VPP POLICY PRINCIPLES

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INTRODUCTION

PURPOSE: This document contains policy principles to support the fair and efficient growth, integration, valuation, compensation, and advancement of virtual power plants (VPPs) and outlines their benefits to the electric grid and its customers. VPPs are aggregations of distributed energy resources (DERs) that can flexibly balance electrical loads and provide utility-scale and utility-grade grid services. This simple set of foundational principles can support policymakers and energy industry audiences in enabling VPPs.

DESIGN AND USE: These policy principles represent the views and objectives of several parties in the DER and VPP industries — the Virtual Power Plant Partnership (VP3).[i] We intend them to guide policy development and decisions impacting VPP advancement in the short to medium term (one to four years).

We expect policy development to include the initiation and adoption of regulatory proceedings or legislation directly related to VPPs and DER programs, but also to spur action on topics including integrated distribution system planning, non-wires solutions, utility business model reforms, wholesale market participation, tariff design, and energy system digitalization.

These principles are intended to represent ideal visions for the roles of VPPs in a clean energy future, with practical steps on how to get there in the interim. We list the policy principle and the vision, followed by the impacts that principle will have.

AUDIENCES: regulators, policymakers, state energy offices, utilities, advocacy organizations

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[i] *While this document represents the consensus view of the working group, it does not necessarily represent the individual views of VP3 member organizations.*

VPP POLICY PRINCIPLES

DER Asset Base

1. **Advance policies to expand beneficial DER adoption by diverse end-users:** A robust policy framework supporting and accelerating the deployment of distributed energy resources (DERs) is the essential first step in scaling virtual power plants (VPPs), as VPPs are aggregations of DERs. To utilize grid services from DERs at scale, DERs are widely deployed and accessible to all customers (single-family residential, multifamily residential, low-to-moderate income, energy burdened, historically disadvantaged communities, commercial, and industrial).

   DERs provide benefits to consumers (reduced costs, resilience, comfort), society (community energy resilience, decreased externalities), and the grid (grid services provided through VPPs). Examples of policies that accelerate deployment of DERs can include tax credits and rebates, utility up-front financing, utility on-bill financing, DER carve-outs in energy portfolio standards, and compensation for the services DERs provide, such as net energy metering and thoughtfully-designed successors, ongoing performance payments for provision of grid services, and time-varying or dynamic tariffs.

   - **IMPACT**: *DERs are deployed at scale and with the option to enroll in VPPs. VPPs can ensure deployed DERs are able to deliver additional benefits to the grid and customers as scale enables robustness and reliability. All ratepayers, not just DER asset owners, have access to equitable benefits and cost savings from VPP programs.*

2. **Enable inclusion of all DER technologies in VPPs:** VPPs are structured to welcome all DERs capable of delivering the grid services identified, ensuring no preference is given to particular technologies where multiple technology types can meet the identified need.

   - **IMPACT:** *VPPs are accessible to a broad range of DER technologies, fostering a diverse and technology-neutral environment for the provision of grid services.*

VPP Design

3. **Utilize best practices in program design:** VPP programs are designed to leverage best practices from established, successful, jurisdictionally relevant VPP examples to avoid common program design pitfalls and maximize program success and benefits to the grid and customers. Utilities and third parties share lessons learned, and there is a pathway for further program growth.

   - **IMPACT:** *VPPs are repeatable and scalable to maximize customer participation and decrease implementation costs.*

4. **Use open communication protocols and standards**: Regulators support open communication protocols and standards for interactions between DER owners, aggregators, and grid operators. Utilities and third parties adhere to these standards in their programs.

   - **IMPACT:** *DERs of all technology types and vendors are seamlessly aggregated and integrated into VPPs.*

5. **Enable VPP participation in wholesale and retail markets:** Transparently governed, openly accessible, and non-discriminatory competitive markets secure grid services from VPPs where possible. This includes allowing for fair competition between all resources to provide services including capacity, demand response, renewable energy integration, load management, and ancillary services. Services are valued based on their cost, carbon emissions, grid benefits, and social benefits. Reasonable minimum site and aggregation size requirements are set to be inclusive of, and not preclusive of, VPPs.

    - **IMPACT:** *VPPs are ensured fair treatment through robust market-based competition, where available.*

6. **Regularly update grid service needs to reflect the evolving grid:** Grid service requirements are regularly updated to meet evolving energy system needs and technology capabilities. Service specifications and operational characteristics are amended or flexible enough to be inclusive of the full suite of capabilities of DERs. Pilot programs or technology-specific DER programs (e.g., those focusing on battery storage, smart thermostats, bi-directional EV chargers) can help scale DERs that enable VPPs in the short term to enable asset deployment, with an intention to expand to full-scale, technology-neutral programs in the medium term. Product definitions are flexible enough to continue to enable participation and value stacking across multiple programs or markets, even when new ones emerge.

    - **IMPACT:** *VPPs can compete fairly with traditional solutions to meet evolving system needs. Regulators, policymakers, utilities, and system operators trust VPPs to deliver grid services reliably.*

7. **Support comprehensive utility planning and investment decisions:** Utilities fully evaluate all possible options, including VPPs, when reinforcing and managing the electric grid, and provide opportunity for innovation and competition. Utilities coordinate across planning and VPP programs and procurement and communicate often with interested VPP stakeholders and providers. Regulators ensure utilities make decisions with ratepayer benefits, customer choice, customer participation, grid resilience, and a more cost-efficient transmission and distribution system in mind.

    - **IMPACT:** *Grid services provided by VPPs are fairly considered and evaluated alongside traditional solutions. Ratepayers receive the best value for their investments and electricity bills.*

Equitable Compensation

8. **Fairly compensate VPPs for services delivered:** Services provided by DERs and aggregations of DERs participating in VPPs are adequately and accurately valued for the full suite of benefits and impacts they provide to the system. Customer compensation structures for participation in VPPs can include ongoing performance payments for provision of grid services, and/or time-varying or dynamic tariffs. Third-party aggregators are fairly compensated for providing services where applicable.

    - **IMPACT:** *VPPs can operate and compete in a fair, value-driven, pro-competitive environment. Customers and aggregators receive compensation for services provided.*

9. **Enable value stacking to maximize benefits:** System operators, utilities, and regulators enable VPPs to provide and stack multiple wholesale market and retail utility grid services, with clear eligibility criteria and rules preventing double-counting.

    - **IMPACT:** *VPPs can offer the true value of DER assets to maximize ratepayer benefits, customer choice, customer participation, grid resilience, and a more cost-efficient transmission and distribution system.*

10. **Support policies that value VPP contributions to resilience, reliability, and sustainability:** Policymakers and regulators support policies recognizing and rewarding the contribution of VPPs to grid resilience and reliability. Policymakers, regulators, and utilities align VPPs with broader environmental and sustainability goals, such as reducing greenhouse gas emissions and supporting the transition to a low-carbon energy system.

    - **IMPACT:** *VPPs are recognized for their benefits beyond cost savings and are implemented to achieve a variety of goals such as grid resilience, reliability, and emissions reductions.*

11. **Uphold equitable penalties and liabilities:** VPPs are not unduly penalized, or held to unreasonable liabilities, relative to traditional providers for the grid services they provide.

    - **IMPACT:** *VPPs can operate and compete fairly with traditional power generators and distribution and/or transmission assets.*

Customer Experience

12. **Maintain customer choice in DER operational control:** Customers can maintain operational control of their DERs or choose to have their assets managed by a system operator, utility, or third-party aggregator under pre-established, well-justified, and transparent customer-consenting terms.

    - **IMPACT:** *Customers are empowered to contract with the utility or third-party VPP service provider of their choice, enabling varying levels of DER asset control to suit customer preferences.*

13. **Uphold customer data ownership and simplify enrollment:** Customers own their data. The process to access third-party programs is simple, secure, quick, transparent, and reliable. This includes, but is not limited to, the timely sharing of accurate utility customer data, the utility planning and contracting processes to integrate third parties, and timeline to support third-party program enrollment. Customer asset enrollment and disenrollment process is easy and clear. Customers can enroll in a VPP at the point of sale of an eligible device.

    - **IMPACT:** *The customer experience is simple and accessible. Customers are encouraged to enroll their DERs in a VPP to provide grid services.*

14. **Protect and educate customers:** Customers are afforded suitable and accessible protections across data privacy and cybersecurity, sales and marketing materials, technical due diligence, proposal and pre-contract engagement, contracts, maximum penalties, and complaints. Customer and program terms and conditions are clear, simple, and comprehensible. Policy measures support program transparency and customer education so participants in VPPs are fully informed about VPP options, the role of their DERs, and any trade-offs involved in VPP enrollment.

    - **IMPACT:** *Customers receive fair treatment from VPP programs. Customers have clarity on what they are signing up for and are empowered to make their energy decisions.*

15. **Support customer participation in structuring VPP offerings through procedural equity:** Regulators, utilities, and system operators implement procedural equity in their processes by enabling stakeholder participation in the development of grid service requirements, programs, and policies.

    - **IMPACT:** *System operators and utilities make informed decisions to support grid services maximizing ratepayer benefits and a more cost-efficient transmission and distribution system.*

Utility and System Operator Roles

16. **Encourage participation of competitive hardware and service providers:** Utilities enact contracts with third parties providing VPP services that complement their own strengths. Utilities consider in their decision-making process the benefits of partnering with a third party for both themselves and customers to provide services such as customer enrollment and support, device management and dispatch, a single point of settlement for the program administrator, de-risking underperformance by spreading across the fleet, and/or program administration.

    - **IMPACT:** *Utilities and third parties partner to deliver maximum benefits to customers and the grid while minimizing implementation costs.*

17. **Use open-source software and make grid data available:** System operators use open-source software and make utility grid data that supports grid service provisions available to third-party providers — unless specified and justified otherwise. Supporting regulatory policies to enable the timely and secure sharing of grid data are implemented and enforced. Data relevant to measurement and verification (M&V), installation of new capacity, and justification of operation and deployment of assets is delivered in a timely and secure fashion. M&V processes are accurate; timely; not susceptible to bias, incorrect scales/ratios/unit of measurement, or cheating; and standardized.

    - **IMPACT:** *Enabling grid data is available to VPPs and customers to develop solutions to meet grid service needs. Utilities enable VPPs to demonstrate performance in a timely manner. Regulators and utilities have greater trust in VPPs and their ability to deliver timely and reliable grid services.*

ADDITIONAL RESOURCES

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About VP3

The Virtual Power Plant Partnership, or VP3, is a coalition industry voices that seeks to shift the necessary policies, regulations, and market rules to unlock the market for virtual power plants (VPPs). Our members span hardware and software technology solution providers, distributed energy resource (DER) aggregators, and others.

A robust VPP market expands the possibilities for all DERs — empowering households, businesses, and communities to play a role in the energy transition alongside technology solution providers. Learn more at **vp3.io**.

About RMI

RMI is an independent nonprofit, founded in 1982 as Rocky Mountain Institute, that transforms global energy systems through market- driven solutions to align with a 1.5°C future and secure a clean, prosperous, zero-carbon future for all. We work in the world's most critical geographies and engage businesses, policymakers, communities, and NGOs to identify and scale energy system interventions that will cut greenhouse gas emissions at least 50 percent by 2030. RMI has offices in Basalt and Boulder, Colorado; New York City; Oakland, California; Washington, D.C.; and Beijing.