



Evaluation of Electric Distribution
Utilities Compliance with Tier III
Obligations

RES Tier III Verification Report 2020

Vermont Department of Public Service

June 1, 2021

This page left blank intentionally.

Contents

Introduction	7
Prescriptive Measure Development	8
Evaluation Methodology.....	8
Summary of Results	10
Green Mountain Power.....	13
GMP 2020 RES Tier III Savings Claim	15
GMP Tier III Program and Measure Descriptions	17
Prescriptive Measures.....	17
Shared Savings	17
Cold Climate Heat Pumps	17
Heat Pump Water Heaters.....	17
Transportation Programs.....	17
Electric Vehicles	17
Electric Bikes	18
Electric Lawnmowers	18
Electric Forklift Program	18
Public and Workplace EV Charging Stations	18
Charging Network Infrastructure.....	18
Battery Storage	18
Custom Projects	19
Burlington Electric Department	22
Burlington Electric Department 2020 Tier III Savings Claim	24
BED Tier III Program and Measure Descriptions.....	26
Prescriptive Measures.....	26
Electric Vehicles and Plugin Hybrid Electric Vehicles.....	26
Electric Bikes	26
Cold Climate Heat Pumps	26
Electric Vehicle (“EV”) Charging Stations.....	27
Residential & Commercial Electric Lawnmowers	27
Heat Pump Water Heaters.....	27
Custom Ground-Source Heat Pump Project	27
Custom VRF Heat Pump Project.....	27

Washington Electric Cooperative	29
Washington Electric Cooperative 2020 Tier III Savings Verification Report	31
WEC Tier III Program and Measure Descriptions	33
Prescriptive Projects	33
Cold Climate Heat Pumps	33
Heat Pump Water Heaters	33
Electric Vehicles	33
Electric Bikes	33
Residential and Commercial Mowers	33
Modern Wood Heating	34
Market Rate Weatherization	34
Income Eligible Weatherization	34
Vermont Electric Cooperative.....	35
Vermont Electric Cooperative 2020 Tier III Savings Verification Report	37
VEC Tier III Program and Measure Descriptions	39
Prescriptive Measures.....	39
Cold Climate Heat Pumps	39
Heat Pump Water Heater	39
Electric Vehicles	39
Residential Lawnmowers	39
Modern Wood Heating	40
Custom Projects	40
Clean Air Program	40
Mello	40
Residential EV Charger.....	40
Vermont Public Power Supply Authority.....	41
VPPSA 2020 Tier III Savings Verification Report.....	43
VPPSA Tier III Program and Measure Descriptions.....	45
Prescriptive Measures.....	45
Cold Climate Heat Pumps	45
Heat Pump Water Heaters.....	45
Electric Vehicles	46
EV Charger.....	46

Electric Bike	46
Residential and Commercial Lawnmowers	46
Custom Projects	46
Line Extension	46
Stowe Electric	47
Stowe Electric 2020 Tier III Savings Verification Report	49
Stowe Electric Tier III Program and Measure Descriptions.....	50
Prescriptive Projects	50
Cold Climate Heat Pumps	50
Heat Pump Water Heaters.....	51
Electric Vehicles	51
General RES Tier III Program Recommendations	52
Fuel Use Estimates	52
Reporting	52
Other	52

This page left blank intentionally.

Introduction

30 V.S.A. § 8005 requires Vermont electric Distribution Utilities (“DUs”) to acquire specified amounts of renewable energy, in the form of renewable attributes or Renewable Energy Credits (“RECs”), and to achieve fossil-fuel savings from energy transformation projects.

The structure of the RES is divided into three categories, or tiers.¹ The first tier (“Tier I”) requires DUs to procure an amount of renewable energy equivalent to 55% of their annual retail electric sales for the year 2017. This amount increases by 4% every third January 1 thereafter, eventually reaching 75% in 2032.²

The second tier (“Tier II”) requires DUs to procure an amount of renewable energy equivalent to 1% of their annual retail sales from distributed generation resources starting in 2017. This amount increases by three-fifths of a percent each year, eventually reaching 10% in 2032.³ Tier II resources are also counted as part of a DU’s Tier I requirement.⁴

The third tier of the RES (“Tier III”) requires that DUs either procure additional renewable distributed generation eligible for Tier II or acquire fossil-fuel savings from energy transformation projects.⁵ Energy transformation projects are those that reduce fossil fuel consumed by DU customers.⁶ For Tier III, the RES establishes a required amount of 2% of a DU’s annual retail sales in 2017, increasing by two-thirds of a percent each year of each year’s sales until reaching 12% in 2032.⁷ Energy Transformation projects implemented on or after January 1, 2015 are eligible to be counted towards a DU’s Tier III obligation.⁸

On April 1, 2020, the Vermont Public Utility Commission’s (“PUC” or “Commission”) administrative rule 4.400⁹ became effective. This rule implements the Renewable Energy Standard (“RES”).¹⁰ Commission Rule 4.412 directs the Vermont Department of Public Service (“PSD” or “Department”) to carry out evaluations to determine whether a DU is meeting its RES obligations. Before Rule 4.400 came into effect, the Department reviewed RES compliance per Commission Order.¹¹

¹ 30 V.S.A. § 8005(a).

² 30 V.S.A. § 8005(a)(1)(B).

³ 30 V.S.A. § 8005(a)(2)(C).

⁴ 30 V.S.A. § 8005(a)(1)(C).

⁵ 30 V.S.A. § 8005(a)(3)(A).

⁶ 30 V.S.A. § 8005(a)(3)(C).

⁷ 30 V.S.A. § 8005(a)(3)(B). For municipal electric utilities serving less than 6,000 customers, the required amount is 2% of the providers’ annual retail sales beginning January 1, 2019 increasing by two-thirds of a percent each year until reaching 10% in 2032. *Id.*

⁸ 30 V.S.A. § 8005(a)(3).

⁹ Vermont Public Utility Commission Rule 4.400, RENEWABLE ENERGY STANDARD RULE, *available at* https://puc.vermont.gov/sites/psbnew/files/doc_library/4400-renewable-energy-standard.pdf

¹⁰ *See also*, 30 V.S.A. §§ 8004 and 8005.

¹¹ *Investigation re: establishment of the Renewable Energy Standard Program*, Docket No. 8550, Order Implementing the Renewable Energy Standard of 6/28/2016 at 33 (directing Department to evaluate whether DUs are meeting the RES energy transformation requirements).

This report provides the PSD's verification of each DU's 2020 Tier III claims submitted for their Tier III programs. This report also includes recommendations regarding the DUs Tier III programs and reporting.

Scope of Evaluation

The PSD's evaluation activities consist of a thorough review of each DU's Tier III programs. For custom measures, this includes reviewing customer specific energy usage data and operational information to verify the assumptions on which the engineering analysis was based. Once these assumptions are confirmed, the engineering analysis is reviewed for reasonableness, accuracy, and compliance with statute. For prescriptive measures, the PSD reviews documentation that could be used to verify that prescribed savings values and calculations have been applied correctly, and to calculate evaluated savings that incorporate any necessary corrections. The evaluation did not include site visits to verify installations, operation of products, or to verify baseline conditions.

Prescriptive Measure Development

As established in administrative rule 4.400, a Technical Advisory Group ("TAG") was created with representatives from all the DUs impacted by Tier III requirements. The TAG creates a common approach to estimate savings for specific measures to create a unified and verifiable savings construct for all DUs to follow. The claim of prescriptive measure savings was verified as described below.

Evaluation Methodology

Most savings the majority of the DUs claim come from prescriptive projects which are based upon a prescriptive methodology created in the TAG. The approach used for evaluating prescriptive savings is consistent with the verification process used to verify the Energy Efficiency Utilities ("EEUs") savings claims. The utilities' prescriptive projects were statistically sampled to determine the number of projects that were required to be reviewed to ensure statistically significant results for the specific populations. The samples were designed to ensure a minimum confidence level of 80% and that the margin of error was no more than $\pm 10\%$ of the claimed savings value for the overall population. The savings claimed for these measures were then compared to values generated through a proper application of the Tier III Technical Resource Manual ("TRM") measure characterizations. To avoid double counting for those measures or services for which Efficiency Vermont participates, savings were adjusted prior to the Department's review, according to each DU's Memorandum of Understanding

(“MOU”) with Efficiency Vermont – which dictates how savings will be shared. In addition, for measures that increase electricity consumption, the overall non-fossil fuel generation percentage of each DU electrical portfolio was applied to account for any fossil fuel consumed to supply that electricity. For example, if a DU’s power supply portfolio is considered 100% renewable, there was deemed to be no penalty for increased electrical usage. If a utility’s generation mix is considered 75% non-fossil fuel generation, then 25% of the additional electrical load is subtracted from the electrical savings generated by the Tier III measure.

Through the TAG process, the “Tier III Planning Tool” was created for prescriptive measures that could be adjusted to the non-fossil percentage of each DU’s specific power supply portfolio. Any savings sharing with Efficiency Vermont through an MOU was then applied to determine the Tier III savings value of each measure installed. This tool was also used by the PSD to confirm the accuracy of the calculations.

The PSD is typically included early in the development of custom measures to determine if the project could appropriately be considered a Tier III project, and to establish reasonable assumptions for determining the savings attributable to that measure. This allowed the PSD to recommend improvements to the approaches, and refinements of the datasets used, to calculate savings that were ultimately claimed for the DU 2020 Tier III activities. It also increased the efficacy and speed of the evaluation and reduced the need for adjustments to savings claims.

After the first year of the Tier III program, documentation and reporting standards varied greatly. The PSD continues to work with the DUs to make aspects of the reporting more uniform to simplify review and improve comprehension of the measures implemented by the DUs. This includes development of common formatting for reporting tables and creating a common lexicon of definitions to avoid any confusion. These improvements have also increased the efficiency of the evaluation process.

Summary of Results

The table below provides a summary of the DUs claimed MWh equivalent (MWhe) savings and the recommended adjustments made by the PSD after the verification process.

TABLE 1 - SUMMARY OF RESULTS¹²

	Lifetime MWhe*	Percentage of Goal	Verified Lifetime MWhe	Verified Percentage of Goal
GMP	323,949	205.93%	322,582	205.08%
BED	37,968	305.87%	37,968	305.87%
WEC	3,183	108.75%	3,183	108.75%
VEC	24,823	136.90%	24,823	136.90%
VPPSA	19,409	213.36%	19,409	213.36%
Stowe	1,939	103.92%	1,939	103.92%
Hyde Park	328 ⁺	100.00%		

*MWhe = Megawatt hour equivalent

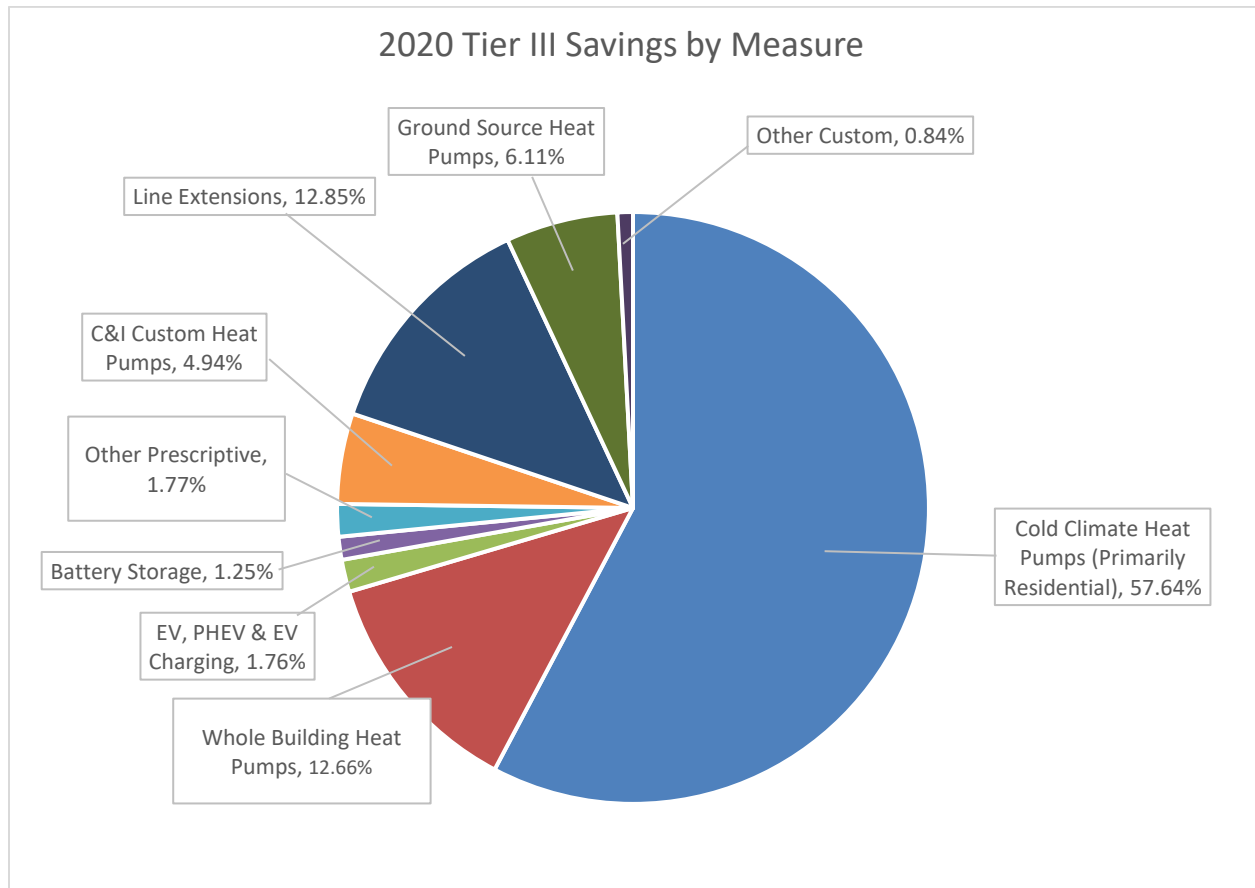
[^] Utilized banked Tier III RECs

⁺ Utilized banked Tier II RECs

Hyde Park Electric is satisfying its Tier III requirements entirely utilizing banked Tier II credits. The utilization of these credits will be confirmed against their Renewable Energy Standard filing due in August, 2021.

¹² Distribution Utilities savings claims filled in PUC case number 21-1045-INV

FIGURE 1: 2020 TIER III SAVINGS BY MEASURE



The following Electric Distribution Utility (“DU”) specific sub-reports contain information about the DU’s Tier III programs and savings claims as well as details of any savings claim adjustments recommended by the PSD.

This page left blank intentionally.

Green Mountain Power
2020 Tier III Savings Verification Report

This page left blank intentionally.

GMP 2020 RES Tier III Savings Claim

In the Green Mountain Power (“GMP”) Annual Plan, filed on November 1, 2019, the Tier III savings target for 2020 was estimated at 165,878 MWh. Actual retail sales in 2020 resulted in a target of 161,630 MWh. As detailed below, GMP claimed Tier III savings of 323,949 MWh for 2020, which surpasses the target by 162,319 MWh. The PSD has verified 322,582 MWh savings from their program in 2020 with an additional 160,952 carried over to 2021.

There were two instances where the verified savings was lower than claimed by GMP. One deduction of 38.6 MWh was due to a data entry error in the accounting for savings in the Charging Network Infrastructure program. The other deduction was due to the application of a 94.1% realization rate to the EV program due to the discovery of savings claimed for one EV (out of a sample of 19) for which the documentation was incomplete, and an incentive was not paid.

GMP’s Tier III Report claims to have met and exceeded their goal through a range of Energy Transformation Program offerings and custom Commercial & Industrial (“C&I”) projects. Most of the program offerings rely on the measure characterizations developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the full input of the DUs and the Department. Such prescriptive measures use average values from empirical data to determine the expected average savings for common measures. A significant portion of the GMP claimed savings for 2020 result from the completion of 24 large custom C&I projects that were pre-screened through the PSD prior to being implemented.

Table 2, below, lists the components GMP used to meet its 2020 Tier III MWh target.

TABLE 2: GMP 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Claimed	Percentage of Target	Verified Lifetime MWh	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	270,370	169.13%	272,003	168.29%
2020 Tier III Custom Projects	50,579	31.29%	50,578	31.29%
Total 2020 Tier III Savings	336,592	208.25%	335,223	207.40%
GMP 2020 Tier III Target	161,630	100.00%	161,630	100.00%
Carryover to 2021	162,319		160,952	

Tables 3 and 4 provide a more detailed breakdown of GMPs Tier III Savings claim and all subsequent adjustments. Table 3, below, summarizes the various Residential sector and other prescriptive measures implemented by GMP through either a shared savings memorandum of understanding or through measures implemented by GMP directly.

TABLE 3: GMP RESIDENTIAL AND PRESCRIPTIVE TIER III ENERGY TRANSFORMATION PROGRAMS

Measure	Units	Lifetime MWh Claimed	Percentage of Goal	Verified Lifetime MWh	Verified Percentage of Goal
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	8,386	192,614	119.17%	192,614	119.17%
Heat Pumps (Centralized System)	424	41,236	25.51%	41,236	25.51%
Heat Pump Water Heaters					
Heat Pump Water Heater	335	6,334	3.92%	6,334	3.92%
Transportation Programs					
Electric Vehicles Program					
New All Electric Vehicles	431	15,895	9.83%	14,960**	9.26%
Used All Electric Vehicles	58	1,054	0.65%	992	0.61%
New Plug-in Hybrid EV	186	5,134	3.18%	4,831	2.99%
Used Plug-in Hybrid EV	37	502	0.31%	473	0.29%
EVs Subtotal	712	22,586	13.97%	21,256	13.15%
Electric Bikes	590	3,103	1.92%	3,103	1.92%
Residential Lawnmowers	341	648	0.40%	648	0.40%
Commercial Lawnmowers	9	719	0.44%	719	0.44%
Forklifts (New)	1	116	0.07%	116	0.07%
Forklifts (Used)	1	56	0.03%	56	0.03%
Other Electric Vehicles Subtotal	942	4,642	2.87%	4,642	2.87%
Electric Vehicles Total	1654	27,228	16.85%	25,898	16.02%
Public & Workplace EV Charging Stations					
Level 2 - Public	12	193	0.12%	193	0.12%
Level 2 - Workplace	24	588	0.36%	588	0.36%
Level 2 - Multifamily	1	1	0.00%	1	0.00%
Public & Workplace EVSE Totals	36	781	0.48%	781	0.48%
Charging Network Infrastructure					
Level 2 - 90 ports	78,726	108	0.07%	108	0.07%
DC Fast Chargers - 14 ports	74,250	118	0.07%	118	0.07%
Charging Network Infrastructure Totals	152,976	264*	0.16%	226	0.14%
Transportation Programs Overall Total					
		28,273	17.49%	26,905	16.65%
Residential Battery Storage					
Tesla Powerwall 2019 Installations	656	4,913	3.04%	4,913	3.04%
Battery Storage Totals	656	4,913	3.04%	4,913	3.04%
Residential and Prescriptive Totals					
	11,491	273,371	169.13%	272,003	168.29%

*Total for Charging Network Infrastructure was incorrect in the GMP savings claim, resulting in a 38.6 MWh deduction in verified savings.

** A 94.1% realization rate was applied to the EV program due to the claimed savings for one EV being disallowed for lack of documentation.

GMP Tier III Program and Measure Descriptions

Prescriptive Measures

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”).

Shared Savings

Beginning on June 1, 2019, GMP partnered with Efficiency Vermont (“EVT”) to offer customers a \$100 mid-stream rebate to augment EVT’s existing mid-stream cold climate heat pump (“ccHP”) rebate program. GMP also continued its \$400 down-stream rebate directly to customers from January 1, 2020 through May 25, 2020 and again from September 1, 2020 through December 31, 2020. In the interim months from May 26, 2020 through August 31, 2020, GMP doubled the down-stream rebate from \$400 per condenser to \$800 through its *“Go, Save and Share Green”* incentive program for customers. This added incentive was intended to provide an economic stimulus for the heating and ventilation business sector, which had been impacted by the COVID-19 pandemic. Through an agreement with EVT, GMP receives 100% of the credits for the units that are installed in the Vermont Gas territory and splits the credits 50/50 with EVT when the units are installed in the GMP/EVT overlapping territories. At EVT’s request, 187 units in the overlapping territory were paid for 100% by GMP and therefore GMP received 100% credit for these units.

Cold Climate Heat Pumps

In program year 2020, GMP continued its collaboration with EVT by supporting cold climate heat pumps (“ccHP”) installations that were claimed through the EVT mid-stream rebate program. The savings claim for this measure is prescriptive, based on the size of the outdoor unit, as characterized in the Tier III TRM. GMP claims 8,810 ccHPs installed through the program in 2020, including 424 whole building (centrally ducted) heat pumps of which 15 were air to water heat pumps.

Heat Pump Water Heaters

GMP leverages EVT Heat Pump Water Heaters (“HPWH”) incentives in the program to reduce the cost to participating customers. In addition, GMP offered a \$200 down-stream rebate directly to customers through its *“Go, Save & Share Green”* program from May 25, 2020 through August 31, 2020. GMP claimed prescriptive Tier III savings for 335 HPWHs under this program in 2020.

Transportation Programs

Electric Vehicles

In 2020, GMP offered increased incentives to GMP customers for purchasing new and used all-electric (“EV”) and plug-in hybrid electric vehicles (“PHEV”), and all purchasers of new and used

EVs and PHEVs were eligible for a free Level 2 charger. New all-electric vehicles under \$60,000 were eligible for a \$1,500 incentive. New PHEVs were eligible for a \$1,000 incentive and GMP customers purchasing a used EV or PHEVs received a \$750 incentive. Most of the EV and PHEV incentives were coordinated through partner dealerships. A total of 712 EVs and PHEVs were purchased through this program, 617 of them new vehicles.

The TAG group has established a savings value for all-electric and plug-in electric vehicles and the numbers presented by GMP are consistent with these values.

Electric Bikes

GMP continued offering incentives for electric bicycles or ‘e-Bikes’ in 2020 through participating bike shops and claimed Tier III savings according to the Tier III TRM measure characterization at 5.26 MWh per bike.

Electric Lawnmowers

GMP again offered incentives for both residential and commercial electric lawnmowers in 2020. Customers can receive a \$75 incentive for residential electric lawnmower, and \$2,500 for a commercial lawnmower. Savings are based on a prescriptive algorithm developed by the Tier III TAG.

Electric Forklift Program

In 2020, GMP continued to offer incentives for the purchase of electric forklifts. GMP paid a \$3,000 incentive for one new electric forklift and \$1,500 for one used forklift in 2020. Savings claims are based on an algorithm approved by the Tier III TAG.

Public and Workplace EV Charging Stations

In 2020 GMP provided incentives for the installation of 12 public, 24 workplace, and one multifamily, Level 2 EV charging stations. The Tier III savings for these charging stations is prescriptive as characterized in the Tier III TRM.

Charging Network Infrastructure

GMP manages a network of 90 ports of Level 2 public and workplace chargers at 44 locations, and 14 ports of Level 3 DC Fast Chargers at customer locations throughout the service territory. GMP claimed Tier III credits based on the metered kWh output of each charging station. The Level 2 Charging stations averaged around 875 kWh usage for 2020, and the Level 3 DC Fast chargers averaged around 5.3 MWh for the year.

Battery Storage

In 2019, GMP continued to offer Tesla Powerwalls as a resiliency improvement in customer homes. Under this program, participating customers have a Tesla Powerwall installed that provides backup power during outages. The Powerwall is an intelligent device which GMP can control to reduce demand during peak events by controlling the charging/discharging patterns of an aggregated group of Powerwalls. The PSD has verified that 656 residential batteries were

installed in 2020 as claimed. The Tier III savings for each battery is calculated using the algorithm approved by the Tier III TAG in 2019.

Custom Projects

GMP undertook 22 custom C&I projects in 2020. GMP involved PSD staff from the inception of these projects and the PSD reviewed all relevant information, including savings calculations, and suggested changes to the assumptions and methodologies that were implemented where appropriate. These changes were negotiated to achieve what both parties deemed to be a reasonable and conservative estimation of the overall project savings. The Custom C&I projects are summarized in Table 4, below.

The PSD reviewed the files provided with GMP's Tier III filing for consistency with what had previously been reviewed and found no need to alter savings from these projects, with three exceptions. These three projects involved replacement of the primary fossil fuel heating source with air-source heat pumps, while the fossil fuel system was retained as back-up. A portion of the savings was deducted for these projects based on the projection that the back-up system would inevitably be used to supply heat during peak load. This adjustment was made before GMP's savings claim was filed, so no adjustments were necessary to the verified savings for these projects.

TABLE 4. GMP CUSTOM 2020 COMMERCIAL AND INDUSTRIAL TIER III PROJECTS

Commercial and Industrial Projects					
Custom Projects	Units	Lifetime MWHe Claimed	Percentage of Goal	Verified Lifetime MWHe	Verified Percentage of Goal
Quarry Diesel Generator Offset	1	19,151	13.93%	19,151	13.93%
Bennington Renewal Project - HVAC	1	7,115	5.18%	7,115	5.18%
VT Structural Eureka Quarry	1	4,572	3.33%	4,572	3.33%
Assisted Living Facility HVAC	1	3,438	2.50%	3,438	2.50%
School HVAC	1	1,808	1.32%	1,808	1.32%
Multi-Family HVAC	1	1,885	1.37%	1,885	1.37%
Lumber Mill Diesel Decommission	1	1,806	1.31%	1,806	1.31%
Quarry Diesel Screener Decommission	1	1,004	0.73%	1,004	0.73%
Library HVAC	1	1,527	1.11%	1,527	1.11%
Hospital Window Replacement	1	1,209	0.88%	1,209	0.88%
Residential Generator Offset	1	1,144	0.83%	1,144	0.83%
Affordable Housing - electric heating	1	1,059	0.77%	1,059	0.77%
Residential Generator Offset	1	972	0.71%	972	0.71%
Transitional Housing HVAC	1	938	0.68%	938	0.68%
Hospital Ventilation Controls	1	851	0.62%	851	0.62%
Multi-family HVAC	1	646	0.47%	646	0.47%
Office HVAC Retrofit	1	419	0.30%	419	0.30%
Diesel Generator Offset	1	393	0.29%	393	0.29%
New Construction HVAC	1	329	0.24%	329	0.24%
Office HVAC	1	152	0.11%	152	0.11%
Industrial Dehumidification	1	85	0.06%	85	0.06%
Office HVAC	1	78	0.06%	78	0.06%
Custom Project Totals	22	50,579	36.79%	50,579	36.79%
Total All Sectors		323,949	205.93%	322,582	205.08%

This page left blank intentionally.

Burlington Electric Department
2020 Tier III Savings Verification Report

This page left blank.

Burlington Electric Department 2020 Tier III Savings Claim

The BED Tier III Annual Plan, filed on November 1, 2019, estimated a RES Tier III savings target for 2020 at 13,179 MWhe. Actual retail sales in 2020 resulted in a target of 12,413 MWhe. BED has claimed 37,968 MWh equivalent savings through its Tier III programs as detailed below. The Department has verified these savings by reviewing project documentation, confirming the correct application of TRM savings algorithms, and spot-checking installations of EV charging stations and EV proofs of purchase. As a utility with 100% renewable generation, there is no penalty applied to BED's savings because of active measures that electrify fossil fuel loads.

TABLE 5: BED 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWHe Claimed	Percentage of Target	Verified Lifetime MWHe	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	12,243.7	98.64%	12,243.7	98.64%
2020 Tier III Custom Projects	25,724.0	207.23%	25,724.0	207.23%
Total 2020 Tier III Savings	37,967.7	305.87%	37,967.7	305.87%
BED 2020 Tier III Target	12,413	100.00%	12,413	100.00%
Carryover to 2021	25,555		25,555	

Table 6 on the following page shows the various Tier III programs and measures implemented by BED for 2020.

TABLE 6- DETAILED BED PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Goal	Verified Lifetime MWH	Verified Percentage of Goal
Cold Climate Heat Pumps					
Heat Pumps (Ductless single zone)	94	2,010	16.19%	2,010	22.10%
Heat Pumps (Ductless single zone - LMI)	26	0	0.00%	0	
Heat Pumps (Ductless multi-zone)	79	2,673	21.53%	2,673	29.38%
Heat Pumps (Centralized Systems - Residential)	10	899	7.24%	899	9.89%
Heat Pumps (Centralized Systems - C&I)	4	940	7.57%	940	10.33%
ccHP Total	213	6,522	52.54%	6,522	71.70%
Heat Pump Water Heaters					
Heat Pump Water Heater	5	105	0.85%	105	1.15%
HPWH Total	5	105	0.85%	105	1.15%
Transportation Programs					
New All Electric Vehicles	25	944	7.61%	944	7.61%
New All Electric Vehicles - LMI	6	227	1.83%	227	1.83%
New Plug-in Hybrid EV	22	620	4.99%	620	4.99%
New Plug-in Hybrid EV - LMI	7	198	1.59%	198	1.59%
Used All Electric Vehicles	9	170	1.37%	170	1.37%
Used Plug-in Hybrid EV	4	56	0.45%	56	0.45%
Home Level 2 EV Charger	11	0	0.00%	0	0.00%
Public EVSE - BED owned	9	34	0.28%	34	0.28%
Public EVSE - privately owned	4	66	0.53%	66	0.53%
Workplace EVSE	3	49	0.40%	49	0.40%
eBus	2	2,548	20.53%	2,548	20.53%
Electric Bikes	52	278	2.24%	278	2.24%
Transportation Programs Total	154	5,190	41.81%	5,190	41.81%
Misc. Programs					
Residential Lawnmowers	93	179	1.44%	179	1.44%
Commercial Lawnmowers	3	247	1.99%	247	1.99%
Misc. Programs Total	96	426	3.43%	426	3.43%
Custom Measures					
Variable Refrigerant Flow HVAC	1	1,735	13.98%	1,735	13.98%
Ground-source Heat Pump HVAC	1	23,989	193.26%	23,989	193.26%
Custom Measures Totals	1	25,724	207.23%	25,724	207.23%
Custom and Prescriptive Totals	469	37,968	305.87%	37,968	325.33%

*MWhe = Megawatt hour equivalent

BED utilized social media promotions, e-newsletters, and press releases with links to its website to promote its Tier III offerings, particularly its EV and Electric Bike programs.

BED Tier III Program and Measure Descriptions

Prescriptive Measures

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Department and the Distribution Utilities (“DUs”).

Electric Vehicles and Plugin Hybrid Electric Vehicles

BED offered incentives for the purchase or lease of new or pre-owned electric vehicles (EVs) and plug-in hybrids (PHEVs) in 2020. The incentive increased to \$1,800 for new EVs and \$1,500 for new PHEVs in June of 2020. Used EVs and PHEVs are eligible for a \$800 incentive. Self-identified low-income and moderate-income customers could also claim an additional \$600 incentive for new EVs and \$300 for new PHEVs. In 2020, BED paid incentives on a total of 73 electric vehicles, 60 new and 13 pre-owned. Forty were all-electric vehicles (nine of which were pre-owned) and 33 were PHEVs (four pre-owned). The savings claims for these vehicles were determined using the Tier III TRM algorithm.

Electric Bikes

The electric bicycle or ‘e-Bike’ program is implemented for BED by Local Motion, a Burlington-based non-profit that advocates for walkable and bikeable communities. A \$200 rebate is offered to BED customers who purchase an electric bike through one of seven local retailers. An additional \$50 fee is paid to Local Motion for each rebate processed. BED paid incentives for 64 electric bikes in 2019, as verified by invoices from Local Motion.

Cold Climate Heat Pumps

BED provided an incentive for the installation of 213 cold climate heat pumps in 2020, 120 single zone heat pumps, and 79 multizone units. There were also 14 centrally ducted heat pumps provided an incentive in 2020 (ten residential and four commercial systems). Incentive levels vary based on the size of the units. Twenty-six of the single zone heat pumps received an additional \$400 rebate offered to low-income and moderate-income households (“LMI”). This LMI bonus rebate was increased from \$200 in response to the pandemic and to help BED meet its Green Stimulus goals.

Electric Vehicle (“EV”) Charging Stations

BED installed one additional Level 2 public EV charging station, for a total of sixteen now in service at various locations around the city, of which ten receive Tier III credit. BED contracts with ChargePoint to manage the administrative details of the charging stations’ operation, including billing of EV customers. A prescriptive MWhe savings value for these EV charging stations was established through the Tier III TRM process. However, since electric vehicle supply equipment (“EVSE”) is monitored and metered, BED claimed Tier III credits based on the actual metered kWh output of each charging station and converted that amount to MWhe based on the TRM algorithm.

BED also provided incentives to install four privately owned Level 2 charging stations in Burlington and claimed Tier III savings according to the Tier III TRM deemed savings.

Residential & Commercial Electric Lawnmowers

BED continued to offer incentives for residential and commercial electric lawnmowers in 2020. Response to the residential lawnmower program continued to be strong and BED awarded incentives for three commercial lawnmowers in 2020 after getting no uptake in the previous year. BED expected to provide incentives for 25 lawnmowers but ended 2020 having provided rebates for 142.

Heat Pump Water Heaters

BED provided incentives for five heat pump water heaters (“HPWH”) in 2020. The savings for these water heaters were determined using the Tier III TRM algorithm.

Custom Ground-Source Heat Pump Project

BED provided a substantial incentive to support the installation of a ground source heat pump HVAC system in a commercial gut-rehab project in 2020. PSD staff was involved early in the project to validate the engineering assumptions and verify that all cost-effective improvements to the thermal shell of the building were utilized to reduce the thermal load and enable a fully electric heating system. BED’s energy efficiency utility also contributed to the project on the basis of electric savings from efficient pumps, chillers, and building automation systems. The PSD verified that none of the substantial savings from this project were “double-counted” on both the Tier III and EEU ledgers. Because of the complexity of the project and the potential for anomalies and inaccuracies in the energy modeling, the EEU incentive will not be paid until a year’s worth of actual usage is logged.

Custom VRF Heat Pump Project

With the input of PSD staff, BED provided an incentive for a variable refrigerant flow (“VRF”) heat pump installation in 2020. VRF systems allow simultaneous heating and cooling (also known as heat recovery) for customers that have a wide diversity of HVAC loads within one building. This is the second VRF system that BED has supported with Tier III incentives, so BED continues to explore ways to make this type of installation “semi-prescriptive” and replicable for future projects.

This page left blank intentionally.

Washington Electric Cooperative
2020 Tier III Savings Verification Report

This page left blank intentionally.

Washington Electric Cooperative 2020 Tier III Savings Verification Report

The Washington Electric Cooperative (“WEC”) Tier III Annual Plan, filed on November 15, 2019, estimated the savings requirement for 2020 at 2,754 MWhe. Actual retail sales for 2020 resulted in a target of 2,927 MWhe. As detailed below, WEC claimed Tier III savings of 3,183 MWhe for 2020, which surpasses the target by 256 MWhe. The PSD has verified 3,183 MWhe savings from their program in 2021.

As a utility that is considered 100% renewable, there is no penalty applied to their savings because of additional electrical loads resulting from active measures that electrify what were previously thermal loads.

The Washington Electric Cooperative Tier III program focused on prescriptive measures as shown below in Table 7. The savings reported in Table 7 include allowable payments made to income eligible weatherization partners valued at \$55 per MWhe for a total of 713 MWhe, these are detailed in Table 7.

TABLE 7: WEC 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWHe Claimed	Percentage of Target	Verified Lifetime MWHe	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	3,183	108.75%	3,183	108.75%
WEC 2020 Tier III Target	2,927	100.00%	3,183	108.75%
Carryover to 2021	256		256	

A detailed breakout of the above savings is contained in Table 8 on the following page.

TABLE 8 - DETAILED WEC TIER III RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Goal	Verified Lifetime MWH	Verified Percentage of Goal
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	23	603	20.60%	603	20.60%
ccHP Total	23	603	20.60%	603	20.60%
Heat Pump Water Heaters					
Heat Pump Water Heater	14	233	7.96%	233	7.96%
Heat Pump Water Heater (PoS Incentive)	14	231	7.89%	231	7.89%
HPWH Total	28	464	15.85%	464	15.85%
Transportation Programs					
All Electric Vehicles	13	383	13.09%	383	13.09%
Plug-in Hybrid EV	4	92	3.14%	92	3.14%
Electric Bikes	20	105	3.59%	105	3.59%
Transportation Programs Total	37	580	19.82%	580	19.82%
Misc. Programs					
Residential Lawnmowers	17	23	0.79%	23	0.79%
Commercial Lawnmowers	2	114	3.89%	114	3.89%
Modern Wood Heating (Wood/Pellet Stove)	40	134	4.58%	134	4.58%
Modern Wood Heating (Pellet Boilers)	3	90	3.07%	90	3.07%
Modern Wood Heating (Pellet Furnace)	2	25	0.85%	25	0.85%
Market Rate Weatherization	18	437	14.93%	437	14.93%
Income Eligible Weatherization	1	713	24.36%	713	24.36%
Misc. Programs Total	83	1,536	52.48%	1,536	52.48%
Prescriptive Totals	171	3,183	108.75%	3,183	108.75%

*MWh = Megawatt hour equivalent

The above table shows the various measures implemented by WEC through either a shared savings memorandum of understanding with Efficiency Vermont (“EVT”) or through measures implemented by WEC directly or through partner organizations. WEC utilized its “Button Up” program along with reaching out to its members through its newsletter to promote its Tier III offerings.

WEC Tier III Program and Measure Descriptions

Prescriptive Projects

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

WEC offered its customers an incentive of \$250, in addition to the electric incentives already offered by EVT, for the purchase and installation of cold climate heat pumps. This incentive was available to homes that already met or had participated in a weatherization program to meet the weatherization standards to claim the additional savings allowed for within the prescriptive measure for weatherized homes. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Heat Pump Water Heaters

WEC provided a \$250 incentive to units installed in WEC territory that were displacing fossil fuels and claimed 100% of these savings per its MOU with EVT. These measures are considered prescriptive and are verified through the review of the appropriate records provided by the DU.

Provision of the incentive dollars changed part way through 2020 from a post-installation incentive credit provided directly to the customer, to a point-of-sale incentive applied to the cost of the units at the time of purchase.

Electric Vehicles

WEC provided incentives for the purchase or lease of 13 all-electric vehicles (“EVs”) and 4 plug-in hybrid electric vehicles (“PHEVs”). These measures are considered prescriptive and are verified through the review of the appropriate records provided by the DU.

Electric Bikes

WEC provided an incentive of \$200 for the purchase of 20 electric bikes or ‘e-Bikes’. These measures are considered prescriptive and are verified through the review of the appropriate records provided by the DU.

Residential and Commercial Mowers

WEC provided an incentive of \$100, each, for 17 electric residential mowers and of \$1,000 for 2 commercial mowers. These measure characteristics were developed with the input of the DUs. These measures are considered prescriptive and are verified through the review of the appropriate records provided by the DU.

Modern Wood Heating

WEC provided an incentive of \$1,000 for pellet boilers and furnaces, and a further incentive of \$250 for wood/pellet stoves. Through a Memorandum of Understanding (“MOU”), WEC and EVT reached an agreement on how to share MMBtu savings for programs already in existence and operated by EVT. The goal of the MOU was to create an agreed upon methodology that would determine the savings split relative to the number of additional or incremental units that enter the program through WEC’s involvement.

Market Rate Weatherization

WEC provided an incentive of \$600 towards the weatherization of 18 homes within WEC territory. Through a Memorandum of Understanding (“MOU”), WEC and EVT reached an agreement on how to share MMBtu savings for programs already in existence and operated by EVT. The goal of the MOU was to create an agreed upon methodology that would determine the savings split relative to the number of additional or incremental units that enter the program through WEC’s involvement.

Income Eligible Weatherization

The Department reviewed the savings claimed by WEC for its income eligible weatherization program per PUC Rule 4.416 (2):

If proposing a low-income weatherization energy transformation project, a retail electricity provider may:

(2) pay a rate per MWh of lifetime energy savings to a low-income weatherization provider that shall be used by the low-income weatherization provider to fund low-income weatherization projects anywhere within the state, so long as the low-income weatherization provider provides low-income weatherization services within the Retail Electricity Provider’s service territory and the Retail Electricity Provider contemporaneously advertises the low-income weatherization services to its Customers or members. The MWh Rate shall be updated annually, and the lesser of the calculated rate or the Alternative Compliance Payment shall be established as the rate per MWh of lifetime energy savings to be used for the calendar year. By October 1 of each year, the Vermont Office of Economic Opportunity shall file the updated MWh Rate with the Commission.

For 2020, the rate calculated by the Vermont Office of Economic Opportunity was \$55 per MWh. The Department finds that the WEC offering is consistent with the PUC rule for low-income weatherization eligibility as a Tier III energy transformation project.

WEC’s partner for their low-income weatherization program, CAPSTONE, provided confirmation of the payment to its program.

Vermont Electric Cooperative
2020 Tier III Savings Verification Report

This page left blank intentionally.

Vermont Electric Cooperative 2020 Tier III Savings Verification Report

The Vermont Electric Cooperative (“VEC”) Tier III Annual Plan, filed on November 15, 2019, estimated the savings requirement for 2020 at 18,400 MWh. The actual target based upon sales for 2020 was 18,132 MWh. As detailed below, VEC claimed Tier III savings of 24,823 MWh for 2020, which surpasses the target by 18,132 MWh. The PSD has verified 24,823 MWh savings from their program with a total carryover of Tier III credits of 6,961 MWh into 2021.

TABLE 9: VEC 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Claimed	Percentage of Target	Verified Lifetime MWh	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	19,107	105.38%	19,107	105.38%
2020 Tier III Custom Projects	5,716	31.52%	5,716	31.52%
Total 2020 Tier III Savings	24,823	136.90%	24,823	136.90%
VEC 2020 Tier III Target	18,132	100.00%	24,823	136.90%
Carryover to 2021	6,691		6,691	

Table 10 on the following page provides a detailed breakdown on savings by program measure.

TABLE 10 - DETAILED VEC PROGRAM RESULTS

Measure	Units	Lifetime MWhe Claimed	Percentage of Goal	Verified Lifetime MWhe	Verified Percentage of Goal
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	477	12,406	68.42%	12,406	68.42%
Heat Pumps (Centralized System)	47	3,730	20.57%	3,730	20.57%
Heat Pumps (Air to Water)	3	309	1.71%	309	1.71%
ccHP Total	527	16,445	90.70%	16,445	90.70%
Heat Pump Water Heaters					
Heat Pump Water Heater	75	290	1.60%	290	1.60%
HPWH Total	75	290	1.60%	290	1.60%
Transportation Programs					
New All Electric Vehicles	30	1,067	5.88%	1,067	5.88%
Used All Electric Vehicles	6	107	0.59%	107	0.59%
New Plug-in Hybrid EV	24	643	3.55%	643	3.55%
Used Plug-in Hybrid EV	3	40	0.22%	40	0.22%
Transportation Programs Total	63	1,857	10.24%	1,857	10.24%
Misc. Programs					
Residential Lawnmowers	29	51	0.28%	51	0.28%
Modern Wood Heating	24	465	2.56%	465	2.56%
Misc. Programs Total	53	515	2.84%	515	2.84%
Custom Measures					
Clean Air Program (Load Electrification)	8	5,676	31.30%	5,676	31.30%
Mello (Flexible Load Management)	87	10	0.06%	10	0.06%
Residential EV Charger (Flexible Load Management)	14	30	0.16%	30	0.16%
Custom Measures Totals	109	5,716	31.52%	5,716	31.52%
Custom and Prescriptive Totals	827	24,823	136.90%	24,823	136.90%

*MWhe = Megawatt hour equivalent

The above table shows the various measures implemented by VEC through either a shared savings Memorandum of Understanding (“MOU”) with Efficiency Vermont (“EVT”), or through measures implemented by VEC directly or through partner organizations.

VEC Tier III Program and Measure Descriptions

Prescriptive Measures

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

VEC offered an incentive of \$300 for the first half of 2020 and \$600 for the second half. These incentives were provided in addition to the electric incentives already offered by EVT for the purchase and installation of cold climate heat pumps (“ccHPs”). However, VEC’s program also supported incentives for centralized systems and air-to-water heat pump systems with higher incentives offered for the higher associated savings. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Heat Pump Water Heater

VEC offered incentives of \$150 in the first half of 2020 and \$250 in the later half for the installation of 75 heat pump water heaters, the savings from these measures were shared with EVT as per a MOU. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Provision of the incentive dollars changed part way through 2020 from a post-installation incentive payment made directly to the customer, to a point-of-sale incentive applied to the cost of the units at the time of purchase.

Electric Vehicles

VEC provided incentives for the purchase or lease of 36 all-electric vehicles (“EVs”), including 6 used vehicles, and 27 plug-in hybrid electric vehicles (“PHEVs”), including 3 used vehicles. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Residential Lawnmowers

VEC provided a \$50 incentive for 29 residential electric lawnmowers. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Modern Wood Heating

VEC provided a \$150 incentive for the purchase of pellet stoves. These measures are considered prescriptive and verified through the review of the appropriate records and claim forms provided by the DU.

Custom Projects

Clean Air Program

VEC undertook 8 custom projects under its Clean Air Program in 2020. Measures in this category undertook to reduce or replace fossil fuel use through the provision of new or upgraded electrical service and the upgrade of existing transformers. The PSD reviewed all relevant information and savings assumptions to ensure the savings estimates were reasonable and met statutory requirements. The PSD found these project savings to be reasonable and overall a conservative estimate of potential project savings.

Mello

VEC implemented a flexible load water heating program by providing a Wi-Fi enabled smart thermostat connected to an electric resistance water heater that allowed these units to be controlled to avoid energy use during peak periods. The PSD reviewed all relevant information and savings assumptions to ensure the savings estimates were reasonable and met statutory requirements. The PSD found these project savings to be reasonable and overall a conservative estimate of potential project savings.

Residential EV Charger

VEC implemented a flexible load EV charging program by providing an incentive for controllable EV chargers that allowed these units to be controlled to avoid energy use during peak periods. The PSD reviewed all relevant information and savings assumptions to ensure the savings estimates were reasonable and met statutory requirements. The PSD found these project savings to be reasonable.

Vermont Public Power Supply Authority
2020 Tier III Savings Verification Report

This page left blank intentionally.

VPPSA 2020 Tier III Savings Verification Report

Given that the Vermont Public Power Supply (“VPPSA”)¹³ is a consortium of municipal electric utilities that individually do not serve more than 6,000 customers, their requirements for Tier III began on January 1, 2019 per statute.¹⁴ The RES Tier III requirements for such utilities are 2% of the provider’s annual retail sales beginning on January 1, 2019, increasing by an additional two-thirds of a percent each subsequent January 1 – until reaching 10 and two-thirds percent on and after January 1, 2032.

The VPPSA Tier III Annual Plan, filed on November 15, 2019, estimated the savings requirement for 2020 at 9,413 MWhe. The actual target based upon sales for 2020 was 9,097 MWhe. As detailed below, VPPSA claimed Tier III savings of 19,409 MWhe for 2020, which surpasses the target of 9,097 MWhe. The PSD has verified 19,409 MWh savings from their program with a carryover of Tier III credits of 10,312 MWh. These results include measures from 2019 as well as the 2020 Tier III programs offered by VPPSA.

TABLE 21: VPPSA 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWHe Claimed	Percentage of Target	Verified Lifetime MWHe	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	3,667	40.31%	3,667	40.31%
2020 Tier III Custom Projects	15,742	173.05%	15,742	173.05%
Total 2020 Tier III Savings	19,409	213.36%	19,409	213.36%
VPPSA 2020 Tier III Target	9,097	100.00%	19,409	213.36%
Carryover to 2021	10,312		10,312	

As detailed in Table 12, on the following page, the carryover credits are due entirely from the line extension electrification projects which replaced fossil fueled generators with three phase power.

¹³ As of November 17, 2019 VPPSA, is made up of 11 utilities that participated in their Tier III programs. See generally, 30 V.S.A. §§ 5001 -5041.

¹⁴ 30 V.S.A. § 8005(a)(3)(B).

TABLE 12 - DETAILED VPPSA PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Goal	Verified Lifetime MWH	Verified Percentage of Goal
Cold Climate Heat Pumps (Ductless)					
Heat Pumps (Ductless) 2019	13	287	3.15%	287	3.15%
Heat Pumps (Ductless)	79	1,677	18.43%	1,677	18.43%
Heat Pumps (Centralized Systems)	10	412	4.53%	412	4.53%
Heat Pumps (Air to water)	1	47	0.51%	47	0.51%
Ductless ccHP Total	103	2,422	26.63%	2,422	26.63%
Heat Pump Water Heaters					
Heat Pump Water Heater 2019	12 ⁺	141	1.55%	141	1.55%
Heat Pump Water Heater 2020 (Direct Incentive)	8	212	2.33%	212	2.33%
Heat Pump Water Heater 2020 (PoS Incentive)	19	338	3.72%	338	3.72%
HPWH Total	39	691	7.59%	690	7.60%
Transportation Programs					
New All Electric Vehicles	7	225	2.47%	225	2.47%
Used All Electric Vehicles	1	16	0.18%	16	0.18%
New Plug-in Hybrid EV	8	197	2.17%	197	2.17%
Level 2 EV Charger (1 Port)	1	20	0.22%	20	0.22%
Electric Bikes	4	21	0.23%	21	0.23%
Transportation Programs Total	21	479	5.27%	479	5.27%
Misc. Electrification Programs					
Residential Lawnmowers	6	9	0.10%	9	0.10%
Commercial Lawnmowers	1	66	0.72%	66	0.72%
Misc. Electrification Programs Total	7	75	0.83%	75	0.83%
Custom Measures					
Line Extension	1	846	9.30%	846	9.30%
Line Extension	1	14,896	163.75%	14,896	163.75%
Custom Measures Totals	2	15,742	173.05%	15,742	173.05%
Custom and Prescriptive Totals	172	19,409	213.36%	19,409	213.36%

*MWh = Megawatt hour equivalent

⁺ 12 units are reported installed in 2019, however 4 of these units received the 2020 direct incentive and savings.

The preceding table shows the various measures implemented by VPPSA through either a shared savings Memorandum of Understanding (“MOU”) with Efficiency Vermont (“EVT”), or through measures implemented by VPPSA directly or through partner organizations.

VPPSA Tier III Program and Measure Descriptions

Prescriptive Measures

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

VPPSA offered its customers a \$400 incentive, in addition to the electric incentives already offered by EVT, for the purchase and installation of cold climate heat pumps (“ccHPs”). An additional \$100 was offered to homeowners whose buildings met the requirements for the enhanced incentive. In total 92 ductless ccHPs were provided an incentive within a VPPSA member’s territory, with 7 of those qualifying for the enhanced incentive. These measures are considered prescriptive and were verified through the review of the appropriate records and claim forms provided by the DU.

VPPSA also offered a range of incentives for whole building or centralized systems, and air to water systems, based upon the size of the units installed. These measures are characterized as custom; however, the savings are considered prescriptive and as such are verified through the review of the appropriate records and claim forms provided by the DU.

Savings in the category include 13 units which were installed in 2019 but that had not provided documentation to VPPSA prior to the savings for 2019 being finalized.

Heat Pump Water Heaters

VPPSA provided 100% of the total rebate to customers who installed heat pump water heaters (“HPWH”) which replaced fossil-fuel fired water heaters through EVTs mid-stream program. This allowed VPPSA to claim 100% of these savings. EVT funded the measure when the unit being replaced was electric. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Two paths for the incentive were provided throughout the entirety of the year. Customers had the option to receive the point-of-sale incentive when working with a participating contractor or distributor. Customers that chose to install themselves or work with a non-participating contractor could receive a post-installation incentive. Both incentive paths were administered by Efficiency Vermont.

Electric Vehicles

VPPSA offered incentives for the purchase or lease of 8 all-electric vehicles (“EVs”), including 1 used EV, and 8 plug-in hybrid electric vehicles (“PHEVs”). These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

EV Charger

VPPSA provided a \$500 incentive for the purchase of a single port level 2 EV charger for workplace charging. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by the DU.

Electric Bike

VPPSA provided a \$100 incentive, each, for the purchase of four electric bikes. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by the DU.

Residential and Commercial Lawnmowers

VPPSA provided \$25 and \$1,000 incentives, respectively, for six residential electric lawnmowers and one commercial lawnmower. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Custom Projects

Line Extension

This is a custom measure offered by VPPSA to two customers and it provides three phase power to an industrial customer replacing on site diesel power generation. These measures were documented by VPPSA, including establishing fuel use and the overall efficiency of the generator being replaced. This information and the resulting calculations were reviewed and found to be reasonable.

Stowe Electric
2020 Tier III Savings Verification Report

This page left blank intentionally.

Stowe Electric 2020 Tier III Savings Verification Report

Given that Stowe Electric is a municipal electric utility serving not more than 6,000 Customers, its requirement for Tier III began on January 1, 2019 per statute.¹⁵ The Tier III RES requirements for such utilities are 2% of the provider's annual retail sales beginning on January 1, 2019, increasing by an additional two-thirds of a percent each subsequent January 1 – until reaching 10 and two-thirds percent on and after January 1, 2032.

The Stowe Electric Tier III Annual Plan, filed on November 15, 2018, estimated the savings requirement for 2020 at 2,092 MWhe. Actual retail sales for 2020 resulted in a target of 1,866 MWhe. As detailed below, Stowe claimed Tier III savings of 1,939 MWhe for 2020, which surpasses the target by 73 MWhe. The PSD has verified 1,939 MWh savings from Stowe Electric's program for Tier III with a carryover of 73 MWhe.

The Stowe Electric Tier III program focused on prescriptive measures as shown below in Table 13.

TABLE 33: STOWE 2020 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWhe Claimed	Percentage of Target	Verified Lifetime MWhe	Verified Percentage of Target
2020 Tier III Prescriptive Energy Transformation Programs	1,939	103.92%	1,939	103.92%
Stowe 2020 Tier III Target	1,866	100.00%	1,939	103.92%
Carryover to 2021	73		73	

¹⁵ 30 V.S.A. § 8005(a)(3)(B).

TABLE 14 - DETAILED STOWE ELECTRIC PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Goal	Verified Lifetime MWH	Verified Percentage of Goal
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	61	1,464	78.48%	1,464	78.48%
Heat Pumps (Centrally Ducted)	6	211	11.30%	211	11.31%
Ductless ccHP Total	68	1,675	89.78%	1,872	89.78%
Heat Pump Water Heaters					
Heat Pump Water Heater (PoS Incentive)	3	25	1.35%	25	1.35%
HPWH Total	3	25	1.35%	39	1.35%
Transportation Programs					
New All Electric Vehicles	2	60	3.22%	60	3.22%
Used All Electric Vehicles	1	15	0.79%	15	0.79%
New Plug-in Hybrid EV	7	164	8.77%	162	8.77%
Transportation Programs Total	10	239	12.79%	239	12.79%
Prescriptive Totals	80	1,939	103.92%	1,939	103.92%

*MWh_e = Megawatt hour equivalent

The above table shows the various measures implemented by Stowe Electric through either a shared savings Memorandum of Understanding (“MOU”) with Efficiency Vermont (“EVT”), or through measures implemented by Stowe Electric directly or through partner organizations.

Stowe Electric Tier III Program and Measure Descriptions

Prescriptive Projects

The Tier III savings for these measures represents the fossil fuel that is displaced by the measure. The calculation of savings for these measures relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

Stowe Electric offered its customers a \$675 mid-stream incentive, in addition to the electric incentives already offered by EVT, for the purchase and installation of cold climate heat pumps (“ccHPs”). A total of 68 units were installed and included a mix of single heat, multi-head, and centrally ducted units.

The Tier III savings for this measure represents the fossil fuel heating load that is displaced by the ccHP. The calculation of savings for ccHPs relies on the measure characterization developed for the Tier III Technical Resource Manual (“TRM”). These measure characteristics were developed with the input of the Distribution Utilities (“DUs”). These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Heat Pump Water Heaters

Stowe Electric offered an incentive of \$650 each for the installation of 3 heat pump water heaters. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Electric Vehicles

Stowe Electric offered incentives for the purchase or lease of 3 all-electric vehicles (“EVs”), including 1 used vehicle, and 7 plug-in hybrid electric vehicles (“PHEVs”). These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

General RES Tier III Program Recommendations

During the verification, the PSD identified issues that have broad applicability. The PSD has the following general RES Tier III program recommendations for consideration by the PUC and stakeholders.

Fuel Use Estimates

When a custom measure is estimating the fossil fuel displacement of the measure under consideration, there should be at least 2 years of fuel consumption data used to estimate the amount of fossil fuel being saved. This is to ensure that the fuel use reported by the business is not a-typical usage resulting in higher-than-normal fuel use. This is especially true for measures being implemented for businesses that are impacted by weather conditions and temperature fluctuations. Having multiple years of fuel records would help better estimate typical fuel use rather than simply the fuel used in the past year.

Reporting

The PSD requests that if the DU prefers to present its results in a different format in the main body of their report that they include the summary table required in rule 4.400 as an appendix.

Other

Where there is an MOU in place for the division of savings between parties, this agreement should be detailed or included in the savings claim. This will ensure the Department can verify that there is no potential double counting of savings between the EEU and DU for the same measure.