

Evaluation of Electric Distribution
Utilities Compliance with Tier III
Obligations

RES Tier III 2021 Verification Report

Vermont Department of Public Service

June 1, 2022



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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 provides guidance on the implementation of 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 has met its annual 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 2021 Tier III claims submitted for their Tier III programs. This report also includes comments 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 of the DU claimed savings come from prescriptive projects which are based upon a 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 ("EEOs") 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 2021 Tier III activities. It also increased the efficacy and speed of the evaluation and reduced the need for adjustments to savings claims.

The PSD continues to work with the DUs to make aspects of Tier III reporting more uniform to simplify review and improve comprehension of the measures implemented by the DUs. This has included the 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 (MWh_e) savings and the recommended adjustments made by the PSD after the verification process.

TABLE 1 - SUMMARY OF RESULTS¹²

	Lifetime MWh _e * Claimed	Percentage of Requirement	Verified Lifetime MWh _e	Verified Percentage of Requirement
GMP	316,551	165.31%	316,551	165.31%
BED	23,271	137.30%	23,271	137.30%
WEC	5,509	165.21%	5,509	165.21%
VEC	30,949	145.44%	30,952	145.45%
VPPSA	18,502	160.29%	18,502	160.29%
Stowe	5,784	225.13%	5,791	225.40%
Hyde Park	415 ⁺	100.00%		

*MWh_e = 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 2022.

¹² Distribution Utilities savings claims filled in PUC case number 22-0604-INV

FIGURE 1: 2021 TIER III SAVINGS BY MEASURE

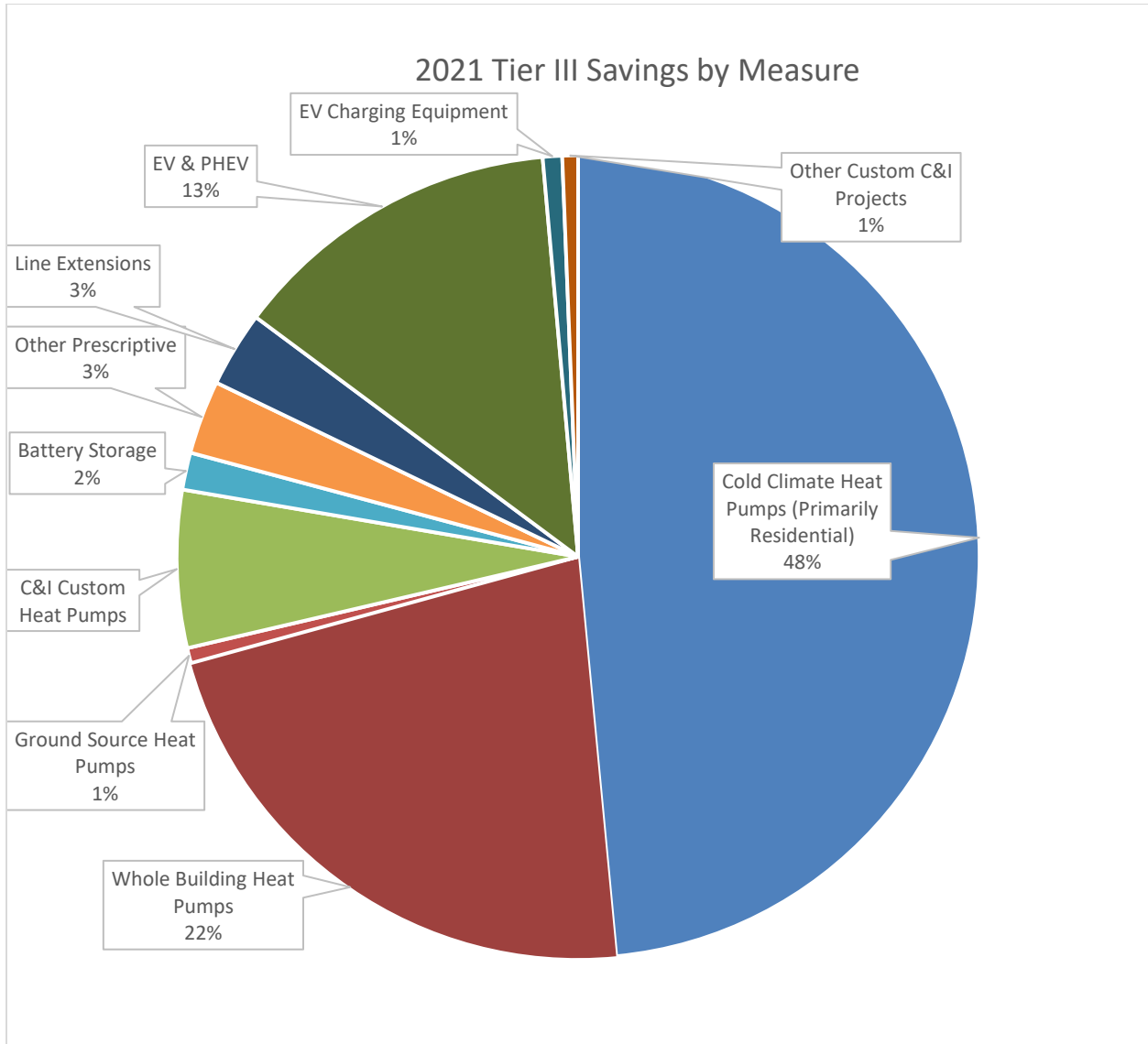


Figure 1, above, details the cumulative savings broken out by measure for all six of the DUs that actively support and promote Tier III measures within their territories. As in previous years, heat pumps make up most of these savings but of note is the increased contribution of EV and PHEVs from 2% of the overall savings in 2020 to 13% in 2021.

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

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Green Mountain Power
2021 Tier III Savings Verification Report

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GMP 2021 RES Tier III Savings Verification Report

Green Mountain Power (“GMP”) retail sales for 2021 resulted in a Tier II obligation of 191,493 MWhe. As detailed below, GMP claimed Tier III savings of 316,550 MWhe for 2021, which surpasses this requirement by 125,058 MWhe. The PSD has verified 316,550 MWhe savings from GMP’s program in 2021 with an additional 125,058 carried over to 2022.

The 2021 Tier III savings claim was extensively pre-reviewed prior to the March 15, 2022 GMP savings claim filing. This allowed for the identification and resolution of several discrepancies. For instance, as detailed below, GMP’s draft savings claim included 22 Level 3 EV chargers. In the filed claim, this was corrected to 12 chargers, reflecting that although there were 22 enrolled Level 3 chargers, only 12 of those were installed in 2021. There was also a change to the savings reported in the cold climate heat pump (ccHP) program, which is detailed below.

GMP’s Tier III Report claims to have met and exceeded their requirement through a range of prescriptive Energy Transformation Projects 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 2021 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 2021 Tier III MWhe requirement.

TABLE 2: GMP 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWhe Claimed	Percentage of Requirement	Verified Lifetime MWhe	Verified Percentage of Requirement
GMP 2021 Tier III Requirement	191,493	100.00%	191,493	100.00%
2021 Tier III Prescriptive Energy Transformation Programs	282,943	147.76%	282,943	147.76%
2021 Tier III Custom Projects	33,607	17.55%	33,607	17.55%
Total 2021 Tier III Savings	316,551	165.31%	316,551	165.31%
Carryover to 2021	125,058		125,058	

Tables 3 and 4 provide a more detailed breakdown of GMP’s 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 with Efficiency Vermont (“EVT”) 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)	5,770	153,486	80.15%	153,486	80.15%
Heat Pumps (Centralized Systems)	702	70,410	36.77%	70,410	36.77%
Heat Pumps Subtotal	6472	223,895	116.92%	223,895	116.92%
Heat Pump Water Heaters					
Heat Pump Water Heater	263	4,975	2.60%	4,975	2.60%
Transportation Programs					
Electric Vehicles Program					
New All Electric Vehicles	679	25,954	13.55%	25,954	13.55%
Used All Electric Vehicles	104	1,988	1.04%	1,988	1.04%
New Plug-in Hybrid EV	475	13,543	7.07%	13,543	7.07%
Used Plug-in Hybrid EV	68	969	0.51%	969	0.51%
EVs Subtotal	1326	42,453	22.17%	42,453	22.17%
Electric Bikes	605	3,274	1.71%	3,274	1.71%
Residential Lawnmowers	247	475	0.25%	475	0.25%
Commercial Lawnmowers	0	-	0.00%	-	0.00%
Electric Trimmers	116	141	0.07%	141	0.07%
Electric Leaf Blowers	58	71	0.04%	71	0.04%
Electric Chainsaws	58	71	0.04%	71	0.04%
Res Lawn & Garden Tractor	17	44	0.02%	44	0.02%
Forklifts (New)	1	121	0.06%	121	0.06%
Forklifts (Used)	3	181	0.09%	181	0.09%
Electric Motorcycles	4	35	0.02%	35	0.02%
Other Electric Vehicles Subtotal	1109	4,412	2.30%	4,412	2.30%
Electric Vehicles Total	2435	46,866	24.47%	46,866	24.47%
Public & Workplace EV Charging Stations					
Level 2 - Public	19	411	0.21%	411	0.21%
Level 2 - Workplace	18	501	0.26%	501	0.26%
Level 3 - Public	12	1,118	0.58%	1,118	0.58%
Public & Workplace EVSE Totals	37	2,029	1.06%	2,029	1.06%
Charging Network Infrastructure					
Level 2 - 90 ports	(kWh)	118,876	165	0.09%	0.09%
DC Fast Chargers - 14 ports		170,799	274	0.14%	0.14%
Charging Network Infrastructure Totals		289,675	439	0.23%	0.23%

Transportation Programs Overall Total		49,334	25.76%	49,334	25.76%
Residential Battery Storage					
Tesla Powerwall 2019 Installations	626	4,739	2.47%	4,739	2.47%
Battery Storage Totals	626	4,739	2.47%	4,739	2.47%
Residential and Prescriptive Totals	9,833	282,943	147.76%	282,943	147.76%

GMP Tier III Program and Measure Descriptions

Prescriptive Measures

The Tier III savings for these measures represent 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

In program year 2021, GMP continued its collaboration with EVT by supporting cold climate heat pump (“ccHP”) installations that were claimed through the EVT mid-stream rebate program. GMP partnered with EVT to offer customers a \$250 mid-stream rebate to augment EVT’s existing mid-stream program for electric efficiency. GMP also continued its \$400 downstream rebate directly to customers through October 31st, 2021. Beginning November 1, 2021, GMP switched its \$400 downstream rebate to a midstream rebate through a partnership with EVT. EVT now processes all GMP’s prescribed heat pump incentives, including the low-to-moderate income (“LMI”) adders. The LMI adders are processed as a downstream incentive by EVT.

The November 2021 switch to EVT processing downstream rebates resulted in a reporting error in the initial draft GMP Tier III Savings Claim that the Department reviewed. The initial savings claim reported 1,208 heat pumps installed for LMI participants, but the pre-filing review revealed that 23 additional heat pumps received LMI rebates under the program. These 23 units were discovered in EVT’s downstream report and were added after the Department’s initial review but before the GMP savings claim was filed.

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 6,472 ccHPs installed through the program in 2021, including 702 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 Heater (“HPWH”) incentives in its Tier III HPWH program to reduce the cost to participating customers. GMP’s HPWH program is now administered by EVT to streamline the rebate application process, however GMP claims all of the fossil fuel savings while EVT claims incremental electric savings compared to a baseline efficiency heat pump. GMP claimed prescriptive Tier III savings for 263 HPWHs under this program in 2021.

Transportation Programs

Electric Vehicles

In 2021, GMP again offered 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 1,326 EVs and PHEVs were purchased through this program, 1,154 of them new vehicles. GMP offered an additional \$1,000 rebate for low-and-moderate income customers who purchased AEVs or PHEVs in 2021, and 295 self-certified LMI customers received the incentive.

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 a \$200 incentive for electric bicycles or ‘e-Bikes’ in 2021 through participating bike shops and claimed Tier III savings according to the Tier III TRM measure characterization of 5.41 MWh per bike.

Electric Lawn and Garden Equipment

Beginning in 2021, GMP offered incentives for electric leaf blowers, chainsaws, trimmers and lawn and garden tractors. Each of these measures has been characterized in the Tier III TRM, with savings based on the avoided fuel usage from gasoline-powered versions of each type of equipment. Uptake of these rebates was significant, with almost 250 incentives awarded for this group of measures.

Electric Lawnmowers

GMP again offered incentives for both residential and commercial electric lawnmowers in 2021. Customers can receive a \$50 incentive for residential electric lawnmower, and \$2,500 for a commercial lawnmower. GMP issued incentives for 247 residential lawnmowers and no commercial lawnmowers in 2021. Savings are based on a prescriptive algorithm developed by the Tier III TAG.

Electric Forklift Program

In 2021, 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 each for three used forklifts in 2021. Savings claims are based on an algorithm approved by the Tier III TAG.

Public and Workplace EV Charging Stations

In 2021 GMP provided a \$750 per port incentive to customers who installed Level 2 EV charging stations for employee or public use, and a \$1,500 per port incentive to commercial customers who install Level 3 “DC fast” charging stations. GMP provided incentives for the installation of 12 public Level 3 DC Fast chargers, 19 public Level 2 chargers, and 18 Level 2 workplace charging stations. The draft savings claim that the Department reviewed included 22 Level 3 chargers. After review, it was discovered that although there were 22 enrolled Level 3 chargers, only 12 of those were installed in 2021. 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 various locations throughout the service territory. GMP claimed Tier III credits based on the metered kWh output of each charging station. GMP reported 165 MWh of Tier III eligible charging at its Level 2 Charging stations, and 274 MWh at its Level 3 DC Fast charging stations for 2021.

Battery Storage

In 2021, GMP continued to offer Tesla Powerwall battery systems as a resiliency improvement in customer homes. Under this program, participating customers have a two-battery Tesla Powerwall system 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 626 residential batteries were installed in 2021 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 24 custom C&I projects in 2021. GMP engaged 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 draft filing for consistency with what had previously been reviewed and found only a few instances where it was necessary to adjust the claimed savings from these projects. Most of these adjustments were for air-source heat

pump projects where the existing fossil fuel heating 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 heating load. Several projects used the 2020 heat rate rather than the 2021 heat rate in converting fossil fuel savings to MWhe. These savings were recalculated with the 2021 heat rate which resulted in a small increase in savings. There were three heat pump projects where the measure life was adjusted to be consistent with other similar measures already characterized in the Tier III TRM.

One ground-source heat pump project received separate incentives from EVT and GMP. GMP initially claimed savings proportional to its share of the overall incentive. It was later confirmed that EVT was not claiming the remainder of the thermal savings, so GMP claimed the entire fossil fuel offset under Tier III, increasing GMP’s savings claim for that project. These adjustments were made before GMP’s savings claim was filed, so no adjustments were necessary to the verified savings for these projects.

TABLE 4. GMP CUSTOM 2021 COMMERCIAL AND INDUSTRIAL TIER III PROJECTS

Commercial and Industrial Projects					
Custom Projects	Units	Lifetime MWhe Claimed	Percentage of Requirement	Verified Lifetime MWhe	Verified Percentage of Requirement
Electric School Bus	1	271	0.1%	271	0.1%
Adult Day Services ccHPs	1	668	0.3%	668	0.3%
Multi-Family ccHPs	1	164	0.1%	164	0.1%
Commercial ccHPs	1	1,126	0.6%	1,126	0.6%
Senior Center ccHPs	1	473	0.2%	473	0.2%
Commercial VRV and ccHPs	1	526	0.3%	526	0.3%
Multifamily Affordable Housing Heat Pump HVAC	1	1,881	1.0%	1,881	1.0%
School Heat Pump HVAC	1	1,122	0.6%	1,122	0.6%
Restaurant ccHPs	1	450	0.2%	450	0.2%
Multifamily Affordable Housing VRV System	1	2,303	1.2%	2,303	1.2%
Lumber Mill Line Extension	1	8,218	4.3%	8,218	4.3%
Commercial HPWH	1	407	0.2%	407	0.2%
Theater ccHPs	1	797	0.4%	797	0.4%
Ground Source Heat Pump	1	1,639	0.9%	1,639	0.9%
Electric School Buses	1	536	0.3%	536	0.3%
Family Shelter HPWH	1	275	0.1%	275	0.1%
Maple Producer Line Extension	1	272	0.1%	272	0.1%
Office ccHPs	1	569	0.3%	569	0.3%
Residential GSHP	1	297	0.2%	297	0.2%
Residential Line Extension	1	429	0.2%	429	0.2%

Multifamily Affordable Housing ccHPs	1	9,986	5.2%	9,986	5.2%
Line Extension	1	690	0.4%	690	0.4%
Office HVAC	1	310	0.2%	310	0.2%
Senior Center Electric Convection Oven	1	200	0.1%	200	0.1%
Custom Project Totals	24	33,607	17.6%	33,607	17.6%
Total All Sectors		316,550	165.31%	316,550	165.31%

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**Burlington Electric Department
2021 Tier III Savings Verification Report**

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Burlington Electric Department 2021 Tier III Savings Verification Report

The BED retail sales for 2021 resulted in an obligation of 16,948 MWh. BED has claimed 23,271 MWh savings through its Tier III programs as detailed below. The Department has verified these savings by reviewing project documentation and proof of installation, confirming the correct application of TRM savings algorithms, spot-checking the usage records 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 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Reported	Percentage of Requirement	Verified Lifetime MWh	Verified Percentage of Requirement
BED 2021 Tier III Requirement	16,948	100.0%	16,948	100.0%
2021 Tier III Prescriptive Energy Transformation Programs	23,271	137.3%	23,271	137.3%
Total 2021 Tier III Savings	23,271	137.3%	23,271	137.3%
Carryover to 2022	6,323		6,323	

Table 6 on the following page shows the various Tier III programs and measures implemented by BED for 2021.

TABLE 6- DETAILED BED 2021 PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Requirement	Verified Lifetime MWH	Verified Percentage of Requirement
Cold Climate Heat Pumps					
Heat Pumps (Ductless single zone)	122	2,578	15.2%	2,578	15.2%
Heat Pumps (Ductless single zone - LMI)	40	0	0.0%	0	0.0%
Heat Pumps (Ductless multi-zone)	122	4,621	27.3%	4,621	27.3%
Heat Pumps (Centralized Systems - Residential)	86	9,410	55.5%	9410	55.5%
Air to Water Heat Pump - Residential	1	169	1.0%	169	1.0%
Heat Pumps (Centralized Systems - C&I)	5	511	3.0%	511	3.02%
cCHP Total	336	17,290	102.0%	17,290	102.0%
Heat Pump Water Heaters					
Heat Pump Water Heater	12	222	1.3%	222	1.3%
Heat Pump Water Heater - LMI	4	0.0	0.0%	0.0	0.0%
HPWH Total	12	222	1.3%	222	1.3%
Transportation Programs					
New All Electric Vehicles	48	1,834	11.1%	1,873	11.1%
New All Electric Vehicles - LMI	15	573	3.2%	535	3.2%
New Plug-in Hybrid EV	34	969	5.7%	969	5.7%
New Plug-in Hybrid EV - LMI	16	456	2.7%	456	2.7%
Used All Electric Vehicles	13	248	1.5%	248	1.5%
Used Plug-in Hybrid EV	6	86	0.5%	86	0.5%
Home Level 2 EV Charger	32	0	0.0%	0	0.0%
Public EVSE - BED owned	10	89	0.5%	89	0.5%
Public EVSE - privately owned	7	151	0.9%	151	0.9%
Workplace EVSE	0	0	0.00%	0	0.0%
eBus	0	0	0.00%	0	0.0%
Electric Bikes	91	492	2.9%	492	2.9%
Transportation Programs Total	272	4,900	28.9%	4,900	28.9%
Miscellaneous Programs					
Residential Lawnmowers	149	286	1.7%	286	1.7%
Commercial Lawnmowers	6	500	3.0%	500	3.0%
Electric Leaf Blowers	33	40	0.2%	40	0.2%
Induction Stoves	9	31	0.2%	31	0.2%
Misc. Programs Total	197	858	5.1%	858	5.1%
Custom and Prescriptive Totals	817	23,270.9	137%	23,271.2	137%

*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 represent 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 used electric vehicles (“EVs”) and plug-in hybrids (“PHEVs”) in 2021. The incentive levels remained at \$1,800 for new EVs and \$1,500 for new PHEVs in 2021. Used EVs and PHEVs are eligible for an \$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 2021, BED paid incentives on a total of 132 electric vehicles, 113 new and 19 used. Seventy-six were all-electric vehicles (13 of which were used) and 56 were PHEVs (six used). 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 91 electric bikes in 2021, as verified by invoices from Local Motion.

Cold Climate Heat Pumps

BED provided an incentive for the installation of 336 cold climate heat pumps in 2021. This total included 122 single zone heat pumps and 122 multizone units. There were also 86 residential and 5 commercial centrally ducted heat pumps incentivized in 2021. Incentive levels vary based on the size of the units. Five of the single zone heat pumps received an additional \$400 rebate offered to self-certified 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 Net Zero goals.

BED offered incentives for centrally ducted and air-to-water heat pumps in 2021. Customers received rebates for 86 residential and five commercial centrally ducted heat pumps in 2021, which is a big increase over 2020, especially on the residential side. One air-to-water heat pump system was incentivized in 2021, the first one to be installed under BED’s Tier III program.

Electric Vehicle (“EV”) Charging Stations

BED owns sixteen Level 2 public EV charging stations at various locations around the city, six of which were installed before the Tier III program began. The remaining ten charging stations 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 MWh 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 MWh based on the TRM algorithm.

BED also provided incentives to install seven 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 2021. Response to the residential lawnmower program continued to be strong and BED awarded incentives for 149 residential and six commercial lawnmowers in 2021 after projecting 100 residential and one commercial lawnmower would be incentivized.

Electric Leaf Blowers

For the first time in 2021, BED offered incentives for electric leaf blowers. Uptake of this program was minimal – only 33 customers received a leaf blower rebate.

Induction Stoves

For the first time in 2021, BED offered incentives for electric induction stoves, which offset natural gas or propane usage and are more efficient than electric resistance stovetops. Nine BED customers availed themselves of this incentive in 2021. Induction stoves are characterized in the Tier III TRM.

Heat Pump Water Heaters

BED provided incentives for 12 heat pump water heaters (“HPWH”) in 2021 and four of those received an additional incentive as self-identified low- or moderate-income customers. The savings for these water heaters were determined using the Tier III TRM algorithm.

Washington Electric Cooperative
2021 Tier III Savings Verification Report

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Washington Electric Cooperative 2021 Tier III Savings Verification Report

Washington Electric Cooperative (“WEC”) retail sales for 2021 resulted in an obligation of 3,335 MWh. As detailed below, WEC claimed Tier III savings of 5,509 MWh for 2021, which surpasses this requirement by 2,174 MWh. The PSD has verified 5,509 MWh savings from their program in 2021.

As a utility that is considered 100% renewable, there is no penalty applied to WEC Tier III savings for 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 \$60.25 per MWh for a total of 311.42 MWh. These are detailed in Table 8.

TABLE 7: WEC 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Claimed	Percentage of Requirement	Verified Lifetime MWh	Verified Percentage of Requirement
WEC 2021 Tier III Requirement	3,335	100.00%	3,335	100.00%
2021 Tier III Energy Transformation Programs	5,509	165.21%	5,509	165.20%
Carryover to 2022	2,174		2,174	

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

TABLE 8 - DETAILED 2021 WEC TIER III RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Requirement	Verified Lifetime MWH	Verified Percentage of Requirement
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	170	3,225	96.70%	3,225	96.70%
Heat Pumps (Centralized Systems)	11	209	6.26%	209	6.26%
ccHP Total	181	3,434	102.96%	3,434	102.96%
Heat Pump Water Heaters					
Heat Pump Water Heater	37	556	16.67%	556	16.67%
HPWH Total	37	556	16.67%	556	16.67%
Transportation Programs					
All Electric Vehicles	14	462	13.85%	462	13.85%
Plug-in Hybrid EV	16	400	11.99%	400	11.99%
Electric Bikes	25	134	4.02%	134	4.02%
Transportation Programs Total	55	996	29.87%	996	29.87%
Misc. Programs					
Residential Lawnmowers	11	17	0.52%	17	0.52%
Modern Wood Heating (Wood/Pellet Stove)	23	132	3.96%	132	3.96%
Modern Wood Heating (Pellet Boilers)	7	54	1.63%	54	1.62%
Modern Wood Heating (Pellet Furnace)	1	7	0.21%	7	0.21%
Weatherization	7	2	0.05%	2	0.05%
Income Eligible Weatherization	6	311	9.34%	311	9.34%
Misc. Electrification Programs Total	55	524	15.71%	524	15.71%
Prescriptive Totals	328	5,509	165.21%	5,509	165.20%

*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 characterizations were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

WEC Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its members. In total 181 ccHPs were provided an incentive within a WEC’s territory. These measures are considered prescriptive and were 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 verified through the review of the appropriate records provided by the DU.

Electric Vehicles

WEC provided incentives for the purchase or lease of 14 all-electric vehicles (“EVs”) and 16 plug-in hybrid electric vehicles (“PHEVs”). These measures are considered prescriptive and verified through the review of the appropriate records provided by the DU.

Electric Bikes

WEC provided an incentive of up to \$200 for the purchase of 25 electric bikes or ‘e-Bikes’. These measures are considered prescriptive and verified through the review of the appropriate records provided by the DU.

Residential Lawnmowers

WEC provided an incentive of up to \$100 each for 11 electric residential mowers. These measure characterizations were developed with the input of the DUs. These measures are considered prescriptive and 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 \$1,000 towards the weatherization of seven homes within WEC territory. Through their 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 2021, the rate calculated by the Vermont Office of Economic Opportunity was \$60.25 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 Community Action, provided confirmation of the payment to its program.

Vermont Electric Cooperative
2021 Tier III Savings Verification Report

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Vermont Electric Cooperative 2021 Tier III Savings Verification Report

Vermont Electric Cooperative (“VEC”) retail sales for 2021 resulted in an obligation of 21,280 MWh. As detailed below, VEC claimed Tier III savings of 39,391 MWh for 2021, which surpasses this requirement by 18,111 MWh. The PSD has verified 39,394 MWh savings from their program with a total carryover of Tier III credits of 18,114 MWh into 2021.

TABLE 9: VEC 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Claimed	Percentage of Requirement	Verified Lifetime MWh	Verified Percentage of Requirement
VEC 2021 Tier III Requirement	21,280	100.00%	21,280	100.00%
2021 Tier III Energy Transformation Programs	30,949	145.44%	30,952	145.45%
2021 Tier III C&I Custom Projects	8,442	39.67%	8,442	39.67%
Total 2021 Tier III Savings	39,391	185.11%	39,394	185.12%
Carryover to 2022	18,111		18,114	

As detailed in Table 10 there are relatively minor variances between the claimed savings and verified savings. These differences appear to be because of different methodologies as to the number of significant figures used to calculate the savings and when rounding to two significant figures to calculate the result.

TABLE 10 - DETAILED 2021 VEC PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Requirement	Verified Lifetime MWH	Verified Percentage of Requirement
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	741	19,522	91.74%	19,526	91.76%
Heat Pumps (Centralized Systems)	66	6,522	30.65%	6,523	30.65%
ccHP Total	807	26,044	122.39%	26,048	122.41%
Heat Pump Water Heaters					
Heat Pump Water Heater	39	200	0.94%	200	0.94%
Heat Pump Pool Heater	1	183	0.86%	183	0.86%
HPWH Total	40	383	1.80%	383	1.80%
Transportation Programs					
New All Electric Vehicles	56	1,927	9.06%	1,927	9.05%
New Plug-in Hybrid EV	44	1,181	5.55%	1,181	5.55%
Level 2 EV Charger (1 Port)	3	79	0.37%	79	0.37%
Transportation Programs Total	103	3,187	14.98%	3,186	14.97%
Misc. Programs					
Residential Lawnmowers	58	102	0.48%	102	0.48%
Electric Forklifts	1	110	0.52%	110	0.52%
Modern Wood Heating	30	940	4.42%	940	4.42%
Home Batteries	19	183	0.86%	183	0.86%
Misc. Electrification Programs Total	108	1,335	6.27%	1,334	6.27%
Custom Measures					
Clean Air Program (Load Electrification)	6	8,418	39.56%	8,418	39.56%
Level 2 EV Charger (Flexible Load Management)	49	24	0.11%	24	0.11%
Custom Measures Totals	55	8,442	39.67%	8,442	39.67%
Custom and Prescriptive Totals	1,113	39,391	185.11%	39,393	185.12%

*MWh = Megawatt hour equivalent

The above table shows the various measures implemented by VEC through either a shared savings Memorandum of Understanding 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 characterizations were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

VEC Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its members in 2021. An additional \$150 was offered directly to homeowners who could prove their buildings met the requirements for the enhanced incentive. In total, 807 ccHPs were provided an incentive within VEC’s territory, with 16 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.

Heat Pump Water Heater

VEC Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its members who installed heat pump water heaters (“HPWH”) that replaced fossil-fuel fired water heaters through EVT’s mid-stream program. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by the DU.

Electric Vehicles

VEC provided incentives for the purchase or lease of 56 all-electric vehicles (“EVs”) and 44 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.

Workplace EV Charger

VEC provided incentives for the installation of three Level 2 EV workplace chargers. 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 on-bill credit for 58 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.

Electric Forklifts

VEC provided a \$1,000 on-bill credit for an electric forklift. Forklifts 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 30 pellet stoves. These measures are considered prescriptive and verified through the review of the appropriate records and claim forms provided by the DU.

Home Battery

VEC provided incentives for 19 home battery storage systems in 2021. VEC customers receive either an upfront incentive or a monthly credit for providing access to the energy stored in the battery during peak times. 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 six custom projects under its Clean Air Program in 2021. 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.

Residential EV Charger

VEC implemented a flexible load EV charging program by incentivizing 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
2021 Tier III Savings Verification Report

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VPPSA 2021 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.

VPPSA retail sales for 2021 resulted in an obligation of 11,543 MWhe. As detailed below, VPPSA claimed Tier III savings of 18,502 MWhe for 2021, which surpasses this requirement by 11,543 MWhe. The PSD has verified 18,502 MWh savings from their program with a carryover of Tier III credits of 6,959 MWh. These results include some measures from 2020 as well as the 2021 Tier III programs offered by VPPSA.

TABLE 21: VPPSA 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWhe Claimed	Percentage of Requirement	Verified Lifetime MWhe	Verified Percentage of Requirement
VPPSA 2021 Tier III Requirement	11,543	100.00%	11,543	100.00%
2021 Tier III Energy Transformation Programs	12,472	108.05%	12,472	108.05%
2021 Tier III C&I Custom Projects	6,030	52.24%	6,030	52.24%
Total 2021 Tier III Savings	18,502	160.29%	18,502	160.29%
Carryover to 2022	6,959		6,959	

As detailed in Table 12, on the following page, the carryover credits are mostly due to the custom electrification projects undertaken by VPPSA.

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 2021 VPPSA PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Requirement	Verified Lifetime MWH	Verified Percentage of Requirement
Cold Climate Heat Pumps					
Heat Pumps (Ductless) + Weatherization	11	182	1.58%	182	1.58%
Heat Pumps (Ductless)	297	6,782	58.75%	6,782	58.75%
Heat Pumps (Centralized Systems)	43	3,158	27.36%	3,158	27.36%
Heat Pumps (Air to water)	3	363	3.15%	363	3.15%
ccHP Total	354	10,486	90.84%	10,486	90.84%
Heat Pump Water Heaters					
Heat Pump Water Heater 2021 (Direct Incentive)	9	122	1.06%	122	1.06%
Heat Pump Water Heater 2021 (PoS Incentive)	18	265	2.30%	265	2.30%
HPWH Total	27	387	3.35%	387	3.35%
Transportation Programs					
New All Electric Vehicles	20	663	5.74%	663	5.74%
Used All Electric Vehicles	5	83	0.72%	83	0.72%
New Plug-in Hybrid EV	16	406	3.52%	406	3.52%
Used Plug-in Hybrid EV	1	13	0.11%	13	0.11%
Level 2 EV Charger (1 Port)	5	116	1.00%	116	1.00%
Electric Bikes	26	139	1.21%	139	1.21%
Transportation Programs Total	73	1,419	12.30%	1,419	12.30%
Misc. Electrification Programs					
Residential Lawnmowers	18	28	0.25%	28	0.25%
Commercial Lawnmowers	2	137	1.18%	137	1.18%
Small Yard Tools	12	15	0.13%	15	0.13%
Misc. Electrification Programs Total	32	180	1.56%	180	1.56%
Custom Measures					
Line Extension	1	3,841	33.28%	3,841	33.28%
Line Extension	1	2,045	17.72%	2,045	17.72%
RTU	1	144	1.25%	144	1.25%
Custom Measures Totals	3	6,030	52.24%	6,030	52.24%
Custom and Prescriptive Totals	489	18,501	160.29%	18,501	160.29%

*MWh = Megawatt hour equivalent

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 characterizations were developed with the input of the Distribution Utilities (“DUs”).

Cold Climate Heat Pumps

VPPSA Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its members’ customers. An additional \$200 was offered to homeowners whose buildings met the requirements for the enhanced incentive. In total, 354 ccHPs were provided an incentive within a VPPSA member’s territory, with 11 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 VPPSA.

Heat Pump Water Heaters

VPPSA Partnered with EVT to offer an instant \$600 mid-stream incentive at point of purchase to its members’ customers who installed heat pump water heaters (“HPWH”) to replace fossil-fuel fired water heaters through EVT’s mid-stream program. These measures are considered prescriptive and are verified through the review of the appropriate records and claim forms provided by VPPSA.

Electric Vehicles

VPPSA offered incentives for the purchase or lease of 25 all-electric vehicles (“EVs”), including 5 used EVs, and 17 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 VPPSA.

EV Charger

VPPSA provided \$500 incentives for the purchase of 5 single-port level 2 EV chargers for workplace charging. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by VPPSA.

Electric Bike

VPPSA provided a \$100 incentive each for the purchase of 26 electric bikes or electric bike retrofit kits. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by VPPSA.

Residential and Commercial Lawnmowers and Yard Equipment

VPPSA provided \$50 and \$1,200 incentives, respectively, for 18 residential electric lawnmowers and two commercial lawnmowers. An additional 18 incentives of \$25 were offered towards the purchase of electric chainsaws, trimmers, or leaf blowers. 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 Extensions

This is a custom incentive offered by VPPSA to two customers in 2021. These line extensions provided three phase power to industrial customers 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 by the Public Service Department.

Roof Top Unit

This custom measure provided an incentive towards the purchase and installation of rooftop heat pump units for a commercial customer to provide heating and cooling. This equipment installation was documented by VPPSA, including establishing fuel use offset by the new heat pumps. This information and the resulting calculations were reviewed and found to be reasonable by the Public Service Department.

Stowe Electric
2021 Tier III Savings Verification Report

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Stowe Electric 2021 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.

Stowe Electric retail sales for 2021 resulted in an obligation of 2,450 MWh. As detailed below, Stowe claimed Tier III savings of 5,784 MWh for 2021, which surpasses this requirement by 3,215 MWh. The PSD has verified 5,790 MWh savings from Stowe Electric’s program for Tier III with a carryover of 3,221 MWh.

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

TABLE 33: STOWE 2021 TIER III SAVINGS CLAIM AND VERIFIED SAVINGS

	Lifetime MWh Claimed	Percentage of Requirement	Verified Lifetime MWh	Verified Percentage of Requirement
Stowe Electric 2021 Tier III Requirement	2,569	100.00%	2,569	100.00%
2021 Tier III Energy Transformation Programs	5,784	225.13%	5,790	225.40%
Carryover to 2022	3,215		3,221	

As detailed in Table 14 there are relatively minor variances between the claimed savings and verified savings. These differences appear to be because of different methodologies as to the number of significant figures used to calculate the savings and when rounding to two significant figures to calculate the result.

¹⁵ 30 V.S.A. § 8005(a)(3)(B).

TABLE 14 - DETAILED 2021 STOWE ELECTRIC PROGRAM RESULTS

Measure	Units	Lifetime MWH Claimed	Percentage of Requirement	Verified Lifetime MWH	Verified Percentage of Requirement
Cold Climate Heat Pumps					
Heat Pumps (Ductless)	123	4,534	176.49%	4,539	176.67%
Heat Pumps (Centralized Systems)	24	571	22.23%	571	22.23%
Ductless ccHP Total	147	5,105	198.72%	5,110	198.91%
Heat Pump Water Heaters					
Heat Pump Water Heater (PoS Incentive)	10	217	8.45%	219	8.52%
HPWH Total	10	217	8.45%	219	8.52%
Transportation Programs					
New All Electric Vehicles	6	234	9.11%	234	9.11%
Used All Electric Vehicles	1	20	0.76%	20	0.76%
New Plug-in Hybrid EV	5	145	5.64%	146	5.66%
Electric Bikes	7	39	1.52%	39	1.50%
Level 2 EV Charger (1 Port)	1	22	0.86%	22	0.86%
Transportation Programs Total	20	460	17.89%	460	17.89%
Misc. Electrification Programs					
Residential Lawnmowers	2	2	0.08%	2	0.09%
Misc. Electrification Programs Total	2	2	0.08%	2	0.09%
Prescriptive Totals	179	5,783	225.13%	5,790	225.40%

*MWh = 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 Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its customers. An additional \$250 was offered to building owners who used participating HVAC contractors for the installation of their units. In total 147 ccHPs were provided incentives in 2021. These measures are considered prescriptive and were verified through the review of the appropriate records and claim forms provided by the DU.

Heat Pump Water Heaters

Stowe Partnered with EVT to offer an instant mid-stream incentive at point of purchase to its customers who installed heat pump water heaters (“HPWH”) which replaced fossil-fuel fired water heaters through EVT’s mid-stream program. 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 7 all-electric vehicles (“EVs”) in 2021, including 1 used vehicle, and 5 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.

Electric Bike

Stowe provided a \$200 incentive each for the purchase of five electric bikes. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by the DU.

EV Charger

Stowe provided a \$500 incentive for the purchase of one level 2 EV charger for public charging in 2021. This measure is considered prescriptive and is verified through the review of the appropriate records and claim forms provided by the DU.

Residential Lawnmower

Stowe provided two \$25 incentives for residential electric lawnmowers in 2021. 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 Comment

The Department would like to acknowledge that completeness of the records being retained by the DUs has improved since the beginning of this program. However, we would like to continue to stress the importance of accurate and complete recordkeeping to allow effective and timely evaluation of this program.

The Department would also like to continue to request that the DUs share their filings with the Department prior to filing to allow the Department to review them for completeness to avoid unnecessary additional process.