

**U.S. Department of Commerce**  
**Renewable Energy and Energy Efficiency Advisory Committee**  
Charter 7, 2022-2024 ● Recommendation Fact Sheet

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**Recommendation #7 (Approved on March 21, 2024) on Promoting U.S. Demand Management Solutions to International Markets**

We recommend that the Secretary direct staff to work with and coordinate among government agencies and private firms to create and promote a pathway to Virtual Power Plants, based on the Department of Energy (DOE)'s Liftoff report (September 2023)<sup>1</sup>. The desired outcome of this proposed capacity-building program is for U.S. exporters to provide demand management technologies, tools, and expertise to help societies and governments in the emerging markets and developing economies (EMDE) manage their demand for clean energy technologies and services and achieve faster progress to “net zero” at a lower cost.

**Sub-Committee(s):** Export Competitiveness

**Background Information:**

During the Leaders' Climate Summit (April 23, 2021) U.S. Secretary of Commerce Gina Raimondo stated that: “Governments will not solve climate change alone. We also want and need private firms and academic research institutions to play a big role in advancing clean technology innovation. This is a once-in-a-generation opportunity for the United States to develop and produce advanced technologies, export them around the world, and speed global net-zero transitions. This work will ultimately lead to good-paying jobs and better technology for the world's fight against climate change.”

Dr. Jessica Trancik of MIT's Institute for Data, Systems, and Society said during a Columbia University SIPA event: “We have the technologies and services to battle climate crises but lack soft technologies or processes to acquire customers and planning. How do we get societies and governments to move in a direction of demand management?”

Countries around the world have robust renewable energy goals and are requesting assistance with achieving these goals. Successfully reaching these goals will lead to a higher volume of variable renewable energy on the electric grid which will require electric utilities to deploy technologies, software, and expertise to effectively manage their power system. Example solutions include:

- Integrated Resource and Resilience Planning (IRRP), which is a power system investment plan that considers cost, reliability, business continuity and climate resilience considerations.<sup>2</sup>

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<sup>1</sup> Pathways to Commercial Liftoff: Virtual Power Plants (VPPs - Pathways to Commercial Liftoff)

<sup>2</sup> See Climate Links for an example definition: [https://www.climatelinks.org/sites/default/files/asset/document/2021-04/2021\\_USAID\\_T-LTS\\_LAC-Workshop-Session-3-IRRP-Case-Study.pdf](https://www.climatelinks.org/sites/default/files/asset/document/2021-04/2021_USAID_T-LTS_LAC-Workshop-Session-3-IRRP-Case-Study.pdf)

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- Demand-side management (DSM) or Demand Response (DR) programs, which involve electricity consumers (residential, commercial, and industrial) in reducing or shifting electricity usage during peak periods.<sup>3</sup>
- Virtual Power Plants (VPPs)<sup>4</sup>, which is a collection or aggregation of renewable assets within an electric grid that consist of batteries, smart thermostats, EV chargers, and other resources. Operators control the VPP remotely using software, determining each customer's supply of electricity according to demand. By efficiently aggregating these resources, VPPs offer a low-cost alternative to traditional centralized utility-scale power plants, benefiting both the grid and end-users alike.

This need creates a unique opportunity for U.S. companies to export their expertise and services to support utility demand management needs. For example, DOE has a series of “Liftoff” reports that describe the market opportunities, current challenges, and potential solutions for commercialization of interdependent clean energy technologies. Its September 2023 report is meant for a diverse audience of stakeholders highlights the opportunities to accelerate liftoff for VPPs.<sup>5</sup>

**Specific Suggested Actions:**

The Department of Commerce can support countries with creating stronger DER markets with a higher volume of renewable energy generation thereby creating a need for demand management solutions and VPPs. Actions the DOC can take include:

1. Work with International Trade Administration (ITA), U.S. Agency for International Development (USAID), U.S. Trade and Development Agency (USTDA), Millennium Challenge Corporation (MCC), U.S. International Development Finance Corporation (DFC), and DOE to promote best practices and lessons learned in creating an enabling environment for clean energy investment through approaches such as national and subnational energy policies and integrated resource and resilience plans.
2. Work with DOE to catalogue examples of demand management solutions including a portfolio of software tools and hardware for VPPs, Distributed Energy Resource Management (DREMS), and energy efficiency models provided by U.S. companies to showcase the breadth of U.S. solutions available to the international market.
3. Conduct trade missions and reverse trade missions featuring VPPs and U.S. companies that provide technologies, software and solutions that help countries effectively transition to a decarbonized, distributed energy market. The DOE estimates that there are already 30 to 60 gigawatts of VPPs in operation today and more than 100 VPPs in the U.S.
4. The ITA could offer case studies of VPPs mentioned by the DOE and their impacts in these markets as well as demand management solutions.

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<sup>3</sup> For example definitions see the Department of Energy website ([Demand Response](#)) and US Energy Information Agency website ([Electric Utility Demand-Side Management](#))

<sup>4</sup> For example definitions see the Department of Energy website ([Sector Spotlight: Virtual Power Plants](#)) and enerG, Q3 2023, [www.alternerg.com](http://www.alternerg.com), article by Robert Senior, Content Editor at *Fortress Power*

<sup>5</sup> Pathways to Commercial Liftoff: Virtual Power Plants ([VPPs - Pathways to Commercial Liftoff](#))

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**Expected Effect on U.S. Export Competitiveness:** Increased demand for U.S. companies to provide demand management solutions in countries that have prioritized decarbonized distributed energy markets.

**Specific Agencies Responsible for Implementation:** ITA, USAID, USTDA, MCC, DFC, and DOE

**Measures of Success:**

- Registration requests for an EMDE adaptation of DOE’s Pathways to Commercial Liftoff: Virtual Power Plants Deep Dive webinar.
- Number of reverse trade missions focused on visits to one or more of the 100 U.S. VPPs.
- Greater coordination and collaboration across and amongst U.S. government agencies and departments through the Wilson Center’s Wahba Institute for Strategic Competition (WISC)<sup>6</sup>
- Increased exports of clean energy technologies, software and services support variable energy market management and VPPs.

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<sup>6</sup> Wahba Institute for Strategic Competition, [www.wilsoncenter.org/WISC](http://www.wilsoncenter.org/WISC), “explored how to close the multi-trillion-dollar infrastructure funding gap in emerging markets and developing economies (EMDE). It focused on providing more authorities to the DFC, the U.S. government’s development finance institution.”