MeguireWhitney

Memorandum

To: Ken Nolan, General Manager, VPPSA

From: Amy Charles, Grants Consultant

Date: January 31, 2022

Re: Summary and analysis of options for Smart Grid funding

You asked for a memo assessing the suitability of the federal Smart Grid Investment Grant Program (Smart Grid or SGIG) to fund VPPSA's advanced metering infrastructure (AMI) and the likelihood of a successful application. This document outlines the program status, provides analysis of VPPSA's AMI initiative with respect to the upcoming round of Smart Grid funding, and concludes that VPPSA is best positioned for federal funding opportunities if the State of Vermont makes an immediate investment in the basic infrastructure on which current Smart Grid opportunities are built.

I. Federal funding is not yet available and will be highly competitive

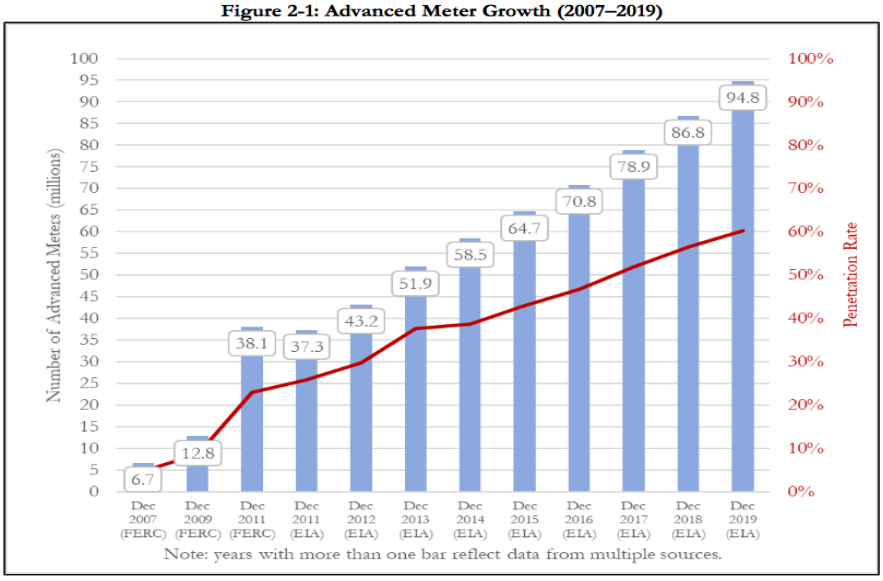
The Smart Grid program was first authorized in Sec. 1306 of the Energy Independence and Security Act of 2007. It received an $4.5 billion infusion as part of the 2009 American Reinvestment and Recovery Act (Recovery Act or ARRA), which was spent on 99 cost-shared projects across the country. Smart Grid funds were used in Vermont and nationwide for AMI rollout in the 2010s.

The Infrastructure Investment and Jobs Act (IIJA) provided new funding for the program in November, 2021. In comparison to the Recovery Act, IIJA represents a smaller investment ($3 billion) over a longer time period (five years), and only $600 million will be available in the first round of funding.

While SGIG was one of the few programs to receive direct appropriations under the IIJA, rather than an authorization that must subsequently be funded through the annual appropriations process, an infrastructure bill "Guidebook" released by the Biden Administration indicates applications for the program are not expected to be open until the end of 2022.

II. VPPSA's AMI project is a prerequisite for the type of projects Smart Grid is likely to fund

Figure 2-1: Advanced Meter Growth (2007–2019)



(source: FERC 2021 Assessment of Demand Response and Advanced Metering)

VPPSA faces strong national competition for IIJA-authorized Smart Grid funds from utilities that are already building on and exploiting operational AMI technology. In its Dec. 2021 report, the Federal Energy Regulatory Commission (FERC) estimated 95 million of 157 million U.S. customers had AMI installed by the end of 2019.

Table 2-2: Advanced Meter Penetration Rate by Customer Class and Census Division (2019)

Census Division	Customer Class			
	Residential	Commercial	Industrial	All Classes
East North Central	68.0%	64.5%	56.5%	67.6%
East South Central	68.8%	61.6%	51.7%	67.8%
Middle Atlantic	37.8%	34.5%	40.4%	37.4%
Mountain	51.5%	47.7%	51.5%	51.1%
New England	22.0%	24.6%	24.5%	22.3%
Pacific	74.0%	73.9%	64.0%	73.9%
South Atlantic	66.3%	62.5%	57.4%	65.8%
West North Central	43.5%	42.8%	58.6%	43.6%
West South Central	75.2%	71.1%	47.5%	74.4%
All Regions	**60.7%**	**57.8%**	**53.9%**	**60.3%**

Source: 2019 Form EIA-861 Advanced_Meters_2019 data file, 2019 Form EIA-861 Utility_Data_2019, 2018 Form EIA-861 Advanced_Meters_2018 data file, 2018 Form EIA-861 Utility_Data_2018.

Note: The transportation sector data collected by EIA contain a relatively small number of meters and are not reported separately here. Although some utilities may operate in more than one state and Census Division, EIA data is broken down by utility at the state level. Commission staff has not independently verified the accuracy of EIA data.

(source: FERC 2021 Assessment of Demand Response and Advanced Metering [highlight – AC])

Many regions of the country were already well along in AMI installation by 2019.

In its report, FERC pointed out that states have already begun encouraging utilities to build on AMI's capabilities: "... state regulators in Connecticut and New Jersey initiated proceedings that provide upfront clarity on how they expect utilities to unlock value from advanced meters and analyze the costs and benefits of advanced meter deployment. Additionally, New York regulators have provided direction on how to measure benefits of advanced meters beyond traditional cost-benefit analysis...." In Minnesota, where the regional penetration of residential AMI was 68% in 2019, XCel Energy's compliance filing noted that "advanced meters are a key enabler for more complex rate structures, such as a three-period design in its time-of-use rate pilot, interactive demand response rate offerings, and critical peak pricing, among others."

Recognizing that thinking has moved beyond "how can we persuade customers to accept AMI" to "how can we use AMI to help stabilize the grid, take best advantage of rapidly increasing DER, and seek efficiencies," IIJA adds to the SGIG program a multitude of new advanced technologies eligible for funding, including broadband and other communications infrastructure to support AMI and AMI-dependent technologies; advanced transmission technologies such as dynamic line rating, flow control devices, advanced conductors, network topology optimization, and other hardware and software to improve network performance and stability; energy storage to meet fluctuating electricity demand, provide voltage support, and integrate intermittent generation sources, including V2G technologies; data analytics and software-as-a-service to provide flexibility and help grid operators quickly rebalance the electrical system; services and materials for the integration of renewable energy resources, electric vehicle charging infrastructure, and V2G technologies; and the ability to reliably meet increased demand from electric vehicles and the electrification of appliances and other sectors.

With AMI penetration already high nationally and the Biden Administration setting ambitious national targets for decarbonization, the Department of Energy's (DOE) focus is likely to be on advancing projects that take the next step in smart grid build-out and find new ways of exploiting operational AMI and other smart grid infrastructure for electrification and efficiency.

III. Meguire Whitney recommends pursuit of immediately available matching funds as a prerequisite to any Smart Grid application

We suggest that an application to Smart Grid for AMI installation is not VPPSA's or Vermont's most advantageous use of the upcoming grant opportunity. At best, a request for dollars for AMI installation may now be judged against a request for advanced SCADA improvements, grid defense against extreme weather, or infrastructure to enable the transition to EVs, all Administration priorities. At worst, such a request may also suggest that an applicant is not in a strong position to receive federal funding for more advanced projects.

In brief, a delay in AMI rollout means a delay in seeking competitive funding for necessary advanced grid technologies dependent on AMI. Therefore, we suggest that VPPSA pursue any readily available State funding that may aid it in catching up to national levels of AMI implementation as rapidly as possible.

We suggest that the State regard funding AMI as seed investment that will allow VPPSA to move quickly, roll out AMI to meet national implementation levels, and compete on an equal footing for IIJA and other funding for grid modernization, resilience, and efficiency programs, all aimed at providing Vermonters with sustainable, reliable, economical power as their grid evolves.