

Vermont Distributed Generation 2020-2029 Expectations



Distributed Generation Forecast
Working Group
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Photo credit: Green Mountain Power



Renewable Energy Standard

- Total Renewable requirement (55% by 2017 increasing to 75% in 2032)
 - Includes any vintage and large hydro
 - **VT exceeded 2018 requirement @ 63% statewide**
- Distributed Generation carve-out (1% of sales in 2017 increasing to 10% in 2032)
 - **2018 requirement of 1.6%, with 100% renewable utilities exempt**
 - **In 2018, VT utilities retired 1.5% for Tier II*, 0.6% banked for future years and 0.3% used toward Tier III (Energy Transformation) compliance**
- Energy Transformation Projects (2% of sales in 2017 increasing to 12% in 2032)
 - Reduce fossil fuel use, including in thermal and transport sectors (heat pumps, weatherization, electric vehicles)

**BED, WEC & Swanton are exempt from the Tier II requirement because they have demonstrated 100% renewability*

RES – DG carve-out

- “This category encourages the use of distributed generation to support the reliability of the State's electric system; reduce line losses; contribute to avoiding or deferring improvements to that system necessitated by transmission or distribution constraints; and diversify the size and type of resources connected to that system.” 30 V.S.A. § 8005(a)(2)(A)
- Eligible projects must be 5 MW or less, located within Vermont, and commissioned after July 1, 2015
 - Exception to 5 MW size threshold may be granted in very limited circumstances
- RECs used to demonstrate compliance
- **2020 Alternative Compliance Payment = \$63.48/MWh**

RES – DG carve-out Expectations

- Flat retail sales in Vermont (5,400 – 5,800 GWh/year over the last ten years)
- **25-27 MW** of DG per year needed to meet requirement
 - Assumes continued aggressive energy efficiency, with resulting flat load growth
 - Assumes that **85-100%** of eligible resources will be solar
- Output from Standard Offer projects will count towards DG carve-out (RECs are purchased through the contract)
- Output of net metering projects from proposed program count if customer “sells” RECs to utility
- RECs for compliance can also be obtained through bundled PPAs, utility-owned generation, REC-only contracts

Standard-Offer Program - Overview

- Created in 2009, provides incentives for generation units utilizing renewable technology with a capacity of 2.2 MW or less
- Original programmatic cap of 50 MW, fixed prices; expanded in 2012 to 127.5 MW, solicitation with specific solicitation guidelines:
 - 2013-2015: 5 MW per year
 - 2016-2018: 7.5 MW per year
 - 2019-2022: 10 MW per year
- Outside cap: Farm Methane & projects that provide “sufficient benefit” to grid operations

Standard-Offer Program – PV Costs

- 2009-2012 rates fixed, varied by technology (PV \$0.24 to \$0.30/kWh)
- 2013-2019 competitive solicitations result in reduced costs
 - 2013 auction results: 4 PV projects:
 - Between \$0.134 and \$0.1441, incl RECs
 - 2014 auction results: 3 PV projects:
 - Between \$0.119 and \$0.129, incl RECs
 - 2015 auction results: 2 PV projects
 - \$0.1096 and \$0.1097, incl RECs
 - 2016 auction results: 2 PV projects
 - \$0.075 and \$0.1087, incl RECs
 - 2017 auction results: 3 “price competitive” PV projects
 - \$0.0889, \$0.0904, and \$0.0946, incl. RECs
 - 2018 auction results: 4 “price competitive” PV projects
 - 1.7 MW @ \$0.0884; 2.2 MW each @: \$0.1087, \$0.1106, and \$0.1112, incl. RECs
 - **2019 auction results: 4 “price competitive” PV projects**
 - **2.2 MW each @ \$0.0838, \$0.0849, \$0.0910, and \$0.0919 incl. RECs**

Standard-Offer Program – Specific Allocations

- Under statute, 10-20% of annual amount available set aside for distribution utilities (Provider Block)
 - 10% to 2015, 15% to 2018, 20% to 2022
- The **2019 RFP** contained the following allocations:

2019 Standard-Offer Program Technology Allocation	
<u>Developer Block</u>	
Price-Competitive Developer Block	3.083 MW
<u>Technology Diversity Developer Block</u>	
Biomass	1.170 MW
Small Wind	1.170 MW
Large Wind	1.170 MW
Food Waste Anaerobic Digestion	1.170 MW
Hydroelectric	1.170 MW
<u>Provider Block</u>	
All provider projects	2.235 MW
Total	11.168 MW

Standard-Offer Program – 2019 Awards

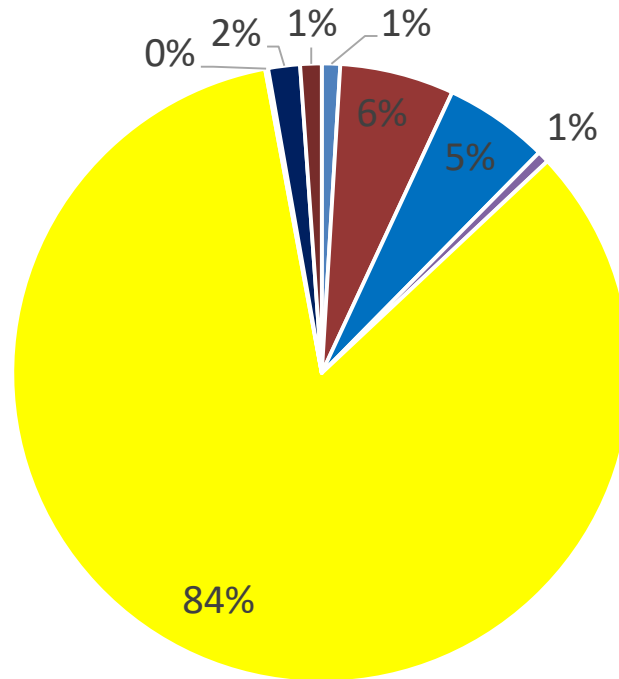
Project Name	Technology	Price (\$/kWh)	Capacity (MW)	Developer
PROVIDER BLOCK				
Salvage Yard Solar	Solar	0.1200	2.100	VPPSA
Center Road Solar	Solar	0.1240	2.100	VPPSA
DEVELOPER BLOCK				
Technology Diversity Block				
Rothblatt Wind	Small Wind	0.2520	0.025	Rothblatt Wind
Shepard Wind	Small Wind	0.2520	0.025	Shepard Wind
Cross Wind Project A	Small Wind	0.2580	0.050	Green Power Farms, LLC
Cross Wind Project B	Small Wind	0.2580	0.050	Green Power Farms, LLC
Cross Wind Project C	Small Wind	0.2580	0.050	Green Power Farms, LLC
Cross Wind Project D	Small Wind	0.2580	0.050	Green Power Farms, LLC
Tomlinson Wind 2	Small Wind	0.2580	0.050	Star Wind Turbines, LLC
Howrigan Wind Farm	Small Wind	0.2580	0.100	David & Peggy Howrigan
Way Out Wind Farm	Small Wind	0.2580	0.100	Keith Weitzmann & Robin Lane
Merck Forest Wind Farm	Small Wind	0.2580	0.100	Merck Forest Foundation
Hespos Wind Farm	Small Wind	0.2580	0.100	Michael R. Hespos
Auger Heights Wind A	Small Wind	0.2580	0.100	Star Wind Turbines, LLC
Auger Heights Wind B	Small Wind	0.2580	0.100	Star Wind Turbines, LLC
Pennock Hill Wind	Small Wind	0.2580	0.100	Josh Kahan & Lauri Berkenkamp
Purpose Energy-St. Albans	Food Waste	0.2038	1.014	Purpose Energy-St. Albans, LLC
Franklin Foods VT Recovery	Food Waste	0.2050	0.710	Franklin Foods, Inc.
Cabot Creamery	Food Waste	0.2080	0.250	Agri-Mark, Inc.
Price Competitive Block				
Vermont Solar DG	Solar	0.0838	2.200	NextEra Energy Resources
St. Albans Solar DG	Solar	0.0849	2.200	NextEra Energy Resources
Sand Hill Solar	Solar	0.0910	2.200	Encore Redevelopment, LLC
Vergennes Solar DG	Solar	0.0919	2.200	NextEra Energy Resources
Total			15.974	
RESERVE GROUP				
ER The Narrows Solar	Solar	0.0930	2.200	Encore Redevelopment, LLC
Silk Solar Park	Solar	0.0939	2.200	Pacific Northwest Solar, LLC
Lemay Solar Park	Solar	0.0998	2.200	Lemay Solar, LLC
Total			6.600	



Standard-Offer Program – Future Expectations

- Solar is expected to continue to be predominant technology type
 - Very limited number of hydro, landfill methane, food waste digester, and biomass sites
 - Farm methane projects likely to be limited, but also outside cap
 - Wind can be difficult to site in Vermont
- 2019 RFP set aside 5.85 MW for non-solar; ~3 MW of small wind and food waste digesters successfully bid, so the unused capacity from the technology diversity block, the last RFP, and terminated contracts were added to the provider and price-competitive blocks.

Standard-Offer Program – Resources Under Contract



- Biomass
- Farm Methane
- Hydro
- Landfill
- Solar
- Small Wind
- Large Wind
- Food Waste

Standard-Offer Program – Certainty of Resources

- Statutory directive for “rapid deployment” of standard offer projects
- Contracts contain milestones with financial penalties if milestones are not met (tracked by purchasing agent)
 - Interconnection application – must be filed prior to entering program
 - Permitting application – must be filed within 12 months
 - Commissioning – must be achieved within 24 months (solar)
- If project drops out, capacity becomes available during the next auction

Net Metering Overview

- “NM 2.0” effective January 1, 2017
 - Each kWh generated credited at retail rate with adjustors, *currently*:
 - + \$0.01 if RECs provided to utility (as of 7/1/19)
 - \$0.03 if customer keeps RECs
 - + \$0.01 for projects up to 150 kW on a preferred site
 - \$0.02 for projects over 150 kW on a preferred site (as of 7/1/19)
 - \$0.03 for projects 15 kW to 150 kW not on a preferred site
- Positive adjustors applied for 10 years; negative adjustors applied in perpetuity
- Preferred site = existing structure, disturbed area, location designated by municipal plans
 - Projects over 150 kW must be on a preferred site
 - Customer can only net out energy component of bill
 - Next biennial review of adjustors in early 2020

Net Metering Rulemaking

- 2018 PUC workshop on preferred sites has **expanded** to become a rulemaking potentially addressing diverse areas of the rule. Comments filed Nov. 1, and reply comments due Dec. 6, on:
 - **Administrative issues**
 - Information needed to streamline the registration/interconnection process and reduce need for amendments
 - **Preferred sites**
 - Standards and procedures for preferred site designation via joint letter of support from regional and local bodies requested
 - **Compensation structure**
 - Detailed information from utilities and others on whether the net-metering program is causing a cost shift,
 - effect on rates, costs and benefits, and alternatives

Vermont DG Summary 2020-2032

- Vermont will need at least 33,000 MWh per year of new DG, for 2019 through 2032, to meet the RES DG carve-out requirement (assuming no load growth)
- Assuming 85% of that amount comes from solar, at least 25 MW of new solar DG is needed each year to meet RES requirement (27 MW if 100% solar)
- Some amount of non-solar will be built, but likely to be fairly limited absent significant technology changes

Vermont DG Summary 2020-2032 (cont.)

- Standard Offer Program and Net Metering are expected to account for most of new resources to meet RES DG requirement
 - Standard Offer program ends after 2022, likely leading to a more predictable pace of DG deployment
 - Unclear how many new net metered projects will be additional to the RES DG requirement
- If these programs don't provide sufficient resources, utilities must get the RECs through other means (PPA, utility-owned generation, etc.)
 - Utilities built generation and entered into PPAs ahead of 2017, the first year of RES compliance and may be “long” for several years
 - Utilities can bank an unlimited # of RECs (for up to 3 years) or sell “excess” RECs from Standard Offer, PPA, or utility-owned projects; they can also use Tier 2 (DG) RECs for Tier 3 (Energy Transformation) compliance (and expect Tier 3 to be challenging to meet otherwise)

Vermont DG Summary 2020-2032 (cont.)

- Unclear how many new net metered projects will be additional to the RES DG requirement
 - For net metering customers that don't "sell" RECs to the interconnecting utility
 - Net metering designed to achieve goals additional to pacing consistent with the RES:
 - Pacing consistent with the Comprehensive Energy Plan (90% renewable across all sectors) and "any other relevant State program," including 25 x 25 and greenhouse gas goals
 - Minimizing cost shifting, accounts for all costs & benefits, ensures all customers who want to net meter can do so, balances pacing and cost with rate impact, and accounts for changes in technology costs over time

2019 Actuals

- PV interconnections in 2019 through September 30 were 36.19 MW*
- Estimate another ~5 MW will interconnect through year-end
 - Additional ~2 MW interconnected in GMP & VEC through November
- Estimated total for 2019 PV interconnections ~41 MW
- Compared with 44 MW of PV interconnections in 2018, 59 MW in 2017 and 73 MW in 2016
- Trajectory and policy developments support 2019 PV forecast pre-discount nameplate values of 25-27 MW/yr through 2028
 - Utility-owned or PPA projects contracted in runup to RES still coming online
 - NM projects from previous, higher-incentive regimes still coming online

*Utility monthly DG resource surveys to ISO-NE

2020 Expectations

- Policy-driven (RES) 25-27 MW
 - Comprised of SO (10 MW), utility-owned or PPAs (>0 MW), and NM (>0 MW)
 - Utility can sell or bank excess SO/UO/PPA RECs; must retire NM RECs
- Net metering additional to RES
 - Adjustors revised downward July 1, 2019
 - Federal stepdown of ITC
 - Availability of preferred locations
 - Net-metering rulemaking
 - 2020 VT legislative session

Questions?



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