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Vermont Public Power Supply Authority
Putting the Public in Power.
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Vermont Public Power Supply Authority 2018 Tier 3 Annual Plan

Vermont's Renewable Energy Standard ("RES") enacted through Act 56 in 2015 requires electric distribution utilities to generate fossil fuel savings through energy transformation projects or purchase additional electricity from small, distributed renewable generators ("Tier 2"). The energy transformation ("Tier 3") requirement for the members of Vermont Public Power Supply Authority ("VPPSA") is described in 30 V.S.A. § 8005(a)(3)(B), which states that "in the case of a provider that is a municipal electric utility serving not more than 6,000 customers, the required amount shall be two percent of the provider's annual retail sales beginning on January 1, 2019 . . . . Prior to January 1, 2019, such a municipal electric utility voluntarily may engage in one or more energy transformation projects in accordance with this subdivision (3).[1]" The 12 municipal Members of VPPSA are each eligible to have their obligation begin in 2019, rather than 2017, under this provision.

In addition, under 30 V.S.A. § 8004 (e) "[i]n the case of members of the Vermont Public Power Supply Authority, the requirements of this chapter may be met in the aggregate." The VPPSA Member utilities plan to engage in joint Tier 3 programs and comply with their RES obligation in the aggregate.

The VPPSA utilities intend to offer an Electric Vehicle Pilot Program on a voluntary basis in 2018. The Pilot Program will deliver economic benefits to customers and allow Members the opportunity to gain experience delivering Tier 3 programs. The Pilot will enable VPPSA to develop the necessary infrastructure to implement programs across utility service territories and determine how its Members can best benefit from Tier 3 aggregation. The structure put in place to track Tier 3 costs and benefits under the EV Pilot Program will be replicable as future Tier 3 programs are rolled out.

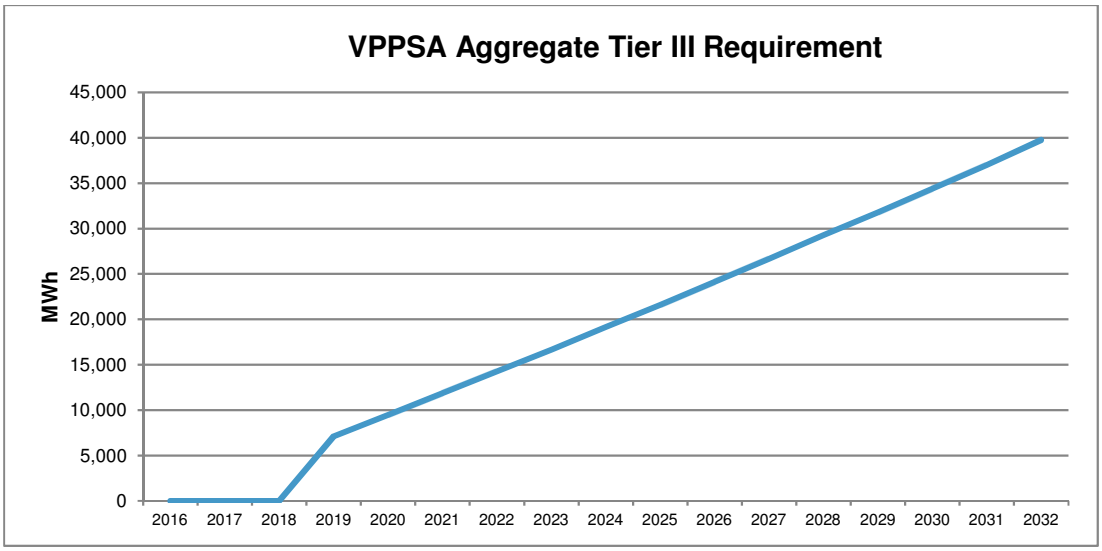
While VPPSA has planned its Tier 3 Pilot Program to include the 12 current members, VPPSA recently received notice that the Village of Hyde Park will be leaving VPPSA. Because Hyde Park is a current VPPSA Member, that utility is included in this Tier 3 Annual Plan; however, it is VPPSA's expectation that Hyde Park will not ultimately be included in VPPSA's Pilot Program and compliance filing and will instead be filing separately.

VPPSA Tier 3 Obligation

In 2019, the first year in which VPPSA has a Tier 3 obligation, VPPSA will need to acquire approximately 7,100 MWH in savings. Obligations increase rapidly, doubling within three years.

[1] 30 V.S.A. § 8005(a)(3)(B)

Savings accrued during the 2018 Pilot Program will be banked for use in a future compliance year, consistent with 30 V.S.A. § 8005(a)(3)(F)(iv).[2]



VPPSA Electric Vehicle Pilot Program

The market share of electric vehicles in Vermont continues to grow, but sales of electric vehicles ("EVs") and plug-in hybrid electric vehicles ("PHEVs") remain a relatively low percentage of overall vehicle sales in the state. According to Drive Electric Vermont, EVs and PHEVs comprised 1.64% of vehicle sales between September 2016 and August 2017, which were the most recent 12 months for which data was available. Despite lower operating and maintenance costs associated with EVs and PHEVs, the upfront cost continues to be one of the barriers to greater EV penetration in the state. The VPPSA Members plan to offer incentives on EVs and PHEVs to customers beginning in January 2018.

VPPSA estimates that approximately 100 customers will participate in the EV and PHEV Pilot in 2018. Based on the prescriptive savings values determined through the Tier 3 Technical Advisory Group ("TAG,") VPPSA will claim 24.6 MWH for each EV and 13.7 MWH for each PHEV. The customer incentive for purchasing an electric vehicle will be $800 and the customer incentive for purchasing a plug-in hybrid electric vehicle will be $400. Low-income customers[3] will receive an additional $200 towards the purchase of an EV or PHEV.

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[2]Act 56 requires the Public Utility Commission to adopt rules: "… (iv) To allow a provider who has met its required amount under this subdivision (3) in a given year to apply excess net reduction in fossil fuel consumption, expressed as a MWH equivalent, from its energy transformation project or projects during that year toward the provider's required amount in a future year."

[3] According to the PUC's *Order Implementing the Renewable Energy Standard* dated 6/28/2016, "A low-income customer shall be defined as a customer whose household income is at or below 80% of Vermont statewide median income.

VPPSA Electric Vehicle Pilot Program Expected Costs and Savings

Vehicle Type	*Customer Incentive*	*Administrative Costs*	*Total Cost*	*# of cars*	*VPPSA Cost*	*Savings per car (MWH)*	*Total Savings (MWH)*	*$/MWH*
EV	$800	$256	$1,056	10	$10,560	24.6	246	$42.92
PHEV	$400	$256	$656	80	$52,480	13.7	1096	$47.88
EV *(low-income)*	$1,000	$256	$1,256	5	$6,280	24.6	123	$51.05
PHEV *(low-income)*	$600	$256	$856	5	$4,280	13.7	68.5	$62.48
TOTAL				**90**	**$73,600**		**1533.5**	**$47.99**

Other Tier 3 Measures

In addition, Commercial and industrial customers will be served on an individual, custom basis in 2018. VPPSA continues to explore cost-effective Tier 3 custom projects, including converting utility customers from diesel generators to electric service. Several customers that are currently using diesel generators and have the potential to convert to electricity have been identified and contacted by their host utilities. Should such projects move forward, VPPSA will provide additional detail on these projects to the Public Utility Commission ("PUC") and the Public Service Department.

Equitable Opportunity

Under 30 V.S.A. § 8005(a)(3)(F)(vi) the PUC is charged with adopting rules "To ensure that all ratepayers have an equitable opportunity to participate in, and benefit from, energy transformation projects regardless of rate class, income level, or provider service territory." In general, all of a host utility's customers stand to benefit from the increased electric sales that accompany EV and PHEV adoption because these increased sales allow fixed utility costs to be spread over a greater number of kWhs, helping to alleviate rate pressure for all customers.

In addition, the EV and PHEV incentives offered by the VPPSA Members will be available to all of the Members' customers. By providing additional incentives for income-eligible customers, as well as by making the incentives available for both vehicle leases and vehicle purchases, this program is accessible to low-income customers. Discussions with vehicle dealerships indicate that many low- to moderate-income customers take advantage of PHEV leases, which are currently offered at $199-299/month.

VPPSA continues to explore other ways to encourage low-income participation in its EV Program, including possibly making the incentive available "upfront" as a down payment on a lease. Consideration will also be given to offering incentives on the purchase of used EVs and PHEVs at prorated incentive and savings levels.

Collaboration/Exclusive Delivery

The natural partners for this EV Pilot Program are local car dealers. Lamoille Valley Ford, located in Hardwick, VT, and McMahon Chevrolet, located in Hyde Park, VT, have indicated interest in partnering with VPPSA to offer customer incentives on EVs and PHEVs. These incentives will be available for vehicle purchases and leases. VPPSA is continuing its outreach to dealerships in central and southern Vermont to ensure that all VPPSA member utility ratepayers have access to a dealer that is aware of the EV and PHEV incentives and that local dealers in the VPPSA members' territories have the opportunity to participate.

The VPPSA Members are uniquely positioned to communicate with their customers about the benefits of converting from gasoline-powered vehicles to electric vehicles while simultaneously monitoring the cumulative impacts of added electric demand on the grid. VPPSA is not aware of other energy service providers currently offering electric vehicle incentives in VPPSA Members' territories, and strategic electrification is outside of the purview of the state's energy efficiency utilities ("EEUs") who are charged with achieving cost-effective electric efficiency and thermal savings. VPPSA has consulted with the subject matter experts at Drive Electric Vermont regarding program design considerations.

Strategic electrification of the transportation sector is an appropriate responsibility of the state's distribution utilities, who are charged with procuring electric supply and managing the distribution grids. Distribution utilities are uniquely positioned to promote electrification of the transportation sector while assessing and mitigating grid impacts.

Best Practices for Demand Management

Over the long-term, electric vehicles have the potential to significantly increase loads for Vermont utilities. Managing when EV charging occurs will enable utilities to collect added revenue from increased electric sales without significant increases in the costs associated with increased peaks in load.

Through ongoing distribution planning efforts, the VPPSA Members have identified that there currently is room on their distribution circuits to absorb additional load from electric vehicle charging. It is expected that the majority of home charging will occur during overnight, off-peak hours. Through VPPSA's EV Pilot Program, informational material about the ideal time to charge will be provided to participating customers. Additionally, the VPPSA member utilities will continue to monitor load impacts of electric vehicle charging to determine if, and when, more active load management will be necessary.

Tier 3 Implementation Considerations

The savings level attributable to electric vehicle conversions established by the TAG is 24.6 MWH for utilities with a power supply mix that is in line with the RES requirements (55% in 2017, increasing to 75% in 2032.) The savings attributable to a PHEV is 13.7 MWH. Given the Alternative Compliance Payment ("ACP") of $60.78/MWH in 2018 and considering only gross costs, the maximum a utility can spend on acquiring savings from an electric vehicle is $1,215 and the maximum utility investment for a PHEV is $669. Pursuant to the PUC's Final Order in docket 8550, administrative costs must be included for the purposes of cost-effectiveness screening; including these costs in the total utility expenditure means that customer incentives from the utility for EVs and PHEVs need to be considerably lower than the maximum investments.

VPPSA seeks guidance whether the determining cost for utilities in evaluating the maximum allowable program expenditures pursuant to 30 V.S.A. § 8005(a)(3)(C)(iv) should be the net cost or the gross cost. Electric vehicles will bring added revenue to the utility over time in the form of increased sales. After accounting for increased power supply and any other costs, adding these projected sales into the calculation shows that the actual net cost to the utility will likely be lower than the upfront incentive plus administrative costs. VPPSA has structured this Pilot Program so that the costs of customer incentives and program administration (i.e. the gross costs) are lower than the ACP. Depending on program participation and other design parameters, there may be merit in offering higher incentives. However, to do so would require that the maximum permissible expenditure as compared with the ACP be calculated based on net cost to the utility, rather than gross utility cost.

Requiring utilities to offer Tier 3 programs with *gross* costs lower than the ACP may result in utilities offering programs that are less cost-effective in the long term from the ratepayer perspective. For instance, it is conceivable that weatherization services could be offered at a lower upfront cost than a meaningful electric vehicle rebate. However, the electric vehicle program will generate added utility revenue, which will decrease overall costs to all ratepayers. An electric vehicle program that is more costly on a gross basis, even to the point of exceeding the ACP, may be a better investment for the utility over the long term, and will have lower potential for cost shifting between participants and non-participants than alternatives such as weatherization.

Similarly, at the current prices for Tier 2 RECs, it may well be more cost-effective for utilities to forego implementing Tier 3 programs in favor of covering their Tier 3 obligation with additional Tier 2 credits. VPPSA suggests that the PUC clarify how utility costs should be screened under Tier 3.