required evidence depends on the type of value claimed and the temporal, operational, and locational conditions under which delivery is expected. For dispatchable VPP resources, this may require event-level data showing whether resources were available, responded when called, and delivered output or load reduction over the relevant event window.

The ConnectedSolutions battery evaluation demonstrates this approach. It separately examined enrolled devices and aggregate load reduction potential, event participation, and event-level impacts, using device telemetry and three baseline scenarios to estimate demand reduction and compare those estimates with vendor-estimated savings (Guidehouse 2024). Efficiency resources require a different evidentiary approach because their contribution is generally not established through event dispatch. The Uniform Methods Project, for example, provides measure-specific protocols for estimating energy and demand savings, complemented by cross-cutting protocols addressing peak demand and time-differentiated energy savings, as well as persistence of savings over time (Li et al. 2018). At the portfolio level, the evidentiary question is how these differently evaluated contributions are combined to support the grid value claimed. A related issue is double counting—whether the same reduction or resource performance is credited more than once in reported delivery.

Demonstrating community-benefit delivery follows the same claim-to-evidence principle. Where the claimed benefits are participation payments or home or building upgrades, delivery may be documented through payment, installation, or completion records showing what has been delivered and to whom. Where the claim concerns bill savings, resilience and comfort improvements, or local economic benefits, the evidentiary inquiry turns to whether the specific outcome claimed has occurred among the intended customers or communities.

5 Consol. Edison Co. of N. Y., Inc., Brooklyn Queens Demand Management (BQDM) Program Implementation and Community Outreach Plan, Case 14-E-0302, (N.Y. Pub. Serv. Comm'n filed February 2, 2026). https://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={809F1F9C-0000-C535-9ED3-8FC0D97EE293}&DocTitle=Con%20Edison%202026%20BQDM%20Implementation%20Plan.

An evaluation of Cape Light Compact's Cape and Vineyard Electrification Offering (CVEO) shows how delivery and household outcomes can be assessed in practice. CVEO targeted low- and moderate-income households that had completed recommended efficiency measures and offered electrification technologies, solar photovoltaic, and, for some participants, battery storage that were automatically enrolled in ConnectedSolutions. The evaluation used staff and implementation partner interviews and participant surveys to examine delivery, customer experience, and non-energy benefits. Billing and telemetry data supported analysis of energy use and bill impacts (Guidehouse 2025). This example is instructive, but is not a direct precedent. It informs the evaluation approach, but its benefit commitments arose through a regulated public-purpose framework rather than a data-center-supported arrangement of the kind examined in this brief.

Evidence requirements should also reflect when decisions are made and commitments fall due. Where decisions about whether and when to rely on the portfolio precede full delivery, the expected grid contribution should be substantiated by documented commitments to make resources available, deployment schedules, and performance estimates under the relevant conditions. Before that contribution is relied upon in grid operations, evidence should establish that the required resources meet applicable readiness and performance requirements, drawing on installation records, test results, or evaluated efficiency savings as appropriate. Verification should continue as delivery proceeds, establishing whether grid performance and community-benefit delivery meet their respective commitments and schedules.

Q5: Who Is Accountable, and Who Bears the Risk?

Accountability, Enforceability, Risk Allocation, and Customer Protection

Accountability for a data-center-supported portfolio requires clarity about who is responsible for each commitment and how that commitment is made enforceable:

- The data center may fund, procure, guarantee, or otherwise support the portfolio
- The utility may administer it, assess or accredit its contribution, or account for that contribution when planning service to the data center and related system needs
- An aggregator may recruit participants and operate resources
- A program administrator may coordinate implementation and reporting
- Contractors may install and maintain equipment
- Independent evaluators may verify delivery

The entities involved and the roles they perform vary across models and arrangements. That variation, however, does not alter the data center's bounded accountability—it need not administer the portfolio or bear every operational risk, but providing funding or delegating implementation does not release it from its other agreed obligations. The commitment should specify the form, extent, and duration of the data center's support—for example, funding amounts and payment schedules or the scope and term of procurement obligations. It should also specify the data center's responsibility for delivery shortfalls, including whether it must fund corrective action or procure replacement services, and any notice or transition-support obligations associated with the end of its support. Regardless of its legal or regulatory form, the commitment should be made enforceable through a binding instrument that establishes how to determine whether it has been met and what obligations are triggered if it has not.

Any regulatory recognition linked to the data center's commitment should also be clearly defined, along with the conditions governing it. Such recognition may include a capacity credit or service treatment enabling earlier access to power. Where recognition is established conditionally before full delivery, the applicable rules, decisions, or agreements should specify the evidence required before particular forms of recognition take effect. If a specified grid contribution is used to justify earlier access to power, the evidence should establish that the resources needed to deliver that contribution meet applicable readiness and performance requirements. The extent and, where relevant, duration of recognition should correspond to the grid contribution supported by that evidence. Receiving recognition should not release the data center from its remaining agreed obligations. Subsequent verification should inform any continuing recognition, with delivery shortfalls triggering the specified obligations or adjustments.

Risk allocation concerns who bears the costs and risks associated with portfolio underperformance or the end of data center support. A key question is whether the binding instrument clearly assigns responsibility for those costs and risks or instead leaves participating customers, affected communities, or other ratepayers to absorb them. In practice, participating customers may not receive agreed compensation or program support, affected communities may not receive committed benefits, and other ratepayers may bear costs if the portfolio value relied upon in serving the new data center does not materialize.

A separate allocation issue arises when data-center support has a limited term, whether the portfolio serves as a bridge to capacity during data center ramp-up or supports longer-term needs. In that setting, the data center commitment may expire while participating customers remain enrolled and some parts of the portfolio still require ongoing support. Efficiency savings may persist even after incentives end, but dispatchable resources may require continuing compensation, administration, and maintenance to remain available (Alliance to Save Energy and The Ad Hoc Group 2026).

The transition question should therefore be addressed at the outset, not deferred until the data-center commitment ends. The binding instrument should specify who will arrange and fund any continuing support, such as through another program or funding source, and by when those arrangements must be in place. If continuing support will not be provided, it should define how participation will conclude, how outstanding customer and community commitments will be fulfilled, and who will address any resulting grid-service gap and how the associated costs will be allocated.

RECOMMENDATIONS

When data centers support the deployment of demand-side resource portfolios, they can help VPPs grow and ultimately deliver real grid value alongside targeted benefits for participating customers, affected communities, or both. They are not a substitute for broader VPP planning or other demand-side strategies, and data-center support does not by itself ensure delivery of either grid value or community benefits. For state policymakers considering this pathway, this brief offers four recommendations:

- **Build community benefits into the design from the start.** States could require that any claimed community benefits be deliberately built into the design of the data-center-supported portfolio. If a portfolio claims to benefit a community, its

design should say who will benefit and how the benefits will reach them. Signing up customers, or being located near the data center, is not enough on its own. The scope of the claim should correspond to the reach of benefit delivery: benefits delivered through individual enrollment may support a participant-level claim, while an affected-community claim requires a mechanism that extends beyond enrolled participants. This discipline allows community benefits and grid value to be pursued together while preserving a separate basis for determining whether each outcome has been delivered.

- **Align expectations for grid value with what the data-center-supported portfolio can credibly deliver.** Achievable scale should reflect the resources that can realistically be recruited or financed, installed where necessary, enrolled, and made operational under the proposed arrangement, rather than technical potential or enrolled capacity alone. Deployment cycles can differ across resource types and between existing eligible and newly financed resources, so portfolio scale may build in stages. Where the portfolio serves as a bridge during a data center's phased ramp-up, expectations for grid value in each phase should reflect the resources reasonably expected to be operational during that period and what they can credibly deliver. Operational characteristics such as availability, duration, responsiveness, and persistence should fit the role assigned to the resources, while transmission or distribution claims require resources that are electrically relevant to the constraint or infrastructure need at issue.
- **Reward data centers only in proportion to proven grid value.** Regulators could condition regulatory recognition for the supporting data center on evidence substantiating the claimed grid contribution, with the extent and, where relevant, duration of that recognition proportionate to the grid contribution supported by that evidence. Regulatory recognition, such as a capacity credit or faster access to power, should depend on evidence. Its size and length should match the grid contribution that the evidence supports. Money committed, customers enrolled, and projected potential do not prove that benefits have been delivered. Evidence should be required at each stage:
  - **At the initial commitment stage:** Documented commitments and realistic estimates of what the portfolio will deliver, plus a clear statement of what evidence must come before each form of recognition takes effect.
  - **Before the grid relies on the portfolio:** Proof that the resources are installed, ready, and meet performance requirements.
  - **On an ongoing basis:** Verification that grid benefits are being delivered when and where claimed, and that community benefits are reaching the people promised. Continued recognition should depend on these results.
- **Hold data centers to a binding commitment, including what happens if things go wrong.** The data center need not administer the portfolio or bear every operational risk, but its accountability should not end with the provision of funding or the delegation of implementation. A binding instrument should define the support the data center must provide, establish how to determine whether its commitment has been met, and specify the obligations triggered if it has not. The binding instrument should also specify how the costs and risks of underperformance will be allocated,

so that they fall to the entities designated to bear them rather than by default to participating customers, affected communities, or other ratepayers. In cases where the data center commitment may end while parts of the portfolio continue to require support, the arrangement should establish at the outset whether that support will continue through another program or funding source or will end with the commitment.

Data center support for VPPs remains an emerging pathway, and the publicly available record of early practices is limited. No single model will fit every state, utility, or community, so this brief does not offer a ready-made portfolio or a one-size-fits-all design. Instead, it offers two tools.

The **framework** lays out the basic building blocks and how they connect. The **five-question checklist** helps policymakers adapt those building blocks to local needs and put them into practice. Used together, they provide a disciplined basis for designing and assessing data-center-supported portfolios that seek to pair targeted community benefits with credible grid value. They also help relevant stakeholders—including data centers, utilities, VPP developers, and grid operators—identify opportunities to align their interests and develop collaborative arrangements for implementation. Such collaboration, with regulatory oversight, can help scale VPP deployment in ways that protect ratepayers, strengthen grid reliability, and improve affordability and resilience for communities.

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