

PHILADELPHIA ENERGY AUTHORITY

REQUEST FOR INFORMATION for

Virtual Power Plant Solutions for The Philadelphia Energy Authority

Issued by: Philadelphia Energy Authority

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I. About the PEA

The Philadelphia Energy Authority is an independent municipal authority established in 2010 building a robust, equitable clean energy economy in Philadelphia. In 2016, PEA and City Council President Darrell Clarke launched the Philadelphia Energy Campaign, a \$1 billion, 10-year investment in energy efficiency and clean energy projects to create 10,000 jobs. To date, PEA has helped launch over \$291 million in projects and programs, and created over 2,500 jobs. PEA works to make Philadelphia a national model for implementing energy strategies that improve the health and well-being of the community and local economy, including the City's most vulnerable residents. PEA runs the nation's largest Solarize program and just completed a pilot round of low-income solar installations. PEA is also the Program Administrator for Philadelphia's Commercial Property-Assessed Clean Energy (C-PACE) program, and recently launched the Philadelphia Green Capital Corp, a green bank affiliate. Learn more at <http://www.philaenergy.org/>.

PEA is a municipal authority and political subdivision of the Commonwealth of Pennsylvania, formed by the City of Philadelphia under the Pennsylvania Municipality Authorities Act, 53 Pa.C.S. § 5601 et. seq. ("the Act") for the purposes described in the Charter and included below:

The Authority's purposes and responsibilities shall be limited to actions for and concerning (i) the development, facilitation and/or financing of energy storage and/or generation projects, (ii) the development, facilitation and/or financing of energy efficiency projects, and (iii) the purchase or facilitation of energy supply and energy services on behalf of the City of Philadelphia, government agencies, institutions and businesses, as well as the education of consumers regarding choices available in the marketplace, and (iv) the promotion of a vital clean energy sector of the Philadelphia economy and increased employment in the sector by undertaking efforts to strengthen the markets for energy efficiency and energy storage and generation projects. The Authority shall have and may exercise all of the powers set forth in the Act that are necessary or convenient for carrying out its purposes and responsibilities.

PEA works closely with Philadelphia's local utilities – PECO and Philadelphia Gas Works – and other load serving entities. PEA does not directly sell electricity to any customers.

In furtherance of its mission, PEA has successfully established programs to spur widespread adoption of energy efficiency and renewable energy technologies. Its Solarize program jump-started the solar industry in the City, leading to the installations of over 1200 residential solar systems. The program is now expanding to commercial and industrial properties as well. PEA's new Built to Last program is coordinating the delivery of energy efficiency, home repair, and solar installations to low-income homeowners from a wide range of city agencies and organizations. PEA is now seeking to expand on the efforts of Solarize and Built to Last to serve an even broader market.

Additionally, PEA recently launched its green bank affiliate, the Philadelphia Green Capital Corp (PGCC) to scale and amplify PEA's work, support the Philadelphia Energy Campaign, and bring new financial products to the region's clean energy economy. As a green bank, PGCC is a nonprofit organization with a specific focus on providing financing support to clean energy projects. PGCC currently manages certain financial components of PEA's Solarize and Built to Last programs. PGCC further expands upon PEA's mission to be a catalyst for growth of a robust, equitable, diverse clean energy economy in Philadelphia. PGCC has the potential to act as a unique vehicle for financing a virtual power plant (VPP). PGCC has the ability to make loans, provide credit enhancements, make grants, and manage a portfolio of solar renewable energy credits (SRECs), among other financial tools that could support a VPP. PEA & PGCC have held a series of discussion with US Department of Energy (DOE) and other potential financial sources in advance of issuing this RFI and we welcome additional market information on VPP financial needs and opportunities.

II. Purpose of Request for Information

PEA is exploring establishing a virtual power plant (**VPP**) program in Philadelphia. At its core, a VPP is a network of distributed energy resources that aggregates the collective capacities of the network for the purposes of delivering power, demand response, or other services to the electric grid. The individual resources are not physically interconnected but are under common cloud-based management. PEA's interest in VPPs is to help create a program (the **VPP Program**) to speed the adoption by residential, commercial and institutional electricity customers (**VPP Customers**) of home and facility improvements including energy efficiency, energy storage, solar energy, smart appliances, and electric vehicle chargers. The VPP Program will support VPP Customers with the financing and acquisition of these improvements. By networking individual VPP Customers in a VPP, PEA hopes to create revenues and savings that reduce the VPP Customers' costs for the implementation of improvements. This in turn serves PEA's purposes of reducing household energy burdens and meeting the City's sustainability goals.

The VPP Program encompasses a broad array of controllable behind-the-meter energy technologies that are typically marketed, installed, and financed through different commercial channels. Solar installations are eligible for federal investment tax credits, and many of the improvements may be eligible for utility rebates under Pennsylvania Act 129 or other state and local incentives. A VPP includes sophisticated building energy controllers which may also serve as microgrid controllers for individual VPP Customer homes or buildings (**Customer Facilities**). It also involves overall management of the aggregated Customer Facilities through central signaling to participating customers and interface with the grid to deliver VPP services. While direct dispatch is one possible form of signaling, PEA anticipates that transactive electricity pricing will produce far greater energy and cost savings by allowing VPP Customers to respond to the real time needs of the grid through active management or the automated responses of their building energy controllers.

Regulatory issues will arise in various facets of the VPP program. Home improvement and solar installers require homeowners to obtain specific licenses, as do lenders. Energy supply markets

feature a combination of competitive wholesale and retail markets along with regulated utility service programs for retail customers who do not choose to participate in the competitive retail market. We believe that incentive pricing, including transactive pricing, can be provided through a pilot PECO tariff or by a licensed retail energy supplier in Pennsylvania's deregulated consumer electricity market. A FERC qualified energy aggregator that is a PJM member can deliver services to the wholesale grid, and a PECO tariff could also take advantage of locational values of services on the distribution system.

PEA is seeking innovative ideas for VPP implementation including technology solutions, implementation best practices, financial structures, and program structures. While PEA anticipates that a single entity will need to manage the customer-to-grid interface for energy services, it also expects that no single provider may be able to deliver or assemble all required elements of the program. Respondents may submit either (i) a comprehensive proposal for the structure and elements of a VPP or (ii) a complete, turnkey component of a VPP that they are most qualified to provide. PEA is open to innovative teaming arrangements and service delivery methods. PEA's affiliated green bank, PGCC, may be able to assist with financing options. The goal is to determine how the PEA, as a municipal authority, can promote and deploy VPP technologies in Philadelphia while advancing energy affordability, and serve as a national model for the deployment of VPPs by non-load serving entities in urban and other underserved areas.

The primary purpose of this Request for Information (RFI) is to seek suggestions from a wide range of providers of technology and services that will be necessary or useful components of the VPP including:

- Distributed Energy Resources (DER). We primarily contemplate rooftop solar but can consider other suggestions such as behind-the-meter cogeneration in appropriate settings or "community solar"¹ installations that benefit multiple customers.
- Energy storage systems.
- Energy efficiency and smart building technologies that lead to reduced and controllable consumption, including building controllers.
- Smart appliances.
- EV Charging stations.
- Retail energy providers and transactive energy pricing technology providers.
- Aggregators that can manage VPP assets for delivery of services to the grid.
- Financing organizations that may support either the technology providers or the VPP Customers in financing adoption of VPP assets.
- Marketing strategies to enroll customers in the program.
- Research organizations, and other relevant entities to provide PEA with information regarding technology, marketing, and service delivery solutions and implementation best practices.

¹ While traditional community solar is not currently allowed in Pennsylvania, a licensed retail energy supplier could develop a solar project and use the power to meet their supply obligations for a group of retail electricity customers, thereby providing solar power to a "community" of their customers.

We also ask responding entities to describe how their offerings would integrate with other providers to create the full-service program that PEA envisages.

The PEA hopes to use this information to develop a service contract opportunity for testing or piloting VPP and/or DER and smart building technologies in Philadelphia, other areas of Pennsylvania, and in partnership with other cities and municipalities interested in pursuing VPP technologies.

Responses to this RFI are considered non-binding and are used to assist the PEA in information gathering for planning purposes. Responses to this RFI will help shape a potential scope of work, but are not required in order for respondents to be considered for future Requests for Proposals (RFPs) or contracting work. The PEA is under no obligation to select any provided Response or move forward with any proposed product, service, or resource.

III. Response Calendar

The tentative timeline for the RFI is provided below:

Description	Date
Posting of Request for Information (RFI)	October 13, 2022
Deadline for questions, clarifications or requests for additional information	November 7, 2022
Responses to inquiries posted to PEA website	November 21, 2022
Response to RFI Due Date	December 19, 2022

IV. Responder Questions and Addenda

Questions:

All questions concerning this RFI must be submitted via email no later than 5:00 pm, EST on November 7, 2022 and directed to:

Philadelphia Energy Authority at info@philaenergy.org

Responses to such questions and requests shall be at the PEA's sole discretion and nothing in the RFI shall create an obligation on the PEA to respond to the submitting party or at all. On November 21, 2022 PEA will post all responses to the RFI questions, clarifications and request for additional information at:

<http://www.philaenergy.org/public-bids/>

Addenda

PEA may, in its sole discretion, issue addenda to this RFI containing responses to questions, clarifications of the RFI, revisions to the RFI or any other matters that the City deems appropriate. Addenda will be posted on the PEA's website at:

<http://www.philaenergy.org/public-bids/>.

It is the Respondent's responsibility to monitor the Additional Opportunities site for Addenda and to comply with their terms.

Oral responses by any City employee, PEA employee, or agent of either are not binding and shall not in any way be considered as a commitment by the City or PEA. If a Respondent finds any inconsistency or ambiguity in the RFI or an addendum to the RFI issued by the PEA, the Respondent is requested to notify the PEA in writing by 5:00 pm EST on November 7, 2022.

V. Submission Guidance

Each Respondent who submits a Response to the RFI may submit either (i) a comprehensive proposal for the structure and elements of a VPP or (ii) a complete, turnkey component of a VPP that they are most qualified to provide. Each respondent should submit a description of one or more technologies, finance programs, retail tariff administration capability or other element that they believe would help create a successful VPP Program. Likewise, a submission may suggest specific team members for a comprehensive proposal or may specify roles to be filled without identifying individual suppliers. Each respondent is encouraged to state whether it is open to teaming with other parties identified by PEA. Each respondent should answer the questions below with respect to each area where it would propose to provide services.

VPP Program Summary

- Provide an overview of proposed VPP Program structure for the City of Philadelphia including:
 - Primary customer segments (e.g., single-family residential, multifamily residential, small commercial, etc.)
 - Recommended VPP assets and technology to be deployed
 - Minimum viable size of VPP in (1) energy usage of Customer Facilities included in the VPP and (2) capacity available to be delivered to the grid
 - Key parties to be involved and their roles in administering and facilitating a VPP Program, including PEA's and PGCC's role in the Program
- Any ancillary services such as frequency regulation, voltage control, or black start
- Any respondent proposed financing (including possible tax ownership of solar or other assets eligible for tax credits)

Smart Building Technology Characteristics

- Describe energy efficiency and smart building technologies that respondent would expect to deploy in all buildings or in categories of buildings where appropriate by building type
- Describe the whole building energy controller, smart thermostats or other technology that allows the building to respond to the VPP operator
- Describe how the technology conserves electrical energy or operates as a component of the VPP in delivering services to the grid
- Provide projected costs and savings by building type
- Provide the expected useful life of project equipment (along with operation and maintenance structure and warranty terms)

Generating and Storage Technology Characteristics

- Type(s) of generating assets proposed
- Projected percentage of Customer Facilities of each building type where generating assets will be deployed by resource type
- Describe any non-building-based assets proposed
- Describe if storage capability will be routinely deployed with generating assets. If not, describe what, if any, circumstances storage capabilities will be deployed
- Describe if storage or other technologies will permit the customer to operate as an island to provide resilience
- Detail whether customers will own, lease, or have a PPA
- Describe any ancillary grid services such as frequency regulation or voltage control
- Provide the expected useful life of project equipment (along with operation and maintenance structure and warranty terms).

VPP Technology Characteristics

- Retail Pricing
 - Describe the pricing technology and methodology
 - Explain how the pricing methodology protects customers while encouraging them to be responsive to VPP price signals
 - If you propose only a voluntary price response option, describe the fixed obligations or a combination of both
- Sales to the grid
 - Describe how grid energy sales will integrate with pricing
 - Describe any ancillary services sales such as frequency regulation, voltage control, or black start
 - Explain if any capacity sales will be planned
- Describe any financing requirements for this part of the scope

Other Technologies

- Describe how you will integrate smart appliances in the Program.
 - Describe your proposed smart appliance technology and how it integrates with the Program
 - Explain if you propose special purpose financing

- Describe how you will integrate EV charging stations in the Program
 - Describe your proposed EV charging station technology and how it integrates with the Program
 - Explain if you propose special purpose financing

Basic Program Characteristics

- Describe how the Program can deliver a seamless interface to customers
- Detail which parts of the program the Respondent team would expect to manage and deliver
- Describe your marketing, outreach, recruitment and installation approach
- Detail what parts your Respondent team would expect to manage versus what you expect others to handle
- Describe any financing you would expect to provide, including
 - what kinds of financing options would be available and why your financing costs are competitive
 - or, alternatively what sort of financing support you would need
- Explain why your operation, maintenance, and software costs on an annualized basis are competitive or provide an advantage
- Detail the expected savings per customer type (along with a timeline for recouping savings)
- Detail any existing subsidies that customers can take advantage of related to your scope
- Provide a projected number of jobs created in areas where you would operate
- Describe how your VPP program would reach customers who may not traditionally have access to finance new technologies or clean energy products (i.e., low FICO score customers). Further describe any additional support you would seek from PEA and/or PGCC to expand program access to this population (i.e., credit enhancements)

Diversity, Equity and Inclusion

- Detail any direct benefit to highly impacted, hard-to-reach and vulnerable communities
- Describe how Respondent will address an existing barrier to expanded participation in DERs e.g., high upfront investment, access to financing
- Describe opportunities for workforce development, training and hiring of Philadelphia businesses and residents
- Highlight any locally, minority, or women-owned companies that are part of the Respondent team

Deployment Experience

Identify if you have experience designing, implementing and managing VPP programs or elements of such programs described above. Include project location, project partners, project timeline, included DERs, rated capacity, actual operational performance, project cost, and any other details relevant to your experience deploying this technology.

Specifically, describe your company's experience and approach to deploying the technologies you describe in low- to moderate-income communities with or without the direct sponsorship of the local electricity utility, Community Choice Aggregation (CCA) program, or other sponsoring agency.

Deployment Model

Include a projection of who will or might operate the VPP, building technology, and DER assets after they are installed, and who will be responsible for any necessary repairs and/or replacements of parts that are (a) covered and (b) not covered under manufacturers' warranties.

Company or Organization Overview

Include company name, physical address, phone number, and web address, a brief description of the company, its services, business size (total revenue and number of employees), and point(s) of contact, including name, address, phone, and email address. Note the company's operations, including the number of years the company has been supporting this solution, the location of the company's headquarters and all other office locations. If applicable, please describe any relevant subcontractors or partners with which you have worked. Resumes need not be included.

VI. Use of Responses

The Responses submitted by Respondents to this RFI may be used by PEA in the process of selecting a provider of VPP technology solutions. PEA may contact Respondents with questions and request for additional information after receiving their RFI response. All Respondents may submit proposals to any future notice of contracting opportunity once it has been posted to the City of Philadelphia or PEA websites. A Response to this RFI is not a requirement to submit a proposal for the contracting opportunity.

VII. How to Submit

Respondents must submit their Responses electronically to: Philadelphia Energy Authority at info@philaenergy.org and include "VPP RFI – [Firm Name]" in the email subject line. Please direct all inquiries and questions to info@philaenergy.org. We will not respond to phone inquiries. Responses are due by December 19, 2022.

VIII. Confidentiality and Public Disclosure

Respondents shall treat all information obtained from the PEA that is not generally available to the public as confidential and/or proprietary. Respondents shall exercise all reasonable precautions to prevent any information derived from such sources from being disclosed to any other person. No other party, including any Respondent, is intended to be granted any rights hereunder. Respondents agree to indemnify and hold harmless the PEA, the City, its officials and employees, from and against all liability, demands, claims, suits, losses, damages, causes

of action, fines and judgments (including attorney's fees) resulting from any use or disclosure of such confidential and/or proprietary information by any Respondent or any person acquiring such information, directly or indirectly, from any Respondent. This RFI and the process described are proprietary to the PEA and are for exclusive benefit of the PEA. Upon submission, Responses to this RFI shall become the property of the PEA, which shall have unrestricted use thereof. Responses may be subject to public disclosure under the Pennsylvania Right-to-Know Law. However, a "record that constitutes or reveals a trade secret or confidential proprietary information" is exempt from access by a requester under that law. Ultimate determination of the application of that exemption cannot be assured, but **Respondents are advised to mark clearly any portion(s) of any submittal believed to qualify for that exemption.** If a Right-to-Know request is received related to your response, PEA will notify Respondents and allow requests for legal redaction. By submitting its Response, the Respondent agrees to the terms.

IX. Rights and Options Reserved

In addition to the rights reserved elsewhere in this RFI, the PEA reserves and may, in its sole discretion, exercise any of the following rights and options with respect to this RFI if PEA determines that doing so is in the best interest of the City and PEA:

1. to extend the Submission Date/Time and/or to supplement, amend, substitute or otherwise modify the RFI at any time prior to the Submission Date/Time, by posting notice thereof on PEA's web page(s) where the RFI is posted;
2. to require, request, or permit, in discussion with any Respondent, any information relating to the subject matter of this RFI that PEA deems appropriate, whether or not it was described in the Response to this RFI;
3. at any time determined by PEA, to discontinue discussions with any Respondent or all Respondents regarding the subject matter of this RFI, and/or initiate discussions with any other Respondent or with vendors that did not respond to the RFI;
4. to do any of the foregoing without notice to Respondents or others, except such notice as PEA, in its sole discretion, may elect to post on the PEA web page(s) where this RFI is posted. Respondents with any interest or knowledge of the subject matter are strongly encouraged to submit their Responses. PEA looks forward to receiving and reviewing all Responses.

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