KEEGAN WERLIN LLP

ATTORNEYS AT LAW
99 HIGH STREET, SUITE 2900
BOSTON, MASSACHUSETTS 02110

(617) 951-1400

TELECOPIER:
(617) 951-1354

June 4, 2021

BY E-FILING
Mark D. Marini, Secretary
Commonwealth of Massachusetts
Department of Public Utilities
One South Station
Boston, MA 02110

Re: NSTAR Electric Company d/b/a Eversource Energy, D.P.U. 21-70
2020 Energy Efficiency Plan-Year Report

Dear Secretary Marini:

On behalf of NSTAR Electric Company d/b/a Eversource Energy (the "Company"), enclosed is the Company's 2020 Energy Efficiency Plan-Year Report for filing with the Department of Public Utilities (the "Department").[1] Plan Year 2020 was the second year of implementation under the *2019-2021 Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan*, as reviewed and approved by the Department in D.P.U. 18-110 – D.P.U. 18-119. Please note that Appendix 3 (Technical Reference Manual- 2020 Report Version) and Appendix 4D (Evaluation Studies) are being provided statewide under separate cover.

In 2020, the Massachusetts Energy Efficiency Program Administrators[2] (the "Program Administrators") successfully delivered on very ambitious energy savings goals for the year during a very challenging and uncertain pandemic year. Statewide, the electric Program Administrators achieved 92 percent of the lifetime electric savings goal, and 88 percent of planned total benefits. The gas Program Administrators achieved 78 percent of the lifetime gas savings goal, and 78 percent of planned total benefits statewide. The Program Administrators achieved these aggressive savings goals and benefits while maintaining budgetary control and complying with the directive of the Green Communities Act to seek all available cost-effective energy efficiency opportunities.

---

1 This report is being submitted pursuant to the Hearing Officer's Memorandum dated May 2, 2014 adopting the Energy Efficiency Plan-Year Report Template in D.P.U. 11-120-A, Phase II and the Joint Motion of the Program Administrators for Extension of the Deadline for Each Program Administrator to File its 2020 Plan-Year Report granted by the Department on April 16, 2021.

2 The Massachusetts Program Administrators are: The Berkshire Gas Company, Fitchburg Gas & Electric Light Company d/b/a Unitil, Liberty Utilities (New England Natural Gas Company) Corp. d/b/a Liberty, Massachusetts Electric Company, Nantucket Electric Company, Boston Gas Company and former Colonial Gas Company, each d/b/a National Grid, NSTAR Electric Company, NSTAR Gas Company and Eversource Gas Company of Massachusetts, each d/b/a Eversource Energy, and Cape Light Compact JPE

These savings and benefits achievements and implementation enhancements demonstrate the Program Administrators' continued commitment throughout 2020 to achieving sustainable cost-effective energy efficiency, despite the difficulties presented by the pandemic in 2020. In response to the COVID-19 pandemic, the Program Administrators proactively suspended on-premise program offerings in order to protect the health and safety of customers, contractors, and employees. The Program Administrators quickly worked with experts to develop appropriate health and safety protocols for the resumption of on-premise work when permitted, and convened a Contractor Mitigation Working Group to ensure that the contractor community was represented in program decisions. The Program Administrators worked quickly to develop and operationalize Virtual Home Energy Assessments, ensuring future weatherization and major measure work going forward, and worked with LEAN to offer income eligible customers remote assessments. In addition to continuing to offer extensive and varied PA programming (e.g., retail and mail-in rebate offerings and active demand response), the PAs also responded to the changing situation by developing a vendor resources site on MassSave.com, presenting webinars to vendors on accessing federal and state relief measures, offering multiple enhanced virtual workforce development and training opportunities, and offering enhanced residential and C&I customer incentives for specific measures.

The Program Administrators also continued with many other program enhancements in 2020, such as launching the new Mass Save residential hotline. The system, which is available in English, Spanish, Portuguese, and Mandarin, serves as a single intake channel for residential customers. On the C&I side, the Program Administrators redesigned the C&I new construction offering in 2020. The redesigned offering provides pathways and options across the entire range of projects and customer needs, from Zero Net Energy buildings to systems or equipment based opportunities. Throughout 2020, the Program Administrators responded to changing conditions and demonstrated their commitment to leveraging relationships with customers, contractors, and other vendors and stakeholders to coordinate efforts, share ideas and best practices, and serve customers.

The Program Administrators look forward to continuing to provide energy efficiency opportunities for customers throughout this Plan term and beyond.

Very truly yours,

Enclosures

cc: Jeffrey Leupold, Department of Public Utilities
Sarah Smegal, Department of Public Utilities
Jessica Ellis, Department of Public Utilities
Krista Hawley, Department of Public Utilities
Jo Ann Bodemer, Office of the Attorney General
Rachel Graham Evans, Department of Energy Resources
Jerrold Oppenheim, Low-Income Energy Affordability Network

2020

Energy Efficiency Plan-Year Report

D.P.U. 21-70

NSTAR Electric d/b/a Eversource Energy

June 4, 2021

NSTAR Electric Company d/b/a Eversource Energy

2020 Energy Efficiency Plan-Year Report

D.P.U. 21-70

June 4, 2021

Table of Contents

2020 PLAN-YEAR REPORT DATA TABLES

Appendix 1: Significant Core Initiative Variances & Cost-Effectiveness

Appendix 2: Benefit-Cost Ratio Screening Tool

Appendix 3: Technical Reference Manual – 2020 Report Version

Appendix 4: Statewide Evaluation Studies Summary

Appendix 4A - Table of Evaluation Studies

Appendix 4B - Summary of the Studies with the Most Significant Effects

Appendix 4C - Evaluation Study Summaries

Appendix 4D - 2020 Plan-Year Report Evaluation Studies

Appendix 5: Performance Incentives

Appendix 6: 2020 Miscellaneous Implementation Update

Energy Efficiency Data Tables

2020 Plan Year Report Overview

Eversource Electric
June 4, 2021

DATA OVERVIEW

The following data tables provide a summary of the Program Administrator's benefits, costs, savings, and cost-effectiveness for 2019 through 2021. The planned values are consistent with each Program Administrator's 2019-2021 Three-Year Plan. The 2020 preliminary and evaluated values are presented here for the first time as part of each Program Administrator's 2020 Plan Year Report.

The data included in these tables is based on other supporting models. The primary supporting models used by the Program Administrators in the preparation of this 2020 Plan Year Report are the Benefit-Cost Screening model and the Performance Incentive model. These exhibits should be referenced when looking for more detailed analyses, such as measure-level savings. High-level summaries for each of these models are provided below.

USING THE DATA TABLES

These Plan Year Report data tables are in a pivot table format with set outputs based on the Department's direction in D.P.U. 11-120, Phase II. Users can manipulate the data by using either the raw data included on the Master Data tab, or the Slicers shown on the Selections tab. The Slicers will update the comparisons between the planned, preliminary, or evaluated results on the Plan Year Summary tables only.

BENEFIT-COST SCREENING MODEL

The Benefit-Cost Screening model provides measure-level savings and benefits. This model uses the avoided cost values from the 2018 Avoided Energy Supply Cost study prepared by Synapse Energy Economics, Inc.

PERFORMANCE INCENTIVE MODEL

The Performance Incentive model filed as part of the Joint Statewide Three-Year Plan provides support for the performance incentive dollars proposed for collection by the Program Administrator. Final performance incentive amounts will be based on the three-year term and will be subject to review and final approval in the three-year term report; the amounts shown in the Plan Year Report are based on the data available to date and will change as additional years of data are included. Note that performance incentives are not applicable to the Cape Light Compact.

EM&V ACTIVITIES

The Evaluation, Monitoring & Verification (EMV) Section of the Joint Statewide Three-Year Plan describes in detail the EM&V activities planned for 2019-2021. The EMV section of each Program Administrator's 2020 Plan Year Report summarizes the evaluation results completed in 2020 and their impact on the 2020 evaluated results. The Technical Reference Library (TRL) has been updated to account for recent evaluation results.

2020 Plan Year Report Data Tables

Template Version: March 18, 2021

PA-Specific Information

2020 Plan Year Report Filing Detail

Distribution Fuel	Electric
Program Administrator	Eversource
Date of Filing	June 4, 2021
Name of Filing	2020 Plan Year Report

PLAN FILINGS

Reporting Period	Filing Date	DPU Docket #
2019 Plan	February 19, 2019	D.P.U. 18-110 thru 18-119
2020 Plan	February 19, 2019	D.P.U. 18-110 thru 18-119
2021 Plan	February 19, 2019	D.P.U. 18-110 thru 18-119
2019 Preliminary and Evaluated	May 27, 2021	D.P.U. 20-50
2020 Preliminary and Evaluated	June 4, 2021	D.P.U. 21-70
2021 Preliminary and Evaluated	TBD	D.P.U. 22-###

RATES FOR ADJUSTMENTS

2020 Nominal Discount Rate	2.33%	
2021 Nominal Discount Rate	2.33%	
Effective Tax Rate	27.32%	PA-specific

PLAN YEARS

Current Plan Year 1	2019
Current Plan Year 2	2020
Current Plan Year 3	2021

GHG EMISSIONS REDUCTION FACTORS (Short Tons)

GHG per:	NOX	SO2	CO2
Electricity (MWh)	0.00016	0.00004	0.49400
Gas (Therm)			0.00585
Oil (MMBTU)			0.08069
Propane (MMBTU)			0.06959
Source:	File named "3-year plan EFs 8-9-18.xlsx"		

Technical Reference Library

TRL Link	https://etrm.anbetrack.com/#/workarea/home?token=6d6c4576

Selections for Data Displayed in Tables

2020 Plan Year Report

Eversource Electric

June 4, 2021

Use the options in the boxes below to select the data shown and compared in the Term Report data tables.

Tables with Master Data source

Select comparison Year

Year

- 2019
- **2020**
- 2021

Select comparison Reporting Periods

First Comparison	*Second Comparison*
Evaluated	**Evaluated**
Planned	Planned
Preliminary	Preliminary

Select the PA and corresponding Distribution Company

Program Administrator	*Distribution Company*
Cape Light Compact	**Electric**
Eversource	Gas
National Grid	(blank)
Statewide Electric	
Unitil	

Tables with Master ADR data source

Select comparison Year

Year

- 2019
- **2020**
- 2021

Select comparison Reporting Periods

First Comparison	*Second Comparison*
Evaluated	**Evaluated**
Planned	Planned
Preliminary	Preliminary

Select the PA and corresponding Distribution Company

Program Administrator	*Distribution Company*
Cape Light Compact	**Electric**
Eversource	(blank)
National Grid	
Statewide Electric	
Unitil	
(blank)	

Notes

• To select more than one option, press the Control button while clicking on the options.

• If no data is included for a Program Administrator on the MasterData tabs, then the Program Administrator's name and distribution company may not appear in the above boxes. For example, if this a Program Administrator-specific filing, then the other Program Administrators names may not appear in the boxes for selection.

2020 Plan Year Report Variances

Variances Summary

Eversource Electric

June 4, 2021

Variances Summary				
Program	**Total Program Cost Variances**	**Lifetime Electric Savings (MWh) Variances**	**Total Benefits (2019$) Variances**	**Total Resource Benefits (2019$) Variances**
A - Residential	**11%**	**48%**	**30%**	**-22%**
A1 - Residential New Buildings	-32%	6%	49%	-52%
A1a - Residential New Homes & Renovations	**-32%**	6%	49%	**-52%**
A2 - Residential Existing Buildings	21%	55%	27%	-15%
A2a - Residential Coordinated Delivery	13%	-4%	15%	-5%
A2b - Residential Conservation Services (RCS)	-7%			
A2c - Residential Retail	**41%**	100%	51%	**-35%**
A2d - Residential Behavior	**-52%**	**-56%**	**-57%**	
A2e - Residential Active Demand Reduction	**55%**		270%	0%
A3 - Residential Hard-to-Measure	-10%			
B - Income Eligible	**-20%**	**-14%**	**-24%**	**2%**
B1 - Income Eligible Existing Buildings	-20%	-14%	-24%	2%
B1a - Income Eligible Coordinated Delivery	**-20%**	-14%	**-24%**	2%
B1b - Income Eligible Active Demand Reduction				
B2 - Income Eligible Hard-to-Measure	**-24%**			
C - Commercial & Industrial	**-16%**	**-6%**	**-5%**	**0%**
C1 - C&I New Buildings	-40%	-24%	-41%	18%
C1a - C&I New Buildings & Major Renovations	**-40%**	**-24%**	**-41%**	18%
C2 - C&I Existing Buildings	-14%	-4%	-1%	-1%
C2a - C&I Existing Building Retrofit	**-18%**	-3%	1%	0%
C2b - C&I New & Replacement Equipment	11%	-12%	-11%	-8%
C2c - C&I Active Demand Reduction	**-49%**		6%	**-19%**
C3 - C&I Hard-to-Measure	8%			
Grand Total	**-7%**	**-2%**	**1%**	**-4%**

Notes

• Significant variances, which require explanation, are defined as:

(1) variances between *planned and actual* core initiative budget of *15 percent or greater;*
(2) variances between *planned and preliminary* core initiative *total lifetime savings* showing a *decrease of 15 percent or greater;*
(3) variances between *planned and preliminary* core initiative *total benefits* showing a *decrease of 15 percent or greater;* and
(4) variances between *preliminary and evaluated* core initiative *total resource benefits* showing a *decrease of 15 percent or greater*.

• Variances are calculated as a percent of the three-year goal, meaning variance are calculated as the percentage difference between the percentage of the Three-Year Plan goals planned to be achieved through the Plan Year Report year compared to the percentage of the Three-Year Plan goals actually achieved through the Plan Year Report year.

• Cells highlighted in the above tables indicate that a variance is significant enough to require explanation. Refer to the Program Administrator's Plan Year Report for explanations of significant variances.

2020 Plan Year Report Variances

Total Program Cost Variances

Eversource Electric

June 4, 2021

Total Program Cost Variances									
Program	Planned				Actual		Planned v. Actual (%)		
	2019	2020	2021	2019-2021	2019	2020	Planned 2019 - 2020 % Total Plan	Actual 2019 - 2020 % Total Plan	Planned v Actual (%)
A - Residential	**101,750,000**	**100,450,000**	**101,370,000**	**303,570,000**	**117,915,389**	**105,605,930**	**67%**	**74%**	**11%**
A1 - Residential New Buildings	9,630,000	9,605,000	9,610,000	28,845,000	6,468,625	6,691,512	67%	46%	-32%
A1a - Residential New Homes & Renovations	9,630,000	9,605,000	9,610,000	28,845,000	6,468,625	6,691,512	67%	46%	**-32%**
A2 - Residential Existing Buildings	74,381,250	71,950,000	72,700,000	219,031,250	93,518,430	83,915,983	67%	81%	21%
A2a - Residential Coordinated Delivery	29,760,000	30,280,000	31,500,000	91,540,000	37,594,055	30,392,127	66%	74%	13%
A2b - Residential Conservation Services (RCS)	6,400,000	6,965,000	6,945,000	20,310,000	6,591,304	5,825,997	66%	61%	-7%
A2c - Residential Retail	34,090,000	30,440,000	29,790,000	94,320,000	45,402,991	45,792,306	68%	97%	**41%**
A2d - Residential Behavior	3,345,000	3,385,000	3,395,000	10,125,000	3,097,099	158,286	66%	32%	**-52%**
A2e - Residential Active Demand Reduction	786,250	880,000	1,070,000	2,736,250	832,980	1,747,266	61%	94%	**55%**
A3 - Residential Hard-to-Measure	17,738,750	18,895,000	19,060,000	55,693,750	17,928,334	14,998,435	66%	59%	-10%
B - Income Eligible	**33,000,000**	**31,725,000**	**29,960,000**	**94,685,000**	**32,043,930**	**19,656,325**	**68%**	**55%**	**-20%**
B1 - Income Eligible Existing Buildings	31,805,000	30,500,000	28,715,000	91,020,000	31,146,728	18,722,376	68%	55%	-20%
B1a - Income Eligible Coordinated Delivery	31,805,000	30,500,000	28,715,000	91,020,000	31,146,728	18,722,376	68%	55%	**-20%**
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-			
B2 - Income Eligible Hard-to-Measure	1,195,000	1,225,000	1,245,000	3,665,000	897,202	933,949	66%	50%	**-24%**
C - Commercial & Industrial	**154,500,000**	**186,150,000**	**178,270,000**	**518,920,000**	**133,105,830**	**154,672,966**	**66%**	**55%**	**-16%**
C1 - C&I New Buildings	11,640,000	11,730,000	11,965,000	35,335,000	8,137,591	5,968,479	66%	40%	-40%
C1a - C&I New Buildings & Major Renovations	11,640,000	11,730,000	11,965,000	35,335,000	8,137,591	5,968,479	66%	40%	**-40%**
C2 - C&I Existing Buildings	137,735,000	169,250,000	160,930,000	467,915,000	119,153,402	143,393,455	66%	56%	-14%
C2a - C&I Existing Building Retrofit	108,815,000	136,260,000	121,850,000	366,925,000	91,793,296	108,440,929	67%	55%	**-18%**
C2b - C&I New & Replacement Equipment	25,585,000	25,665,000	26,045,000	77,295,000	25,799,445	31,087,075	66%	74%	11%
C2c - C&I Active Demand Reduction	3,335,000	7,325,000	13,035,000	23,695,000	1,560,661	3,865,451	45%	23%	**-49%**
C3 - C&I Hard-to-Measure	5,125,000	5,170,000	5,375,000	15,670,000	5,814,837	5,311,032	66%	71%	8%
Grand Total	**289,250,000**	**318,325,000**	**309,600,000**	**917,175,000**	**283,065,149**	**279,935,221**	**66%**	**61%**	**-7%**

Notes

Plan year core initiative significant variance explanations are required for: (1) variances between planned and actual core initiative budget of 15 percent or greater.

2020 Plan Year Report Variances

Lifetime Electric Savings (MWh) Variances

Eversource Electric

June 4, 2021

Lifetime Electric Savings (MWh) Variances									
Program	Planned				Preliminary		Planned v. Preliminary (%)		
	2019	2020	2021	2019-2021	2019	2020	Planned 2019 - 2020 % Total Plan	Preliminary 2019 - 2020 % Total Plan	Planned v Preliminary (%)
A - Residential	**649,334**	**474,219**	**254,997**	**1,378,550**	**978,225**	**681,715**	**82%**	**120%**	**48%**
A1 - Residential New Buildings	82,065	82,966	81,212	246,243	78,276	96,700	67%	71%	6%
A1a - Residential New Homes & Renovations	82,065	82,966	81,212	246,243	78,276	96,700	67%	71%	6%
A2 - Residential Existing Buildings	567,269	391,253	173,785	1,132,307	899,949	585,015	85%	131%	55%
A2a - Residential Coordinated Delivery	149,901	107,497	90,693	348,091	188,460	59,734	74%	71%	-4%
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-			
A2c - Residential Retail	366,158	228,386	23,562	618,106	664,882	525,281	96%	193%	100%
A2d - Residential Behavior	51,210	55,370	59,530	166,110	46,607	-	64%	28%	**-56%**
A2e - Residential Active Demand Reduction	-	-	-	-	-	-			
A3 - Residential Hard-to-Measure	-	-	-	-	-	-			
B - Income Eligible	**138,775**	**123,558**	**107,917**	**370,250**	**149,315**	**75,116**	**71%**	**61%**	**-14%**
B1 - Income Eligible Existing Buildings	138,775	123,558	107,917	370,250	149,315	75,116	71%	61%	-14%
B1a - Income Eligible Coordinated Delivery	138,775	123,558	107,917	370,250	149,315	75,116	71%	61%	-14%
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-			
B2 - Income Eligible Hard-to-Measure	-	-	-	-	-	-			
C - Commercial & Industrial	**4,460,667**	**9,147,678**	**5,021,773**	**18,630,118**	**3,797,745**	**9,057,383**	**73%**	**69%**	**-6%**
C1 - C&I New Buildings	443,056	467,827	479,866	1,390,748	319,740	374,990	65%	50%	-24%
C1a - C&I New Buildings & Major Renovations	443,056	467,827	479,866	1,390,748	319,740	374,990	65%	50%	**-24%**
C2 - C&I Existing Buildings	4,017,611	8,679,851	4,541,907	17,239,369	3,478,004	8,682,393	74%	71%	-4%
C2a - C&I Existing Building Retrofit	3,173,416	7,907,175	3,818,131	14,898,722	2,519,301	8,224,606	74%	72%	-3%
C2b - C&I New & Replacement Equipment	844,196	772,677	723,775	2,340,648	958,703	457,787	69%	61%	-12%
C2c - C&I Active Demand Reduction	-	-	-	-	-	-			
C3 - C&I Hard-to-Measure	-	-	-	-	-	-			
Grand Total	**5,248,775**	**9,745,455**	**5,384,688**	**20,378,918**	**4,925,284**	**9,814,213.94**	**74%**	**72%**	**-2%**

Notes

• Plan year core initiative significant variance explanations are required for: (2) variances between planned and preliminary core initiative total lifetime savings showing a decrease of 15 percent or greater.

• Total lifetime savings are not calculated for active demand reduction (ADR) measures. Correspondingly, a variance for total lifetime savings is not calculated for the ADR core initiatives in each sector.

2020 Plan Year Report Variances

Total Benefits (2019$) Variances

Eversource Electric

June 4, 2021

Total Benefits (2019$) Variances									
Program	Planned				Preliminary		Planned v. Preliminary (%)		
	2019	2020	2021	2019-2021	2019	2020	Planned 2019 - 2020 % Total Plan	Preliminary 2019 - 2020 % Total Plan	Planned v Preliminary (%)
A - Residential	**232,527,365**	**230,439,443**	**255,927,230**	**718,894,037**	**344,568,968**	**255,923,947**	**64%**	**84%**	**30%**
A1 - Residential New Buildings	26,329,890	26,719,043	26,642,939	79,691,872	37,110,362	41,901,106	67%	99%	49%
A1a - Residential New Homes & Renovations	26,329,890	26,719,043	26,642,939	79,691,872	37,110,362	41,901,106	67%	99%	49%
A2 - Residential Existing Buildings	206,197,475	203,720,400	229,284,291	639,202,165	307,458,605	214,022,841	64%	82%	27%
A2a - Residential Coordinated Delivery	108,633,486	111,949,561	120,283,071	340,866,118	144,843,351	108,198,502	65%	74%	15%
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-			
A2c - Residential Retail	86,585,930	79,313,628	95,765,041	261,664,599	151,325,198	99,972,386	63%	96%	51%
A2d - Residential Behavior	10,183,139	11,086,568	11,348,940	32,618,647	9,134,112	-	65%	28%	**-57%**
A2e - Residential Active Demand Reduction	794,921	1,370,642	1,887,239	4,052,802	2,155,944	5,851,953	53%	198%	270%
A3 - Residential Hard-to-Measure	-	-	-	-	-	-			
B - Income Eligible	**75,304,108**	**70,620,558**	**64,803,488**	**210,728,154**	**73,414,798**	**37,978,531**	**69%**	**53%**	**-24%**
B1 - Income Eligible Existing Buildings	75,304,108	70,620,558	64,803,488	210,728,154	73,414,798	37,978,531	69%	53%	-24%
B1a - Income Eligible Coordinated Delivery	75,304,108	70,620,558	64,803,488	210,728,154	73,414,798	37,978,531	69%	53%	**-24%**
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-			
B2 - Income Eligible Hard-to-Measure	-	-	-	-	-	-			
C - Commercial & Industrial	**700,913,320**	**1,054,439,513**	**747,278,461**	**2,502,631,294**	**657,570,376**	**1,014,616,719**	**70%**	**67%**	**-5%**
C1 - C&I New Buildings	71,604,679	75,796,288	78,245,843	225,646,810	46,573,086	40,038,031	65%	38%	-41%
C1a - C&I New Buildings & Major Renovations	71,604,679	75,796,288	78,245,843	225,646,810	46,573,086	40,038,031	65%	38%	**-41%**
C2 - C&I Existing Buildings	629,308,641	978,643,224	669,032,618	2,276,984,484	610,997,290	974,578,688	71%	70%	-1%
C2a - C&I Existing Building Retrofit	462,297,681	810,345,232	492,063,765	1,764,706,677	413,599,440	866,827,021	72%	73%	1%
C2b - C&I New & Replacement Equipment	156,080,379	141,483,856	130,873,906	428,438,141	183,670,115	81,547,000	69%	62%	-11%
C2c - C&I Active Demand Reduction	10,930,582	26,814,136	46,094,948	83,839,665	13,727,734	26,204,666	45%	48%	6%
C3 - C&I Hard-to-Measure	-	-	-	-	-	-			
Grand Total	**1,008,744,793**	**1,355,499,514**	**1,068,009,178**	**3,432,253,484**	**1,075,554,142**	**############**	**69%**	**69%**	**1%**

Notes

Plan year core initiative significant variance explanations are required for: (3) variances between planned and preliminary core initiative total benefits showing a decrease of 15 percent or greater.

2020 Plan Year Report Variances

Total Resource Benefits (2019$) Variances

Eversource Electric

June 4, 2021

Total Resource Benefits (2019$) Variances			
Program	2020		
	Preliminary	Evaluated	Preliminary v Evaluated (%)
A - Residential	**238,166,186**	**186,806,071**	**-22%**
A1 - Residential New Buildings	40,473,477	19,245,508	-52%
A1a - Residential New Homes & Renovations	40,473,477	19,245,508	**-52%**
A2 - Residential Existing Buildings	197,692,709	167,560,563	-15%
A2a - Residential Coordinated Delivery	98,726,542	94,211,772	-5%
A2b - Residential Conservation Services (RCS)	-	-	
A2c - Residential Retail	93,114,213	60,615,357	**-35%**
A2d - Residential Behavior	-	6,881,490	
A2e - Residential Active Demand Reduction	5,851,953	5,851,944	0%
A3 - Residential Hard-to-Measure	-	-	
B - Income Eligible	**21,875,151**	**22,335,906**	**2%**
B1 - Income Eligible Existing Buildings	21,875,151	22,335,906	2%
B1a - Income Eligible Coordinated Delivery	21,875,151	22,335,906	2%
B1b - Income Eligible Active Demand Reduction	-	-	
B2 - Income Eligible Hard-to-Measure	-	-	
C - Commercial & Industrial	**1,057,930,726**	**1,057,921,233**	**0%**
C1 - C&I New Buildings	40,557,953	47,657,658	18%
C1a - C&I New Buildings & Major Renovations	40,557,953	47,657,658	18%
C2 - C&I Existing Buildings	1,017,372,773	1,010,263,575	-1%
C2a - C&I Existing Building Retrofit	910,712,387	914,734,582	0%
C2b - C&I New & Replacement Equipment	80,455,720	74,261,164	-8%
C2c - C&I Active Demand Reduction	26,204,666	21,267,830	**-19%**
C3 - C&I Hard-to-Measure	-	-	
Grand Total	**1,317,972,063**	**1,267,063,209**	**-4%**

Notes

Plan year core initiative significant variance explanations are required for: (4) variances between preliminary and evaluated core initiative total resource benefits showing a decrease of 15 percent or greater.

Program Administrator Budgets, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**5,910,000**	**7,465,000**	**64,355,000**	**18,820,000**	**3,900,000**	**100,450,000**	**3,845,104**	**104,295,104**	**66**	**2.12**
A1 - Residential New Buildings	555,000	190,000	8,150,000	710,000	-	9,605,000	434,922	10,039,922	1,173	2.62
A1a - Residential New Homes & Renovations	555,000	190,000	8,150,000	710,000	-	9,605,000	434,922	10,039,922	1,173	2.62
A2 - Residential Existing Buildings	4,175,000	6,015,000	46,205,000	15,555,000	-	71,950,000	3,410,182	75,360,182	47	2.61
A2a - Residential Coordinated Delivery	1,745,000	975,000	24,055,000	3,505,000	-	30,280,000	1,906,540	32,186,540	1,602	3.32
A2b - Residential Conservation Services (RCS)	480,000	975,000	-	5,510,000	-	6,965,000	-	6,965,000		-
A2c - Residential Retail	1,715,000	4,055,000	21,815,000	2,855,000	-	30,440,000	1,274,730	31,714,730	34	2.46
A2d - Residential Behavior	135,000	-	-	3,250,000	-	3,385,000	185,541	3,570,541	6	3.28
A2e - Residential Active Demand Reduction	100,000	10,000	335,000	435,000	-	880,000	43,372	923,372		1.56
A3 - Residential Hard-to-Measure	1,180,000	1,260,000	10,000,000	2,555,000	3,900,000	18,895,000	-	18,895,000		-
A3a - Residential Statewide Marketing	-	935,000	-	-	-	935,000	-	935,000		-
A3b - Residential Statewide Database	55,000	-	-	-	-	55,000	-	55,000		-
A3c - Residential DOER Assessment	660,000	-	-	-	-	660,000	-	660,000		-
A3d - Residential Sponsorships & Subscriptions	30,000	15,000	-	-	20,000	65,000	-	65,000		-
A3e - Residential Workforce Development	-	-	-	55,000	-	55,000	-	55,000		-
A3f - Residential Evaluation and Market Research	-	-	-	-	3,880,000	3,880,000	-	3,880,000		-
A3g - Residential EEAC Consultants	265,000	-	-	-	-	265,000	-	265,000		-
A3h - Residential R&D and Demonstration	110,000	-	-	675,000	-	785,000	-	785,000		-
A3i - Residential HEAT Loan	-	75,000	10,000,000	825,000	-	10,900,000	-	10,900,000		-
A3j - Residential Education	60,000	235,000	-	1,000,000	-	1,295,000	-	1,295,000		-
B - Income Eligible	**1,955,000**	**520,000**	**21,900,000**	**6,630,000**	**720,000**	**31,725,000**	**1,106,290**	**32,831,290**	**2,600**	**1.28**
B1 - Income Eligible Existing Buildings	1,585,000	405,000	21,900,000	6,610,000	-	30,500,000	1,106,290	31,606,290	2,500	1.33
B1a - Income Eligible Coordinated Delivery	1,585,000	405,000	21,900,000	6,610,000	-	30,500,000	1,106,290	31,606,290	2,500	1.33
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	370,000	115,000	-	20,000	720,000	1,225,000	-	1,225,000		-
B2a - Income Eligible Statewide Marketing	-	115,000	-	-	-	115,000	-	115,000		-
B2b - Income Eligible Statewide Database	15,000	-	-	-	-	15,000	-	15,000		-
B2c - Income Eligible DOER Assessment	170,000	-	-	-	-	170,000	-	170,000		-
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	20,000	-	20,000	-	20,000		-
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	720,000	720,000	-	720,000		-
B2g - Income Eligible Energy Affordability Network	185,000	-	-	-	-	185,000	-	185,000		-
C - Commercial & Industrial	**9,915,000**	**1,140,000**	**145,675,000**	**26,170,000**	**3,250,000**	**186,150,000**	**19,315,025**	**205,465,025**	**19,993**	**5.56**
C1 - C&I New Buildings	570,000	125,000	8,085,000	2,950,000	-	11,730,000	1,365,019	13,095,019	62,614	6.25
C1a - C&I New Buildings & Major Renovations	570,000	125,000	8,085,000	2,950,000	-	11,730,000	1,365,019	13,095,019	62,614	6.25
C2 - C&I Existing Buildings	8,290,000	825,000	137,590,000	22,545,000	-	169,250,000	17,950,007	187,200,007	18,551	5.68
C2a - C&I Existing Building Retrofit	6,515,000	510,000	113,455,000	15,780,000	-	136,260,000	14,501,752	150,761,752	39,032	5.82
C2b - C&I New & Replacement Equipment	1,475,000	245,000	18,285,000	5,660,000	-	25,665,000	2,516,110	28,181,110	4,557	5.49
C2c - C&I Active Demand Reduction	300,000	70,000	5,850,000	1,105,000	-	7,325,000	932,145	8,257,145		3.66
C3 - C&I Hard-to-Measure	1,055,000	190,000	-	675,000	3,250,000	5,170,000	-	5,170,000		-
C3a - C&I Statewide Marketing	-	170,000	-	-	-	170,000	-	170,000		-
C3b - C&I Statewide Database	15,000	-	-	-	-	15,000	-	15,000		-
C3c - C&I DOER Assessment	825,000	-	-	-	-	825,000	-	825,000		-
C3d - C&I Sponsorships & Subscriptions	105,000	20,000	-	-	35,000	160,000	-	160,000		-
C3e - C&I Workforce Development	-	-	-	310,000	-	310,000	-	310,000		-
C3f - C&I Evaluation and Market Research	-	-	-	-	3,215,000	3,215,000	-	3,215,000		-
C3g - C&I EEAC Consultants	55,000	-	-	-	-	55,000	-	55,000		-
C3h - C&I R&D and Demonstration	55,000	-	-	365,000	-	420,000	-	420,000		-
Grand Total	**17,780,000**	**9,125,000**	**231,930,000**	**51,620,000**	**7,870,000**	**318,325,000**	**24,266,420**	**342,591,420**	**206**	**4.05**

Program Administrator Budgets, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Evaluated Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**4,738,128**	**5,336,246**	**79,892,838**	**12,730,876**	**2,907,843**	**105,605,930**	**3,335,598**	**108,941,528**	**40**	**1.77**
A1 - Residential New Buildings	406,340	132,828	5,374,964	777,380	-	6,691,512	345,585	7,037,098	1,100	2.88
A1a - Residential New Homes & Renovations	406,340	132,828	5,374,964	777,380	-	6,691,512	345,585	7,037,098	1,100	2.88
A2 - Residential Existing Buildings	3,007,783	4,520,291	66,246,011	10,141,899	-	83,915,983	2,990,012	86,905,995	32	2.00
A2a - Residential Coordinated Delivery	1,277,939	711,445	26,334,808	2,067,934	-	30,392,127	1,770,460	32,162,586	915	3.10
A2b - Residential Conservation Services (RCS)	355,581	959,864	-	4,510,552	-	5,825,997	-	5,825,997		-
A2c - Residential Retail	1,267,919	2,847,716	39,191,214	2,485,458	-	45,792,306	920,185	46,712,491	18	1.32
A2d - Residential Behavior	86,412	-	-	71,875	-	158,286	133,061	291,347		43.47
A2e - Residential Active Demand Reduction	19,932	1,266	719,989	1,006,080	-	1,747,266	166,307	1,913,574		3.35
A3 - Residential Hard-to-Measure	1,324,005	683,127	8,271,863	1,811,597	2,907,843	14,998,435	-	14,998,435		-
A3a - Residential Statewide Marketing	-	473,481	-	-	-	473,481	-	473,481		-
A3b - Residential Statewide Database	5,130	-	-	-	-	5,130	-	5,130		-
A3c - Residential DOER Assessment	705,203	-	-	-	-	705,203	-	705,203		-
A3d - Residential Sponsorships & Subscriptions	10,804	10,900	-	-	2,160	23,864	-	23,864		-
A3e - Residential Workforce Development	-	-	-	112,415	-	112,415	-	112,415		-
A3f - Residential Evaluation and Market Research	-	-	-	-	2,905,683	2,905,683	-	2,905,683		-
A3g - Residential EEAC Consultants	430,864	-	-	-	-	430,864	-	430,864		-
A3h - Residential R&D and Demonstration	116,043	-	-	119,002	-	235,045	-	235,045		-
A3i - Residential HEAT Loan	-	3,102	8,271,863	765,230	-	9,040,194	-	9,040,194		-
A3j - Residential Education	55,961	195,644	-	814,951	-	1,066,555	-	1,066,555		-
B - Income Eligible	**1,269,681**	**247,020**	**13,734,069**	**3,860,941**	**544,614**	**19,656,325**	**588,409**	**20,244,733**	**1,790**	**1.14**
B1 - Income Eligible Existing Buildings	939,149	189,517	13,734,069	3,859,641	-	18,722,376	588,409	19,310,785	1,705	1.19
B1a - Income Eligible Coordinated Delivery	939,149	189,517	13,734,069	3,859,641	-	18,722,376	588,409	19,310,785	1,705	1.19
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	330,532	57,503	-	1,300	544,614	933,949	-	933,949		-
B2a - Income Eligible Statewide Marketing	-	57,503	-	-	-	57,503	-	57,503		-
B2b - Income Eligible Statewide Database	1,206	-	-	-	-	1,206	-	1,206		-
B2c - Income Eligible DOER Assessment	176,301	-	-	-	-	176,301	-	176,301		-
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	1,300	-	1,300	-	1,300		-
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	544,614	544,614	-	544,614		-
B2g - Income Eligible Energy Affordability Network	153,025	-	-	-	-	153,025	-	153,025		-
C - Commercial & Industrial	**5,675,203**	**961,444**	**129,538,382**	**14,652,451**	**3,845,486**	**154,672,966**	**18,663,232**	**173,336,198**	**16,299**	**6.84**
C1 - C&I New Buildings	320,464	89,094	3,849,332	1,709,589	-	5,968,479	868,863	6,837,343	63,494	7.98
C1a - C&I New Buildings & Major Renovations	320,464	89,094	3,849,332	1,709,589	-	5,968,479	868,863	6,837,343	63,494	7.98
C2 - C&I Existing Buildings	4,288,655	778,800	125,689,050	12,636,950	-	143,393,455	17,794,368	161,187,823	15,261	7.05
C2a - C&I Existing Building Retrofit	3,496,260	512,797	96,173,861	8,258,010	-	108,440,929	15,985,248	124,426,176	29,694	8.44
C2b - C&I New & Replacement Equipment	620,092	262,236	26,344,449	3,860,299	-	31,087,075	1,204,707	32,291,782	5,412	2.39
C2c - C&I Active Demand Reduction	172,303	3,767	3,170,740	518,641	-	3,865,451	604,414	4,469,865		5.50
C3 - C&I Hard-to-Measure	1,066,084	93,550	-	305,912	3,845,486	5,311,032	-	5,311,032		-
C3a - C&I Statewide Marketing	-	77,435	-	-	-	77,435	-	77,435		-
C3b - C&I Statewide Database	3,206	-	-	-	-	3,206	-	3,206		-
C3c - C&I DOER Assessment	881,504	-	-	-	-	881,504	-	881,504		-
C3d - C&I Sponsorships & Subscriptions	38,066	16,115	-	-	3,840	58,021	-	58,021		-
C3e - C&I Workforce Development	-	-	-	242,441	-	242,441	-	242,441		-
C3f - C&I Evaluation and Market Research	-	-	-	-	3,841,646	3,841,646	-	3,841,646		-
C3g - C&I EEAC Consultants	88,343	-	-	-	-	88,343	-	88,343		-
C3h - C&I R&D and Demonstration	54,965	-	-	63,471	-	118,436	-	118,436		-
Grand Total	**11,683,012**	**6,544,710**	**223,165,288**	**31,244,268**	**7,297,944**	**279,935,221**	**22,587,238**	**302,522,459**	**105**	**4.53**

Program Administrator Budgets, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned v. Evaluated Program Administrator Budget Variances (%)										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**-20%**	**-29%**	**24%**	**-32%**	**-25%**	**5%**	**-13%**	**4%**	**-39%**	**-17%**
A1 - Residential New Buildings	-27%	-30%	-34%	9%		-30%	-21%	-30%	-6%	10%
A1a - Residential New Homes & Renovations	-27%	-30%	-34%	9%		-30%	-21%	-30%	-6%	10%
A2 - Residential Existing Buildings	-28%	-25%	43%	-35%		17%	-12%	15%	-33%	-24%
A2a - Residential Coordinated Delivery	-27%	-27%	9%	-41%		0%	-7%	0%	-43%	-7%
A2b - Residential Conservation Services (RCS)	-26%	-2%		-18%		-16%		-16%		
A2c - Residential Retail	-26%	-30%	80%	-13%		50%	-28%	47%	-49%	-46%
A2d - Residential Behavior	-36%			-98%		-95%	-28%	-92%	-100%	1227%
A2e - Residential Active Demand Reduction	-80%	-87%	115%	131%		99%	283%	107%		115%
A3 - Residential Hard-to-Measure	12%	-46%	-17%	-29%	-25%	-21%		-21%		
A3a - Residential Statewide Marketing		-49%				-49%		-49%		
A3b - Residential Statewide Database	-91%					-91%		-91%		
A3c - Residential DOER Assessment	7%					7%		7%		
A3d - Residential Sponsorships & Subscriptions	-64%	-27%			-89%	-63%		-63%		
A3e - Residential Workforce Development				104%		104%		104%		
A3f - Residential Evaluation and Market Research					-25%	-25%		-25%		
A3g - Residential EEAC Consultants	63%					63%		63%		
A3h - Residential R&D and Demonstration	5%			-82%		-70%		-70%		
A3i - Residential HEAT Loan		-96%	-17%	-7%		-17%		-17%		
A3j - Residential Education	-7%	-17%		-19%		-18%		-18%		
B - Income Eligible	**-35%**	**-52%**	**-37%**	**-42%**	**-24%**	**-38%**	**-47%**	**-38%**	**-31%**	**-11%**
B1 - Income Eligible Existing Buildings	-41%	-53%	-37%	-42%		-39%	-47%	-39%	-32%	-10%
B1a - Income Eligible Coordinated Delivery	-41%	-53%	-37%	-42%		-39%	-47%	-39%	-32%	-10%
B1b - Income Eligible Active Demand Reduction										
B2 - Income Eligible Hard-to-Measure	-11%	-50%		-94%	-24%	-24%		-24%		
B2a - Income Eligible Statewide Marketing		-50%				-50%		-50%		
B2b - Income Eligible Statewide Database	-92%					-92%		-92%		
B2c - Income Eligible DOER Assessment	4%					4%		4%		
B2d - Income Eligible Sponsorships & Subscriptions										
B2e - Income Eligible Workforce Development				-94%		-94%		-94%		
B2f - Income Eligible Evaluation and Market Research					-24%	-24%		-24%		
B2g - Income Eligible Energy Affordability Network	-17%					-17%		-17%		
C - Commercial & Industrial	**-43%**	**-16%**	**-11%**	**-44%**	**18%**	**-17%**	**-3%**	**-16%**	**-18%**	**23%**
C1 - C&I New Buildings	-44%	-29%	-52%	-42%		-49%	-36%	-48%	1%	28%
C1a - C&I New Buildings & Major Renovations	-44%	-29%	-52%	-42%		-49%	-36%	-48%	1%	28%
C2 - C&I Existing Buildings	-48%	-6%	-9%	-44%		-15%	-1%	-14%	-18%	24%
C2a - C&I Existing Building Retrofit	-46%	1%	-15%	-48%		-20%	10%	-17%	-24%	45%
C2b - C&I New & Replacement Equipment	-58%	7%	44%	-32%		21%	-52%	15%	19%	-57%
C2c - C&I Active Demand Reduction	-43%	-95%	-46%	-53%		-47%	-35%	-46%		50%
C3 - C&I Hard-to-Measure	1%	-51%		-55%	18%	3%		3%		
C3a - C&I Statewide Marketing		-54%				-54%		-54%		
C3b - C&I Statewide Database	-79%					-79%		-79%		
C3c - C&I DOER Assessment	7%					7%		7%		
C3d - C&I Sponsorships & Subscriptions	-64%	-19%			-89%	-64%		-64%		
C3e - C&I Workforce Development				-22%		-22%		-22%		
C3f - C&I Evaluation and Market Research					19%	19%		19%		
C3g - C&I EEAC Consultants	61%					61%		61%		
C3h - C&I R&D and Demonstration	0%			-83%		-72%		-72%		
Grand Total	**-34%**	**-28%**	**-4%**	**-39%**	**-7%**	**-12%**	**-7%**	**-12%**	**-49%**	**12%**

Notes

• Where not otherwise indicated, budgets for each year are represented in nominal dollars (2019$, 2020$, 2021$).
• Refer to common definitions for allocation of costs.
• The plan year variances provided above are intended to indicate the Program Administrator's performance in the plan year only. The variances used to determine significant variances are provided separately. The variances above and the significant variances use different calculations to determine variances on an annual basis and over the three-year term, respectively.

Program Administrator Budgets, Three-Year Total

2019-2021 Program Administrator Budget

Eversource Electric

June 4, 2021

2019 Evaluated Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**4,522,021**	**5,669,866**	**88,078,045**	**17,166,466**	**2,478,991**	**117,915,389**	**4,765,495**	**122,680,884**	**66**	**2.28**
A1 - Residential New Buildings	429,318	147,157	5,220,695	671,456	-	6,468,625	413,391	6,882,016	1,010	3.63
A1a - Residential New Homes & Renovations	429,318	147,157	5,220,695	671,456	-	6,468,625	413,391	6,882,016	1,010	3.63
A2 - Residential Existing Buildings	3,272,086	4,544,417	71,178,274	14,523,653	-	93,518,430	4,352,105	97,870,534	52	2.62
A2a - Residential Coordinated Delivery	1,323,214	1,215,767	31,636,239	3,418,834	-	37,594,055	2,394,183	39,988,238	1,549	3.48
A2b - Residential Conservation Services (RCS)	342,872	920,508	-	5,327,925	-	6,591,304	-	6,591,304		-
A2c - Residential Retail	1,487,365	2,407,798	39,142,175	2,365,653	-	45,402,991	1,738,665	47,141,657	35	2.26
A2d - Residential Behavior	98,657	-	-	2,998,441	-	3,097,099	146,258	3,243,356	6	2.95
A2e - Residential Active Demand Reduction	19,978	343	399,860	412,800	-	832,980	72,998	905,979		3.16
A3 - Residential Hard-to-Measure	820,617	978,293	11,679,076	1,971,357	2,478,991	17,928,334	-	17,928,334		-
A3a - Residential Statewide Marketing	-	764,724	-	-	-	764,724	-	764,724		-
A3b - Residential Statewide Database	7,989	-	-	-	-	7,989	-	7,989		-
A3c - Residential DOER Assessment	643,247	-	-	-	-	643,247	-	643,247		-
A3d - Residential Sponsorships & Subscriptions	19,754	5,040	-	-	4,626	29,420	-	29,420		-
A3e - Residential Workforce Development	-	-	-	93,456	-	93,456	-	93,456		-
A3f - Residential Evaluation and Market Research	-	-	-	-	2,474,366	2,474,366	-	2,474,366		-
A3g - Residential EEAC Consultants	-	-	-	-	-	-	-	-		
A3h - Residential R&D and Demonstration	95,600	-	-	138,500	-	234,100	-	234,100		-
A3i - Residential HEAT Loan	-	16,306	11,679,076	815,848	-	12,511,229	-	12,511,229		-
A3j - Residential Education	54,027	192,223	-	923,553	-	1,169,802	-	1,169,802		-
B - Income Eligible	**1,498,090**	**431,720**	**24,013,204**	**5,629,609**	**471,308**	**32,043,930**	**1,081,883**	**33,125,813**	**2,025**	**1.39**
B1 - Income Eligible Existing Buildings	1,170,811	333,105	24,013,204	5,629,609	-	31,146,728	1,081,883	32,228,612	1,968	1.43
B1a - Income Eligible Coordinated Delivery	1,170,811	333,105	24,013,204	5,629,609	-	31,146,728	1,081,883	32,228,612	1,968	1.43
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	327,279	98,615	-	-	471,308	897,202	-	897,202		-
B2a - Income Eligible Statewide Marketing	-	98,615	-	-	-	98,615	-	98,615		-
B2b - Income Eligible Statewide Database	975	-	-	-	-	975	-	975		-
B2c - Income Eligible DOER Assessment	160,812	-	-	-	-	160,812	-	160,812		-
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	-	-	-	-	-		
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	471,308	471,308	-	471,308		-
B2g - Income Eligible Energy Affordability Network	165,492	-	-	-	-	165,492	-	165,492		-
C - Commercial & Industrial	**5,568,522**	**1,055,000**	**107,492,357**	**14,819,630**	**4,170,321**	**133,105,830**	**11,006,472**	**144,112,302**	**11,705**	**4.27**
C1 - C&I New Buildings	391,070	132,510	5,773,887	1,840,124	-	8,137,591	791,776	8,929,367	59,398	5.53
C1a - C&I New Buildings & Major Renovations	391,070	132,510	5,773,887	1,840,124	-	8,137,591	791,776	8,929,367	59,398	5.53
C2 - C&I Existing Buildings	4,243,251	773,207	101,718,470	12,418,473	-	119,153,402	10,214,696	129,368,098	10,606	4.39
C2a - C&I Existing Building Retrofit	3,341,307	463,701	79,872,789	8,115,499	-	91,793,296	6,690,751	98,484,047	25,322	3.62
C2b - C&I New & Replacement Equipment	758,156	304,052	20,574,771	4,162,465	-	25,799,445	3,220,277	29,019,721	3,390	6.98
C2c - C&I Active Demand Reduction	143,788	5,455	1,270,910	140,508	-	1,560,661	303,668	1,864,329		7.01
C3 - C&I Hard-to-Measure	934,201	149,283	-	561,032	4,170,321	5,814,837	-	5,814,837		-
C3a - C&I Statewide Marketing	-	137,433	-	-	-	137,433	-	137,433		-
C3b - C&I Statewide Database	4,795	-	-	-	-	4,795	-	4,795		-
C3c - C&I DOER Assessment	804,058	-	-	-	-	804,058	-	804,058		-
C3d - C&I Sponsorships & Subscriptions	81,267	11,850	-	-	9,838	102,956	-	102,956		-
C3e - C&I Workforce Development	-	-	-	470,139	-	470,139	-	470,139		-
C3f - C&I Evaluation and Market Research	-	-	-	-	4,160,483	4,160,483	-	4,160,483		-
C3g - C&I EEAC Consultants	-	-	-	-	-	-	-	-		
C3h - C&I R&D and Demonstration	44,080	-	-	90,894	-	134,973	-	134,973		-
Grand Total	**11,588,632**	**7,156,586**	**219,583,606**	**37,615,704**	**7,120,620**	**283,065,149**	**16,853,851**	**299,918,999**	**155**	**3.11**

Program Administrator Budgets, Three-Year Total

2019-2021 Program Administrator Budget

Eversource Electric

June 4, 2021

2020 Evaluated Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**4,738,128**	**5,336,246**	**79,892,838**	**12,730,876**	**2,907,843**	**105,605,930**	**3,335,598**	**108,941,528**	**40**	**1.77**
A1 - Residential New Buildings	406,340	132,828	5,374,964	777,380	-	6,691,512	345,585	7,037,098	1,100	2.88
A1a - Residential New Homes & Renovations	406,340	132,828	5,374,964	777,380	-	6,691,512	345,585	7,037,098	1,100	2.88
A2 - Residential Existing Buildings	3,007,783	4,520,291	66,246,011	10,141,899	-	83,915,983	2,990,012	86,905,995	32	2.00
A2a - Residential Coordinated Delivery	1,277,939	711,445	26,334,808	2,067,934	-	30,392,127	1,770,460	32,162,586	915	3.10
A2b - Residential Conservation Services (RCS)	355,581	959,864	-	4,510,552	-	5,825,997	-	5,825,997		-
A2c - Residential Retail	1,267,919	2,847,716	39,191,214	2,485,458	-	45,792,306	920,185	46,712,491	18	1.32
A2d - Residential Behavior	86,412	-	-	71,875	-	158,286	133,061	291,347		43.47
A2e - Residential Active Demand Reduction	19,932	1,266	719,989	1,006,080	-	1,747,266	166,307	1,913,574		3.35
A3 - Residential Hard-to-Measure	1,324,005	683,127	8,271,863	1,811,597	2,907,843	14,998,435	-	14,998,435		-
A3a - Residential Statewide Marketing	-	473,481	-	-	-	473,481	-	473,481		-
A3b - Residential Statewide Database	5,130	-	-	-	-	5,130	-	5,130		-
A3c - Residential DOER Assessment	705,203	-	-	-	-	705,203	-	705,203		-
A3d - Residential Sponsorships & Subscriptions	10,804	10,900	-	-	2,160	23,864	-	23,864		-
A3e - Residential Workforce Development	-	-	-	112,415	-	112,415	-	112,415		-
A3f - Residential Evaluation and Market Research	-	-	-	-	2,905,683	2,905,683	-	2,905,683		-
A3g - Residential EEAC Consultants	430,864	-	-	-	-	430,864	-	430,864		-
A3h - Residential R&D and Demonstration	116,043	-	-	119,002	-	235,045	-	235,045		-
A3i - Residential HEAT Loan	-	3,102	8,271,863	765,230	-	9,040,194	-	9,040,194		-
A3j - Residential Education	55,961	195,644	-	814,951	-	1,066,555	-	1,066,555		-
B - Income Eligible	**1,269,681**	**247,020**	**13,734,069**	**3,860,941**	**544,614**	**19,656,325**	**588,409**	**20,244,733**	**1,790**	**1.14**
B1 - Income Eligible Existing Buildings	939,149	189,517	13,734,069	3,859,641	-	18,722,376	588,409	19,310,785	1,705	1.19
B1a - Income Eligible Coordinated Delivery	939,149	189,517	13,734,069	3,859,641	-	18,722,376	588,409	19,310,785	1,705	1.19
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	330,532	57,503	-	1,300	544,614	933,949	-	933,949		-
B2a - Income Eligible Statewide Marketing	-	57,503	-	-	-	57,503	-	57,503		-
B2b - Income Eligible Statewide Database	1,206	-	-	-	-	1,206	-	1,206		-
B2c - Income Eligible DOER Assessment	176,301	-	-	-	-	176,301	-	176,301		-
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	1,300	-	1,300	-	1,300		-
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	544,614	544,614	-	544,614		-
B2g - Income Eligible Energy Affordability Network	153,025	-	-	-	-	153,025	-	153,025		-
C - Commercial & Industrial	**5,675,203**	**961,444**	**129,538,382**	**14,652,451**	**3,845,486**	**154,672,966**	**18,663,232**	**173,336,198**	**16,299**	**6.84**
C1 - C&I New Buildings	320,464	89,094	3,849,332	1,709,589	-	5,968,479	868,863	6,837,343	63,494	7.98
C1a - C&I New Buildings & Major Renovations	320,464	89,094	3,849,332	1,709,589	-	5,968,479	868,863	6,837,343	63,494	7.98
C2 - C&I Existing Buildings	4,288,655	778,800	125,689,050	12,636,950	-	143,393,455	17,794,368	161,187,823	15,261	7.05
C2a - C&I Existing Building Retrofit	3,496,260	512,797	96,173,861	8,258,010	-	108,440,929	15,985,248	124,426,176	29,694	8.44
C2b - C&I New & Replacement Equipment	620,092	262,236	26,344,449	3,860,299	-	31,087,075	1,204,707	32,291,782	5,412	2.39
C2c - C&I Active Demand Reduction	172,303	3,767	3,170,740	518,641	-	3,865,451	604,414	4,469,865		5.50
C3 - C&I Hard-to-Measure	1,066,084	93,550	-	305,912	3,845,486	5,311,032	-	5,311,032		-
C3a - C&I Statewide Marketing	-	77,435	-	-	-	77,435	-	77,435		-
C3b - C&I Statewide Database	3,206	-	-	-	-	3,206	-	3,206		-
C3c - C&I DOER Assessment	881,504	-	-	-	-	881,504	-	881,504		-
C3d - C&I Sponsorships & Subscriptions	38,066	16,115	-	-	3,840	58,021	-	58,021		-
C3e - C&I Workforce Development	-	-	-	242,441	-	242,441	-	242,441		-
C3f - C&I Evaluation and Market Research	-	-	-	-	3,841,646	3,841,646	-	3,841,646		-
C3g - C&I EEAC Consultants	88,343	-	-	-	-	88,343	-	88,343		-
C3h - C&I R&D and Demonstration	54,965	-	-	63,471	-	118,436	-	118,436		-
Grand Total	**11,683,012**	**6,544,710**	**223,165,288**	**31,244,268**	**7,297,944**	**279,935,221**	**22,587,238**	**302,522,459**	**105**	**4.53**

Program Administrator Budgets, Three-Year Total

2019-2021 Program Administrator Budget

Eversource Electric

June 4, 2021

2021 Planned Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**6,210,000**	**7,605,000**	**64,730,000**	**18,885,000**	**3,940,000**	**101,370,000**	**4,440,158**	**105,810,158**	**71**	**2.36**
A1 - Residential New Buildings	585,000	190,000	8,125,000	710,000	-	9,610,000	443,892	10,053,892	1,155	2.61
A1a - Residential New Homes & Renovations	585,000	190,000	8,125,000	710,000	-	9,610,000	443,892	10,053,892	1,155	2.61
A2 - Residential Existing Buildings	4,390,000	6,140,000	46,605,000	15,565,000	-	72,700,000	3,996,267	76,696,267	51	2.94
A2a - Residential Coordinated Delivery	1,900,000	1,030,000	25,065,000	3,505,000	-	31,500,000	2,103,546	33,603,546	1,587	3.43
A2b - Residential Conservation Services (RCS)	495,000	1,030,000	-	5,420,000	-	6,945,000	-	6,945,000		-
A2c - Residential Retail	1,755,000	4,075,000	21,080,000	2,880,000	-	29,790,000	1,635,316	31,425,316	37	3.11
A2d - Residential Behavior	145,000	-	-	3,250,000	-	3,395,000	194,932	3,589,932	6	3.34
A2e - Residential Active Demand Reduction	95,000	5,000	460,000	510,000	-	1,070,000	62,473	1,132,473		1.76
A3 - Residential Hard-to-Measure	1,235,000	1,275,000	10,000,000	2,610,000	3,940,000	19,060,000	-	19,060,000		-
A3a - Residential Statewide Marketing	-	935,000	-	-	-	935,000	-	935,000		-
A3b - Residential Statewide Database	55,000	-	-	-	-	55,000	-	55,000		-
A3c - Residential DOER Assessment	680,000	-	-	-	-	680,000	-	680,000		-
A3d - Residential Sponsorships & Subscriptions	30,000	15,000	-	-	20,000	65,000	-	65,000		-
A3e - Residential Workforce Development	-	-	-	60,000	-	60,000	-	60,000		-
A3f - Residential Evaluation and Market Research	-	-	-	-	3,920,000	3,920,000	-	3,920,000		-
A3g - Residential EEAC Consultants	285,000	-	-	-	-	285,000	-	285,000		-
A3h - Residential R&D and Demonstration	120,000	-	-	700,000	-	820,000	-	820,000		-
A3i - Residential HEAT Loan	-	80,000	10,000,000	850,000	-	10,930,000	-	10,930,000		-
A3j - Residential Education	65,000	245,000	-	1,000,000	-	1,310,000	-	1,310,000		-
B - Income Eligible	**1,965,000**	**535,000**	**20,100,000**	**6,635,000**	**725,000**	**29,960,000**	**1,034,949**	**30,994,949**	**2,456**	**1.28**
B1 - Income Eligible Existing Buildings	1,585,000	420,000	20,100,000	6,610,000	-	28,715,000	1,034,949	29,749,949	2,354	1.33
B1a - Income Eligible Coordinated Delivery	1,585,000	420,000	20,100,000	6,610,000	-	28,715,000	1,034,949	29,749,949	2,354	1.33
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	380,000	115,000	-	25,000	725,000	1,245,000	-	1,245,000		-
B2a - Income Eligible Statewide Marketing	-	115,000	-	-	-	115,000	-	115,000		-
B2b - Income Eligible Statewide Database	15,000	-	-	-	-	15,000	-	15,000		-
B2c - Income Eligible DOER Assessment	180,000	-	-	-	-	180,000	-	180,000		-
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	25,000	-	25,000	-	25,000		-
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	725,000	725,000	-	725,000		-
B2g - Income Eligible Energy Affordability Network	185,000	-	-	-	-	185,000	-	185,000		-
C - Commercial & Industrial	**10,005,000**	**1,180,000**	**137,170,000**	**26,525,000**	**3,390,000**	**178,270,000**	**14,097,123**	**192,367,123**	**18,967**	**3.76**
C1 - C&I New Buildings	620,000	120,000	8,210,000	3,015,000	-	11,965,000	1,439,791	13,404,791	62,848	6.32
C1a - C&I New Buildings & Major Renovations	620,000	120,000	8,210,000	3,015,000	-	11,965,000	1,439,791	13,404,791	62,848	6.32
C2 - C&I Existing Buildings	8,290,000	870,000	128,960,000	22,810,000	-	160,930,000	12,657,332	173,587,332	17,476	3.70
C2a - C&I Existing Building Retrofit	6,145,000	530,000	99,615,000	15,560,000	-	121,850,000	8,664,089	130,514,089	31,731	3.43
C2b - C&I New & Replacement Equipment	1,550,000	265,000	18,345,000	5,885,000	-	26,045,000	2,357,674	28,402,674	4,851	5.02
C2c - C&I Active Demand Reduction	595,000	75,000	11,000,000	1,365,000	-	13,035,000	1,635,569	14,670,569		3.54
C3 - C&I Hard-to-Measure	1,095,000	190,000	-	700,000	3,390,000	5,375,000	-	5,375,000		-
C3a - C&I Statewide Marketing	-	170,000	-	-	-	170,000	-	170,000		-
C3b - C&I Statewide Database	15,000	-	-	-	-	15,000	-	15,000		-
C3c - C&I DOER Assessment	850,000	-	-	-	-	850,000	-	850,000		-
C3d - C&I Sponsorships & Subscriptions	110,000	20,000	-	-	35,000	165,000	-	165,000		-
C3e - C&I Workforce Development	-	-	-	320,000	-	320,000	-	320,000		-
C3f - C&I Evaluation and Market Research	-	-	-	-	3,355,000	3,355,000	-	3,355,000		-
C3g - C&I EEAC Consultants	60,000	-	-	-	-	60,000	-	60,000		-
C3h - C&I R&D and Demonstration	60,000	-	-	380,000	-	440,000	-	440,000		-
Grand Total	**18,180,000**	**9,320,000**	**222,000,000**	**52,045,000**	**8,055,000**	**309,600,000**	**19,572,230**	**329,172,230**	**212**	**3.06**

Program Administrator Budgets, Three-Year Total

2019-2021 Program Administrator Budget

Eversource Electric

June 4, 2021

2019-2021 Program Administrator Budget										
Program	Program Costs						Performance Incentive	Total Program Administrator Budget	Program Cost per Participant	Resource Benefit per Program Cost
	Program Planning and Administration	Marketing and Advertising	Participant Incentive	Sales, Technical Assistance & Training	Evaluation and Market Research	Total Program Costs				
A - Residential	**15,470,149**	**18,611,112**	**232,700,882**	**48,782,342**	**9,326,835**	**324,891,319**	**12,541,251**	**337,432,570**	**55**	**2.14**
A1 - Residential New Buildings	1,420,658	469,985	18,720,659	2,158,836	-	22,770,138	1,202,868	23,973,006	1,094	2.98
A1a - Residential New Homes & Renovations	1,420,658	469,985	18,720,659	2,158,836	-	22,770,138	1,202,868	23,973,006	1,094	2.98
A2 - Residential Existing Buildings	10,669,869	15,204,708	184,029,285	40,230,552	-	250,134,413	11,338,383	261,472,796	43	2.51
A2a - Residential Coordinated Delivery	4,501,154	2,957,213	83,036,047	8,991,768	-	99,486,182	6,268,189	105,754,371	1,287	3.35
A2b - Residential Conservation Services (RCS)	1,193,453	2,910,372	-	15,258,477	-	19,362,302	-	19,362,302		-
A2c - Residential Retail	4,510,284	9,330,514	99,413,389	7,731,111	-	120,985,298	4,294,166	125,279,463	26	2.11
A2d - Residential Behavior	330,069	-	-	6,320,316	-	6,650,385	474,250	7,124,635	6	4.11
A2e - Residential Active Demand Reduction	134,909	6,609	1,579,849	1,928,879	-	3,650,247	301,778	3,952,025		2.84
A3 - Residential Hard-to-Measure	3,379,622	2,936,420	29,950,938	6,392,954	9,326,835	51,986,769	-	51,986,769		
A3a - Residential Statewide Marketing	-	2,173,206	-	-	-	2,173,206	-	2,173,206		
A3b - Residential Statewide Database	68,119	-	-	-	-	68,119	-	68,119		
A3c - Residential DOER Assessment	2,028,450	-	-	-	-	2,028,450	-	2,028,450		
A3d - Residential Sponsorships & Subscriptions	60,559	30,940	-	-	26,786	118,284	-	118,284		
A3e - Residential Workforce Development	-	-	-	265,871	-	265,871	-	265,871		
A3f - Residential Evaluation and Market Research	-	-	-	-	9,300,049	9,300,049	-	9,300,049		
A3g - Residential EEAC Consultants	715,864	-	-	-	-	715,864	-	715,864		
A3h - Residential R&D and Demonstration	331,643	-	-	957,501	-	1,289,145	-	1,289,145		
A3i - Residential HEAT Loan	-	99,407	29,950,938	2,431,078	-	32,481,424	-	32,481,424		
A3j - Residential Education	174,987	632,867	-	2,738,504	-	3,546,357	-	3,546,357		
B - Income Eligible	**4,732,770**	**1,213,740**	**57,847,273**	**16,125,549**	**1,740,922**	**81,660,255**	**2,705,241**	**84,365,496**	**2,093**	**1.29**
B1 - Income Eligible Existing Buildings	3,694,959	942,622	57,847,273	16,099,250	-	78,584,104	2,705,241	81,289,345	2,015	1.34
B1a - Income Eligible Coordinated Delivery	3,694,959	942,622	57,847,273	16,099,250	-	78,584,104	2,705,241	81,289,345	2,015	1.34
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-		
B2 - Income Eligible Hard-to-Measure	1,037,811	271,118	-	26,300	1,740,922	3,076,150	-	3,076,150		
B2a - Income Eligible Statewide Marketing	-	271,118	-	-	-	271,118	-	271,118		
B2b - Income Eligible Statewide Database	17,181	-	-	-	-	17,181	-	17,181		
B2c - Income Eligible DOER Assessment	517,112	-	-	-	-	517,112	-	517,112		
B2d - Income Eligible Sponsorships & Subscriptions	-	-	-	-	-	-	-	-		
B2e - Income Eligible Workforce Development	-	-	-	26,300	-	26,300	-	26,300		
B2f - Income Eligible Evaluation and Market Research	-	-	-	-	1,740,922	1,740,922	-	1,740,922		
B2g - Income Eligible Energy Affordability Network	503,517	-	-	-	-	503,517	-	503,517		
C - Commercial & Industrial	**21,248,725**	**3,196,444**	**374,200,739**	**55,997,081**	**11,405,807**	**466,048,796**	**43,766,827**	**509,815,623**	**15,401**	**4.93**
C1 - C&I New Buildings	1,331,534	341,604	17,833,219	6,564,713	-	26,071,070	3,100,431	29,171,501	61,871	6.45
C1a - C&I New Buildings & Major Renovations	1,331,534	341,604	17,833,219	6,564,713	-	26,071,070	3,100,431	29,171,501	61,871	6.45
C2 - C&I Existing Buildings	16,821,906	2,422,007	356,367,520	47,865,423	-	423,476,857	40,666,396	464,143,253	14,192	5.03
C2a - C&I Existing Building Retrofit	12,982,567	1,506,498	275,661,651	31,933,509	-	322,084,225	31,340,087	353,424,312	28,972	5.17
C2b - C&I New & Replacement Equipment	2,928,248	831,288	65,264,219	13,907,764	-	82,931,520	6,782,657	89,714,177	4,430	4.64
C2c - C&I Active Demand Reduction	911,091	84,222	15,441,650	2,024,150	-	18,461,112	2,543,651	21,004,763		4.24
C3 - C&I Hard-to-Measure	3,095,284	432,833	-	1,566,945	11,405,807	16,500,869	-	16,500,869		
C3a - C&I Statewide Marketing	-	384,868	-	-	-	384,868	-	384,868		
C3b - C&I Statewide Database	23,001	-	-	-	-	23,001	-	23,001		
C3c - C&I DOER Assessment	2,535,562	-	-	-	-	2,535,562	-	2,535,562		
C3d - C&I Sponsorships & Subscriptions	229,333	47,965	-	-	48,678	325,976	-	325,976		
C3e - C&I Workforce Development	-	-	-	1,032,580	-	1,032,580	-	1,032,580		
C3f - C&I Evaluation and Market Research	-	-	-	-	11,357,129	11,357,129	-	11,357,129		
C3g - C&I EEAC Consultants	148,343	-	-	-	-	148,343	-	148,343		
C3h - C&I R&D and Demonstration	159,044	-	-	534,365	-	693,409	-	693,409		
Grand Total	**41,451,644**	**23,021,296**	**664,748,894**	**120,904,972**	**22,473,564**	**872,600,370**	**59,013,319**	**931,613,689**	**147**	**3.55**

Notes

• Where not otherwise indicated, budgets for each year are represented in nominal dollars (2019$, 2020$, 2021$).

• Refer to common definitions for allocation of costs.

Program Savings, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Net Savings

Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**1,524,877**	**19,501**	**26,049**	**126,828**	**474,219**	**923,826**	**3,290,737**	**(403,761)**	**(2,022,030)**
A1 - Residential New Buildings	8,185	1,218	984	5,764	82,966	42,163	548,481	-	-
A1a - Residential New Homes & Renovations	8,185	1,218	984	5,764	82,966	42,163	548,481	-	-
A2 - Residential Existing Buildings	1,516,692	18,283	25,065	121,064	391,253	881,664	2,742,256	(403,761)	(2,022,030)
A2a - Residential Coordinated Delivery	18,900	3,151	4,597	24,181	107,497	176,155	739,418	237	1,656
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	887,792	7,274	8,541	41,513	228,386	302,177	1,599,506	(403,998)	(2,023,685)
A2d - Residential Behavior	610,000	7,857	11,927	55,370	55,370	403,332	403,332	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**12,200**	**1,641**	**2,509**	**14,114**	**123,558**	**102,936**	**832,629**	**28,490**	**373,030**
B1 - Income Eligible Existing Buildings	12,200	1,641	2,509	14,114	123,558	102,936	832,629	28,490	373,030
B1a - Income Eligible Coordinated Delivery	12,200	1,641	2,509	14,114	123,558	102,936	832,629	28,490	373,030
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**9,311**	**70,098**	**51,375**	**585,200**	**9,147,678**	**4,282,111**	**60,584,436**	**(15,578,824)**	**(304,887,784)**
C1 - C&I New Buildings	187	3,703	2,584	28,249	467,827	208,035	3,136,133	58,490	1,046,210
C1a - C&I New Buildings & Major Renovations	187	3,703	2,584	28,249	467,827	208,035	3,136,133	58,490	1,046,210
C2 - C&I Existing Buildings	9,123	66,396	48,791	556,951	8,679,851	4,074,076	57,448,303	(15,637,314)	(305,933,994)
C2a - C&I Existing Building Retrofit	3,491	53,845	40,342	491,211	7,907,175	3,591,762	52,207,840	(15,609,553)	(305,659,457)
C2b - C&I New & Replacement Equipment	5,633	12,550	8,449	65,740	772,677	482,314	5,240,464	(27,761)	(274,537)
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**1,546,387**	**91,240**	**79,933**	**726,141**	**9,745,455**	**5,308,872**	**64,707,802**	**(15,954,095)**	**(306,536,784)**

2020 Evaluated Net Savings

Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**2,638,641**	**23,474**	**30,264**	**149,126**	**457,422**	**1,086,614**	**3,173,749**	**(870,559)**	**(1,159,418)**
A1 - Residential New Buildings	6,085	671	1,085	5,180	66,914	37,695	433,499	-	-
A1a - Residential New Homes & Renovations	6,085	671	1,085	5,180	66,914	37,695	433,499	-	-
A2 - Residential Existing Buildings	2,632,556	22,804	29,179	143,946	390,508	1,048,920	2,740,250	(870,559)	(1,159,418)
A2a - Residential Coordinated Delivery	33,209	2,810	3,403	15,588	58,075	113,937	410,570	16,885	249,909
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,599,347	15,004	18,064	92,709	296,785	675,337	2,070,034	(887,444)	(1,409,327)
A2d - Residential Behavior	-	4,990	7,712	35,649	35,649	259,646	259,646	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**10,983**	**1,226**	**1,747**	**9,902**	**74,920**	**72,200**	**508,205**	**13,319**	**234,605**
B1 - Income Eligible Existing Buildings	10,983	1,226	1,747	9,902	74,920	72,200	508,205	13,319	234,605
B1a - Income Eligible Coordinated Delivery	10,983	1,226	1,747	9,902	74,920	72,200	508,205	13,319	234,605
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**9,490**	**85,337**	**106,637**	**476,167**	**8,886,249**	**3,481,615**	**58,074,151**	**(17,166,382)**	**(407,027,687)**
C1 - C&I New Buildings	94	4,056	2,614	25,376	372,253	185,620	2,487,127	(691,880)	(10,248,517)
C1a - C&I New Buildings & Major Renovations	94	4,056	2,614	25,376	372,253	185,620	2,487,127	(691,880)	(10,248,517)
C2 - C&I Existing Buildings	9,396	81,281	104,023	450,791	8,513,997	3,295,995	55,587,025	(16,474,502)	(396,779,170)
C2a - C&I Existing Building Retrofit	3,652	72,810	95,912	403,164	8,122,291	2,946,655	52,878,432	(16,457,118)	(396,781,714)
C2b - C&I New & Replacement Equipment	5,744	8,471	8,112	47,627	391,706	349,340	2,708,593	(17,384)	2,544
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**2,659,114**	**110,037**	**138,648**	**635,195**	**9,418,591**	**4,640,430**	**61,756,105**	**(18,023,622)**	**(407,952,500)**

Program Savings, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned v. Evaluated Net Savings Variances (%)										
Program	# of Participants	Electric						Natural Gas (Therms)	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)			
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**73%**	**20%**	**16%**	**18%**	**-4%**	**18%**	**-4%**	**116%**	**-43%**
A1 - Residential New Buildings	-26%	-45%	10%	-10%	-19%	-11%	-21%		
A1a - Residential New Homes & Renovations	-26%	-45%	10%	-10%	-19%	-11%	-21%		
A2 - Residential Existing Buildings	74%	25%	16%	19%	0%	19%	0%	116%	-43%
A2a - Residential Coordinated Delivery	76%	-11%	-26%	-36%	-46%	-35%	-44%	7040%	14996%
A2b - Residential Conservation Services (RCS)									
A2c - Residential Retail	193%	106%	111%	123%	30%	123%	29%	120%	-30%
A2d - Residential Behavior	-100%	-36%	-35%	-36%	-36%	-36%	-36%		
A2e - Residential Active Demand Reduction									
B - Income Eligible	**-10%**	**-25%**	**-30%**	**-30%**	**-39%**	**-30%**	**-39%**	**-53%**	**-37%**
B1 - Income Eligible Existing Buildings	-10%	-25%	-30%	-30%	-39%	-30%	-39%	-53%	-37%
B1a - Income Eligible Coordinated Delivery	-10%	-25%	-30%	-30%	-39%	-30%	-39%	-53%	-37%
B1b - Income Eligible Active Demand Reduction									
C - Commercial & Industrial	**2%**	**22%**	**108%**	**-19%**	**-3%**	**-19%**	**-4%**	**10%**	**34%**
C1 - C&I New Buildings	-50%	10%	1%	-10%	-20%	-11%	-21%	-1283%	-1080%
C1a - C&I New Buildings & Major Renovations	-50%	10%	1%	-10%	-20%	-11%	-21%	-1283%	-1080%
C2 - C&I Existing Buildings	3%	22%	113%	-19%	-2%	-19%	-3%	5%	30%
C2a - C&I Existing Building Retrofit	5%	35%	138%	-18%	3%	-18%	1%	5%	30%
C2b - C&I New & Replacement Equipment	2%	-33%	-4%	-28%	-49%	-28%	-48%	-37%	-101%
C2c - C&I Active Demand Reduction									
Grand Total	**72%**	**21%**	**73%**	**-13%**	**-3%**	**-13%**	**-5%**	**13%**	**33%**

Notes

• The plan year variances provided above are intended to indicate the Program Administrator's performance in the plan year only. The variances used to determine significant variances are provided separately. The variances above and the significant variances use different calculations to determine variances on an annual basis and over the three-year term, respectively.

• MMBtu savings are calculated consistent with the findings in the Study to Propose a More Refined Method to Account for the Conversion of Electric Savings to MMBtu Savings (2019 Energy Efficiency Plan-Year Reports, D.P.U. 20-50, Appendix 7).

Program Savings, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Net Savings

Program	Deliverable Fuels				Other				Total Savings		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)		MMBTU			
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**139,765**	**2,743,094**	**56,225**	**1,061,393**	**-**	**-**	**20,668,526**	**147,593,378**	**1,079,441**	**6,893,022**	**130,714**	**539,900**
A1 - Residential New Buildings	331	7,505	8,650	203,520	-	-	-	-	51,143	759,506	5,764	82,966
A1a - Residential New Homes & Renovations	331	7,505	8,650	203,520	-	-	-	-	51,143	759,506	5,764	82,966
A2 - Residential Existing Buildings	139,434	2,735,589	47,576	857,873	-	-	20,668,526	147,593,378	1,028,298	6,133,516	124,950	456,934
A2a - Residential Coordinated Delivery	117,040	2,307,838	17,692	316,800	-	-	20,454,765	146,097,054	310,910	3,364,221	24,758	117,113
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	10,043	415,399	27,568	538,758	-	-	213,761	1,496,324	299,388	2,351,295	44,822	284,450
A2d - Residential Behavior	12,352	12,352	2,316	2,316	-	-	-	-	418,000	418,000	55,370	55,370
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**28,138**	**575,561**	**4,386**	**83,857**	**-**	**-**	**5,447,300**	**54,850,600**	**138,308**	**1,529,350**	**14,251**	**125,621**
B1 - Income Eligible Existing Buildings	28,138	575,561	4,386	83,857	-	-	5,447,300	54,850,600	138,308	1,529,350	14,251	125,621
B1a - Income Eligible Coordinated Delivery	28,138	575,561	4,386	83,857	-	-	5,447,300	54,850,600	138,308	1,529,350	14,251	125,621
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(56,658)**	**(679,826)**	**-**	**-**	**-**	**-**	**170,126**	**2,264,864**	**2,667,571**	**29,415,831**	**585,200**	**9,147,678**
C1 - C&I New Buildings	(4,724)	(63,176)	-	-	-	-	-	-	209,160	3,177,578	28,249	467,827
C1a - C&I New Buildings & Major Renovations	(4,724)	(63,176)	-	-	-	-	-	-	209,160	3,177,578	28,249	467,827
C2 - C&I Existing Buildings	(51,933)	(616,651)	-	-	-	-	170,126	2,264,864	2,458,411	26,238,253	556,951	8,679,851
C2a - C&I Existing Building Retrofit	(46,656)	(560,331)	-	-	-	-	30,846	215,921	1,984,151	21,081,563	491,211	7,907,175
C2b - C&I New & Replacement Equipment	(5,278)	(56,320)	-	-	-	-	139,280	2,048,943	474,260	5,156,690	65,740	772,677
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**111,246**	**2,638,830**	**60,611**	**1,145,250**	**-**	**-**	**26,285,952**	**204,708,843**	**3,885,320**	**37,838,203**	**730,165**	**9,813,199**

2020 Evaluated Net Savings

Program	Deliverable Fuels				Other				Total Savings		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)		MMBTU			
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**67,931**	**2,327,869**	**19,468**	**641,949**	**-**	**-**	**20,640,492**	**288,888,115**	**1,019,026**	**3,699,756**	**153,562**	**535,639**
A1 - Residential New Buildings	628	15,895	7,998	217,379	-	-	-	-	45,692	650,878	5,180	66,914
A1a - Residential New Homes & Renovations	628	15,895	7,998	217,379	-	-	-	-	45,692	650,878	5,180	66,914
A2 - Residential Existing Buildings	67,303	2,311,974	11,470	424,571	-	-	20,640,492	288,888,115	973,334	3,048,879	148,382	468,725
A2a - Residential Coordinated Delivery	106,059	2,160,034	19,958	361,899	-	-	13,474,951	181,405,001	135,583	797,460	19,003	118,973
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(39,079)	151,618	(8,594)	62,565	-	-	7,165,541	107,483,115	577,999	1,991,667	93,730	314,103
A2d - Residential Behavior	322	322	106	106	-	-	-	-	259,752	259,752	35,649	35,649
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**13,402**	**274,709**	**1,888**	**36,486**	**-**	**-**	**4,208,437**	**51,868,627**	**75,420**	**568,152**	**9,909**	**75,025**
B1 - Income Eligible Existing Buildings	13,402	274,709	1,888	36,486	-	-	4,208,437	51,868,627	75,420	568,152	9,909	75,025
B1a - Income Eligible Coordinated Delivery	13,402	274,709	1,888	36,486	-	-	4,208,437	51,868,627	75,420	568,152	9,909	75,025
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(34,375)**	**(340,950)**	**2,662**	**32,322**	**-**	**-**	**1,365,660**	**19,040,538**	**1,767,639**	**17,403,705**	**476,167**	**8,886,249**
C1 - C&I New Buildings	(2,141)	(24,765)	-	-	-	-	722,777	11,456,722	116,432	1,462,275	25,376	372,253
C1a - C&I New Buildings & Major Renovations	(2,141)	(24,765)	-	-	-	-	722,777	11,456,722	116,432	1,462,275	25,376	372,253
C2 - C&I Existing Buildings	(32,234)	(316,185)	2,662	32,322	-	-	642,883	7,583,816	1,651,207	15,941,430	450,791	8,513,997
C2a - C&I Existing Building Retrofit	(28,523)	(289,683)	2,662	32,322	-	-	194,201	1,942,013	1,303,605	13,232,582	403,164	8,122,291
C2b - C&I New & Replacement Equipment	(3,711)	(26,502)	-	-	-	-	448,682	5,641,803	347,602	2,708,848	47,627	391,706
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**46,957**	**2,261,628**	**24,018**	**710,758**	**-**	**-**	**26,214,589**	**359,797,281**	**2,862,085**	**21,671,613**	**639,637**	**9,496,913**

Program Savings, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned v. Evaluated Net Savings Variances (%)												
Program	Deliverable Fuels				Other				Total Savings MMBTU		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)					
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**-51%**	**-15%**	**-65%**	**-40%**			**0%**	**96%**	**-6%**	**-46%**	**17%**	**-1%**
A1 - Residential New Buildings	90%	112%	-8%	7%					-11%	-14%	-10%	-19%
A1a - Residential New Homes & Renovations	90%	112%	-8%	7%					-11%	-14%	-10%	-19%
A2 - Residential Existing Buildings	-52%	-15%	-76%	-51%			0%	96%	-5%	-50%	19%	3%
A2a - Residential Coordinated Delivery	-9%	-6%	13%	14%			-34%	24%	-56%	-76%	-23%	2%
A2b - Residential Conservation Services (RCS)												
A2c - Residential Retail	-489%	-64%	-131%	-88%			3252%	7083%	93%	-15%	109%	10%
A2d - Residential Behavior	-97%	-97%	-95%	-95%					-38%	-38%	-36%	-36%
A2e - Residential Active Demand Reduction												
B - Income Eligible	**-52%**	**-52%**	**-57%**	**-56%**			**-23%**	**-5%**	**-45%**	**-63%**	**-30%**	**-40%**
B1 - Income Eligible Existing Buildings	-52%	-52%	-57%	-56%			-23%	-5%	-45%	-63%	-30%	-40%
B1a - Income Eligible Coordinated Delivery	-52%	-52%	-57%	-56%			-23%	-5%	-45%	-63%	-30%	-40%
B1b - Income Eligible Active Demand Reduction												
C - Commercial & Industrial	**-39%**	**-50%**					**703%**	**741%**	**-34%**	**-41%**	**-19%**	**-3%**
C1 - C&I New Buildings	-55%	-61%							-44%	-54%	-10%	-20%
C1a - C&I New Buildings & Major Renovations	-55%	-61%							-44%	-54%	-10%	-20%
C2 - C&I Existing Buildings	-38%	-49%					278%	235%	-33%	-39%	-19%	-2%
C2a - C&I Existing Building Retrofit	-39%	-48%					530%	799%	-34%	-37%	-18%	3%
C2b - C&I New & Replacement Equipment	-30%	-53%					222%	175%	-27%	-47%	-28%	-49%
C2c - C&I Active Demand Reduction												
Grand Total	**-58%**	**-14%**	**-60%**	**-38%**			**0%**	**76%**	**-26%**	**-43%**	**-12%**	**-3%**

Notes

• The plan year variances provided above are intended to indicate the Program Administrator's performance in the plan year only. The variances used to determine significant variances are provided separately. The variances above and the significant variances use different calculations to determine variances on an annual basis and over the three-year term, respectively.

• MMBtu savings are calculated consistent with the findings in the Study to Propose a More Refined Method to Account for the Conversion of Electric Savings to MMBtu Savings (2019 Energy Efficiency Plan-Year Reports, D.P.U. 20-50, Appendix 7).

Program Savings, Three-Year Total

2019-2021 Net Savings

Eversource Electric

June 4, 2021

2019 Evaluated Net Savings									
Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**1,798,005**	**32,460**	**41,560**	**206,043**	**713,722**	**1,500,756**	**5,033,190**	**(1,173,635)**	**(3,183,076)**
A1 - Residential New Buildings	6,406	915	1,095	5,729	70,304	41,780	464,595	1,142	22,224
A1a - Residential New Homes & Renovations	6,406	915	1,095	5,729	70,304	41,780	464,595	1,142	22,224
A2 - Residential Existing Buildings	1,791,599	31,545	40,465	200,314	643,419	1,458,977	4,568,595	(1,174,777)	(3,205,300)
A2a - Residential Coordinated Delivery	24,268	5,420	7,827	39,038	184,829	284,331	1,293,101	10,981	219,063
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	1,281,724	19,464	22,624	114,673	411,987	835,159	2,936,006	(1,185,759)	(3,424,362)
A2d - Residential Behavior	485,607	6,661	10,014	46,603	46,603	339,487	339,487	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**15,825**	**2,489**	**3,145**	**19,307**	**150,881**	**140,894**	**1,043,114**	**32,978**	**441,646**
B1 - Income Eligible Existing Buildings	15,825	2,489	3,145	19,307	150,881	140,894	1,043,114	32,978	441,646
B1a - Income Eligible Coordinated Delivery	15,825	2,489	3,145	19,307	150,881	140,894	1,043,114	32,978	441,646
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**11,372**	**42,400**	**35,750**	**295,164**	**3,662,791**	**2,165,054**	**24,994,130**	**(1,571,040)**	**(26,692,099)**
C1 - C&I New Buildings	137	2,782	1,821	18,558	312,489	136,411	2,102,990	(191,581)	(3,616,995)
C1a - C&I New Buildings & Major Renovations	137	2,782	1,821	18,558	312,489	136,411	2,102,990	(191,581)	(3,616,995)
C2 - C&I Existing Buildings	11,235	39,618	33,929	276,606	3,350,302	2,028,642	22,891,140	(1,379,459)	(23,075,105)
C2a - C&I Existing Building Retrofit	3,625	21,595	20,929	190,717	2,406,168	1,399,044	16,412,778	(1,330,713)	(22,639,889)
C2b - C&I New & Replacement Equipment	7,610	18,023	13,001	85,888	944,134	629,598	6,478,362	(48,746)	(435,215)
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**1,825,202**	**77,349**	**80,456**	**520,514**	**4,527,394**	**3,806,704**	**31,070,434**	**(2,711,696)**	**(29,433,529)**

2020 Evaluated Net Savings									
Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**2,638,641**	**23,474**	**30,264**	**149,126**	**457,422**	**1,086,614**	**3,173,749**	**(870,559)**	**(1,159,418)**
A1 - Residential New Buildings	6,085	671	1,085	5,180	66,914	37,695	433,499	-	-
A1a - Residential New Homes & Renovations	6,085	671	1,085	5,180	66,914	37,695	433,499	-	-
A2 - Residential Existing Buildings	2,632,556	22,804	29,179	143,946	390,508	1,048,920	2,740,250	(870,559)	(1,159,418)
A2a - Residential Coordinated Delivery	33,209	2,810	3,403	15,588	58,075	113,937	410,570	16,885	249,909
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,599,347	15,004	18,064	92,709	296,785	675,337	2,070,034	(887,444)	(1,409,327)
A2d - Residential Behavior	-	4,990	7,712	35,649	35,649	259,646	259,646	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**10,983**	**1,226**	**1,747**	**9,902**	**74,920**	**72,200**	**508,205**	**13,319**	**234,605**
B1 - Income Eligible Existing Buildings	10,983	1,226	1,747	9,902	74,920	72,200	508,205	13,319	234,605
B1a - Income Eligible Coordinated Delivery	10,983	1,226	1,747	9,902	74,920	72,200	508,205	13,319	234,605
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**9,490**	**85,337**	**106,637**	**476,167**	**8,886,249**	**3,481,615**	**58,074,151**	**(17,166,382)**	**(407,027,687)**
C1 - C&I New Buildings	94	4,056	2,614	25,376	372,253	185,620	2,487,127	(691,880)	(10,248,517)
C1a - C&I New Buildings & Major Renovations	94	4,056	2,614	25,376	372,253	185,620	2,487,127	(691,880)	(10,248,517)
C2 - C&I Existing Buildings	9,396	81,281	104,023	450,791	8,513,997	3,295,995	55,587,025	(16,474,502)	(396,779,170)
C2a - C&I Existing Building Retrofit	3,652	72,810	95,912	403,164	8,122,291	2,946,655	52,878,432	(16,457,118)	(396,781,714)
C2b - C&I New & Replacement Equipment	5,744	8,471	8,112	47,627	391,706	349,340	2,708,593	(17,384)	2,544
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**2,659,114**	**110,037**	**138,648**	**635,195**	**9,418,591**	**4,640,430**	**61,756,105**	**(18,023,622)**	**(407,952,500)**

Program Savings, Three-Year Total

2019-2021 Net Savings

Eversource Electric

June 4, 2021

2021 Planned Net Savings									
Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**1,435,753**	**15,094**	**19,588**	**99,332**	**254,997**	**718,841**	**1,762,085**	**(197,023)**	**(791,540)**
A1 - Residential New Buildings	8,320	1,165	915	5,380	81,212	39,139	529,717	-	-
A1a - Residential New Homes & Renovations	8,320	1,165	915	5,380	81,212	39,139	529,717	-	-
A2 - Residential Existing Buildings	1,427,433	13,929	18,673	93,952	173,785	679,702	1,232,369	(197,023)	(791,540)
A2a - Residential Coordinated Delivery	19,845	2,232	3,143	17,144	90,693	124,097	611,149	237	1,656
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	797,588	4,422	4,503	17,279	23,562	124,619	190,234	(197,259)	(793,196)
A2d - Residential Behavior	610,000	7,275	11,027	59,530	59,530	430,986	430,986	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**12,200**	**1,273**	**2,113**	**11,524**	**107,917**	**83,446**	**714,312**	**28,490**	**373,030**
B1 - Income Eligible Existing Buildings	12,200	1,273	2,113	11,524	107,917	83,446	714,312	28,490	373,030
B1a - Income Eligible Coordinated Delivery	12,200	1,273	2,113	11,524	107,917	83,446	714,312	28,490	373,030
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**9,399**	**43,965**	**37,040**	**384,075**	**5,021,773**	**2,810,126**	**33,548,016**	**(5,791,458)**	**(108,677,651)**
C1 - C&I New Buildings	190	3,784	2,620	28,882	479,866	211,824	3,185,967	57,812	1,032,660
C1a - C&I New Buildings & Major Renovations	190	3,784	2,620	28,882	479,866	211,824	3,185,967	57,812	1,032,660
C2 - C&I Existing Buildings	9,209	40,181	34,420	355,192	4,541,907	2,598,301	30,362,049	(5,849,270)	(109,710,311)
C2a - C&I Existing Building Retrofit	3,840	29,022	26,806	294,909	3,818,131	2,158,121	25,513,799	(5,827,008)	(109,479,307)
C2b - C&I New & Replacement Equipment	5,369	11,159	7,614	60,283	723,775	440,181	4,848,249	(22,263)	(231,004)
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**1,457,351**	**60,331**	**58,741**	**494,931**	**5,384,688**	**3,612,413**	**36,024,413**	**(5,959,991)**	**(109,096,162)**

2019-2021 Net Savings									
Program	# of Participants	Electric						Natural Gas	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		(Therms)	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**5,872,398**	**71,028**	**91,413**	**454,501**	**1,426,142**	**3,306,211**	**9,969,024**	**(2,241,217)**	**(5,134,034)**
A1 - Residential New Buildings	20,811	2,750	3,096	16,289	218,430	118,613	1,427,811	1,142	22,224
A1a - Residential New Homes & Renovations	20,811	2,750	3,096	16,289	218,430	118,613	1,427,811	1,142	22,224
A2 - Residential Existing Buildings	5,851,587	68,278	88,317	438,212	1,207,712	3,187,599	8,541,213	(2,242,359)	(5,156,258)
A2a - Residential Coordinated Delivery	77,322	10,462	14,374	71,769	333,596	522,365	2,314,820	28,103	470,627
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	4,678,658	38,891	45,191	224,661	732,334	1,635,115	5,196,275	(2,270,462)	(5,626,885)
A2d - Residential Behavior	1,095,607	18,925	28,752	141,782	141,782	1,030,119	1,030,119	-	-
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-
B - Income Eligible	**39,008**	**4,987**	**7,005**	**40,734**	**333,719**	**296,541**	**2,265,631**	**74,787**	**1,049,281**
B1 - Income Eligible Existing Buildings	39,008	4,987	7,005	40,734	333,719	296,541	2,265,631	74,787	1,049,281
B1a - Income Eligible Coordinated Delivery	39,008	4,987	7,005	40,734	333,719	296,541	2,265,631	74,787	1,049,281
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**30,261**	**171,702**	**179,428**	**1,155,406**	**17,570,813**	**8,456,795**	**116,616,297**	**(24,528,880)**	**(542,397,438)**
C1 - C&I New Buildings	421	10,622	7,056	72,817	1,164,608	533,856	7,776,084	(825,648)	(12,832,852)
C1a - C&I New Buildings & Major Renovations	421	10,622	7,056	72,817	1,164,608	533,856	7,776,084	(825,648)	(12,832,852)
C2 - C&I Existing Buildings	29,840	161,080	172,372	1,082,589	16,406,205	7,922,939	108,840,214	(23,703,231)	(529,564,586)
C2a - C&I Existing Building Retrofit	11,117	123,428	143,646	888,790	14,346,590	6,503,820	94,805,009	(23,614,838)	(528,900,910)
C2b - C&I New & Replacement Equipment	18,723	37,652	28,726	193,799	2,059,615	1,419,119	14,035,205	(88,393)	(663,676)
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-
Grand Total	**5,941,667**	**247,717**	**277,845**	**1,650,640**	**19,330,673**	**12,059,547**	**128,850,952**	**(26,695,309)**	**(546,482,191)**

Notes

• MMBtu savings are calculated consistent with the findings in the Study to Propose a More Refined Method to Account for the Conversion of Electric Savings to MMBtu Savings (2019 Energy Efficiency Plan-Year Reports, D.P.U. 20-50, Appendix 7).

Program Savings, Three-Year Total

2019-2021 Net Savings

Eversource Electric

June 4, 2021

2019 Evaluated Net Savings												
Program	Deliverable Fuels				Other				Total Savings MMBTU		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)					
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**132,209**	**3,555,151**	**26,154**	**807,894**	**-**	**-**	**29,543,082**	**210,015,320**	**1,541,756**	**9,077,927**	**209,745**	**779,240**
A1 - Residential New Buildings	1,220	30,955	9,773	270,451	-	-	-	-	52,887	768,224	5,729	70,304
A1a - Residential New Homes & Renovations	1,220	30,955	9,773	270,451	-	-	-	-	52,887	768,224	5,729	70,304
A2 - Residential Existing Buildings	130,988	3,524,195	16,381	537,443	-	-	29,543,082	210,015,320	1,488,869	8,309,703	204,016	708,937
A2a - Residential Coordinated Delivery	145,054	2,889,750	17,331	312,931	-	-	29,404,460	209,044,969	447,813	4,517,689	40,099	203,731
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(19,627)	628,883	(1,934)	223,527	-	-	138,622	970,351	695,021	3,445,980	117,314	458,603
A2d - Residential Behavior	5,562	5,562	985	985	-	-	-	-	346,034	346,034	46,603	46,603
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**21,477**	**439,360**	**6,344**	**143,101**	**-**	**-**	**9,422,958**	**103,603,466**	**172,013**	**1,669,739**	**19,307**	**150,881**
B1 - Income Eligible Existing Buildings	21,477	439,360	6,344	143,101	-	-	9,422,958	103,603,466	172,013	1,669,739	19,307	150,881
B1a - Income Eligible Coordinated Delivery	21,477	439,360	6,344	143,101	-	-	9,422,958	103,603,466	172,013	1,669,739	19,307	150,881
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(39,196)**	**(469,560)**	**(13,596)**	**(303,802)**	**-**	**-**	**2,676,662**	**27,881,924**	**1,955,157**	**21,551,558**	**295,195**	**3,663,260**
C1 - C&I New Buildings	(1,556)	(22,227)	-	-	-	-	(651,309)	(10,275,760)	115,698	1,719,064	18,558	312,489
C1a - C&I New Buildings & Major Renovations	(1,556)	(22,227)	-	-	-	-	(651,309)	(10,275,760)	115,698	1,719,064	18,558	312,489
C2 - C&I Existing Buildings	(37,641)	(447,334)	(13,596)	(303,802)	-	-	3,327,971	38,157,684	1,839,460	19,832,494	276,637	3,350,771
C2a - C&I Existing Building Retrofit	(29,638)	(365,361)	(13,596)	(303,802)	-	-	2,152,549	21,525,494	1,222,739	13,479,626	190,749	2,406,637
C2b - C&I New & Replacement Equipment	(8,002)	(81,972)	-	-	-	-	1,175,421	16,632,189	616,721	6,352,868	85,888	944,134
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**114,489**	**3,524,950**	**18,902**	**647,192**	**-**	**-**	**41,642,702**	**341,500,710**	**3,668,926**	**32,299,223**	**524,247**	**4,593,381**

2020 Evaluated Net Savings												
Program	Deliverable Fuels				Other				Total Savings MMBTU		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)					
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**67,931**	**2,327,869**	**19,468**	**641,949**	**-**	**-**	**20,640,492**	**288,888,115**	**1,019,026**	**3,699,756**	**153,562**	**535,639**
A1 - Residential New Buildings	628	15,895	7,998	217,379	-	-	-	-	45,692	650,878	5,180	66,914
A1a - Residential New Homes & Renovations	628	15,895	7,998	217,379	-	-	-	-	45,692	650,878	5,180	66,914
A2 - Residential Existing Buildings	67,303	2,311,974	11,470	424,571	-	-	20,640,492	288,888,115	973,334	3,048,879	148,382	468,725
A2a - Residential Coordinated Delivery	106,059	2,160,034	19,958	361,899	-	-	13,474,951	181,405,001	135,583	797,460	19,003	118,973
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(39,079)	151,618	(8,594)	62,565	-	-	7,165,541	107,483,115	577,999	1,991,667	93,730	314,103
A2d - Residential Behavior	322	322	106	106	-	-	-	-	259,752	259,752	35,649	35,649
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**13,402**	**274,709**	**1,888**	**36,486**	**-**	**-**	**4,208,437**	**51,868,627**	**75,420**	**568,152**	**9,909**	**75,025**
B1 - Income Eligible Existing Buildings	13,402	274,709	1,888	36,486	-	-	4,208,437	51,868,627	75,420	568,152	9,909	75,025
B1a - Income Eligible Coordinated Delivery	13,402	274,709	1,888	36,486	-	-	4,208,437	51,868,627	75,420	568,152	9,909	75,025
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(34,375)**	**(340,950)**	**2,662**	**32,322**	**-**	**-**	**1,365,660**	**19,040,538**	**1,767,639**	**17,403,705**	**476,167**	**8,886,249**
C1 - C&I New Buildings	(2,141)	(24,765)	-	-	-	-	722,777	11,456,722	116,432	1,462,275	25,376	372,253
C1a - C&I New Buildings & Major Renovations	(2,141)	(24,765)	-	-	-	-	722,777	11,456,722	116,432	1,462,275	25,376	372,253
C2 - C&I Existing Buildings	(32,234)	(316,185)	2,662	32,322	-	-	642,883	7,583,816	1,651,207	15,941,430	450,791	8,513,997
C2a - C&I Existing Building Retrofit	(28,523)	(289,683)	2,662	32,322	-	-	194,201	1,942,013	1,303,605	13,232,582	403,164	8,122,291
C2b - C&I New & Replacement Equipment	(3,711)	(26,502)	-	-	-	-	448,682	5,641,803	347,602	2,708,848	47,627	391,706
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**46,957**	**2,261,628**	**24,018**	**710,758**	**-**	**-**	**26,214,589**	**359,797,281**	**2,862,085**	**21,671,613**	**639,637**	**9,496,913**

Program Savings, Three-Year Total

2019-2021 Net Savings

Eversource Electric

June 4, 2021

2021 Planned Net Savings												
Program	Deliverable Fuels				Other				Total Savings		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)		MMBTU			
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**197,071**	**3,625,311**	**101,305**	**1,807,690**	**-**	**-**	**20,668,526**	**147,593,378**	**997,514**	**7,115,933**	**108,765**	**415,936**
A1 - Residential New Buildings	331	7,505	8,650	203,520	-	-	-	-	48,119	740,741	5,380	81,212
A1a - Residential New Homes & Renovations	331	7,505	8,650	203,520	-	-	-	-	48,119	740,741	5,380	81,212
A2 - Residential Existing Buildings	196,740	3,617,807	92,656	1,604,170	-	-	20,668,526	147,593,378	949,395	6,375,192	103,384	334,724
A2a - Residential Coordinated Delivery	125,047	2,490,164	23,226	413,664	-	-	20,454,765	146,097,054	272,394	3,515,143	18,094	106,658
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	59,341	1,115,290	67,113	1,188,190	-	-	213,761	1,496,324	231,347	2,414,395	25,760	168,535
A2d - Residential Behavior	12,352	12,352	2,316	2,316	-	-	-	-	445,654	445,654	59,530	59,530
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**28,138**	**575,561**	**4,386**	**83,857**	**-**	**-**	**5,447,300**	**54,850,600**	**118,819**	**1,411,033**	**11,662**	**109,980**
B1 - Income Eligible Existing Buildings	28,138	575,561	4,386	83,857	-	-	5,447,300	54,850,600	118,819	1,411,033	11,662	109,980
B1a - Income Eligible Coordinated Delivery	28,138	575,561	4,386	83,857	-	-	5,447,300	54,850,600	118,819	1,411,033	11,662	109,980
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(56,062)**	**(657,322)**	**-**	**-**	**-**	**-**	**170,126**	**2,264,864**	**2,174,918**	**22,022,928**	**384,075**	**5,021,773**
C1 - C&I New Buildings	(4,830)	(65,284)	-	-	-	-	-	-	212,776	3,223,949	28,882	479,866
C1a - C&I New Buildings & Major Renovations	(4,830)	(65,284)	-	-	-	-	-	-	212,776	3,223,949	28,882	479,866
C2 - C&I Existing Buildings	(51,232)	(592,038)	-	-	-	-	170,126	2,264,864	1,962,142	18,798,979	355,192	4,541,907
C2a - C&I Existing Building Retrofit	(46,692)	(542,883)	-	-	-	-	30,846	215,921	1,528,728	14,022,986	294,909	3,818,131
C2b - C&I New & Replacement Equipment	(4,541)	(49,156)	-	-	-	-	139,280	2,048,943	433,414	4,775,993	60,283	723,775
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**169,147**	**3,543,551**	**105,691**	**1,891,546**	**-**	**-**	**26,285,952**	**204,708,843**	**3,291,251**	**30,549,894**	**504,501**	**5,547,689**

2019-2021 Net Savings												
Program	Deliverable Fuels				Other				Total Savings		Electric Energy, no Fuel Switching or ADR (MWh)	
	Oil (MMBTU)		Propane (MMBTU)		Wood (MMBTU)		Water (Gallons)		MMBTU			
	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**397,210**	**9,508,331**	**146,927**	**3,257,533**	**-**	**-**	**70,852,100**	**646,496,813**	**3,558,296**	**19,893,616**	**472,071**	**1,730,815**
A1 - Residential New Buildings	2,179	54,355	26,420	691,350	-	-	-	-	146,698	2,159,842	16,289	218,430
A1a - Residential New Homes & Renovations	2,179	54,355	26,420	691,350	-	-	-	-	146,698	2,159,842	16,289	218,430
A2 - Residential Existing Buildings	395,031	9,453,976	120,507	2,566,183	-	-	70,852,100	646,496,813	3,411,598	17,733,774	455,782	1,512,385
A2a - Residential Coordinated Delivery	376,160	7,539,948	60,514	1,088,494	-	-	63,334,177	536,547,024	855,791	8,830,292	77,197	429,362
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	635	1,895,791	56,585	1,474,282	-	-	7,517,923	109,949,790	1,504,367	7,852,041	236,804	941,242
A2d - Residential Behavior	18,236	18,236	3,407	3,407	-	-	-	-	1,051,440	1,051,440	141,782	141,782
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**63,017**	**1,289,630**	**12,618**	**263,444**	**-**	**-**	**19,078,695**	**210,322,693**	**366,252**	**3,648,924**	**40,878**	**335,886**
B1 - Income Eligible Existing Buildings	63,017	1,289,630	12,618	263,444	-	-	19,078,695	210,322,693	366,252	3,648,924	40,878	335,886
B1a - Income Eligible Coordinated Delivery	63,017	1,289,630	12,618	263,444	-	-	19,078,695	210,322,693	366,252	3,648,924	40,878	335,886
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(129,633)**	**(1,467,833)**	**(10,934)**	**(271,480)**	**-**	**-**	**4,212,448**	**49,187,326**	**5,897,714**	**60,978,190**	**1,155,437**	**17,571,282**
C1 - C&I New Buildings	(8,526)	(112,276)	-	-	-	-	71,468	1,180,963	444,906	6,405,288	72,817	1,164,608
C1a - C&I New Buildings & Major Renovations	(8,526)	(112,276)	-	-	-	-	71,468	1,180,963	444,906	6,405,288	72,817	1,164,608
C2 - C&I Existing Buildings	(121,107)	(1,355,557)	(10,934)	(271,480)	-	-	4,140,980	48,006,364	5,452,809	54,572,903	1,082,620	16,406,674
C2a - C&I Existing Building Retrofit	(104,853)	(1,197,927)	(10,934)	(271,480)	-	-	2,377,597	23,683,428	4,055,072	40,735,194	888,821	14,347,059
C2b - C&I New & Replacement Equipment	(16,254)	(157,630)	-	-	-	-	1,763,384	24,322,935	1,397,737	13,837,709	193,799	2,059,615
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**330,593**	**9,330,128**	**148,610**	**3,249,496**	**-**	**-**	**94,143,243**	**906,006,833**	**9,822,262**	**84,520,730**	**1,668,386**	**19,637,983**

Notes

• MMBtu savings are calculated consistent with the findings in the Study to Propose a More Refined Method to Account for the Conversion of Electric Savings to MMBtu Savings (2019 Energy Efficiency Plan-Year Reports, D.P.U. 20-50, Appendix 7).

Demand Response Savings, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Net Savings

Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**1,500**	**3,150**	**150**	**(7)**	**(7)**				
A2 - Residential Existing Buildings	1,500	3,150	150	(7)	(7)				
A2e - Residential Active Demand Reduction	1,500	3,150	150	(7)	(7)				
B - Income Eligible		-	-	-	-				
B1 - Income Eligible Existing Buildings		-	-	-	-				
B1b - Income Eligible Active Demand Reduction		-	-	-	-				
C - Commercial & Industrial	**235**	**57,500**	**13,750**	**(238)**	**(238)**				
C2 - C&I Existing Buildings	235	57,500	13,750	(238)	(238)				
C2c - C&I Active Demand Reduction	235	57,500	13,750	(238)	(238)				
Grand Total	**1,735**	**60,650**	**13,900**	**(245)**	**(245)**				

2020 Evaluated Net Savings

Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**16,553**	**12,148**	**-**	**(0)**	**(0)**				
A2 - Residential Existing Buildings	16,553	12,148	-	(0)	(0)				
A2e - Residential Active Demand Reduction	16,553	12,148	-	(0)	(0)				
B - Income Eligible		-	-	-	-				
B1 - Income Eligible Existing Buildings		-	-	-	-				
B1b - Income Eligible Active Demand Reduction		-	-	-	-				
C - Commercial & Industrial	**323**	**46,600**	**-**	**(39)**	**(39)**				
C2 - C&I Existing Buildings	323	46,600	-	(39)	(39)				
C2c - C&I Active Demand Reduction	323	46,600	-	(39)	(39)				
Grand Total	**16,876**	**58,748**	**-**	**(39)**	**(39)**				

2020 Planned v. Evaluated Net Savings Variances (%)

Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**1004%**	**286%**	**-100%**	**-99%**	**-99%**				
A2 - Residential Existing Buildings	1004%	286%	-100%	-99%	-99%				
A2e - Residential Active Demand Reduction	1004%	286%	-100%	-99%	-99%				
B - Income Eligible									
B1 - Income Eligible Existing Buildings									
B1b - Income Eligible Active Demand Reduction									
C - Commercial & Industrial	**37%**	**-19%**	**-100%**	**-83%**	**-83%**				
C2 - C&I Existing Buildings	37%	-19%	-100%	-83%	-83%				
C2c - C&I Active Demand Reduction	37%	-19%	-100%	-83%	-83%				
Grand Total	**873%**	**-3%**	**-100%**	**-84%**	**-84%**				

Notes

• The above tables reflect only demand response measures in the active demand reduction core initiatives. These savings cannot be summed across years, so are shown here for each individual year.

• The active demand reduction core initiatives may include other, non-demand response measures such as storage. If applicable, those measures are included in the previous savings tables.

Demand Response Savings, Three-Year Total

2019-2021 Net Savings

Eversource Electric

June 4, 2021

2019 Evaluated Net Savings									
Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**8,020**	**4,450**	**-**	**-**	**-**				
A2 - Residential Existing Buildings	8,020	4,450	-	-	-				
A2e - Residential Active Demand Reduction	8,020	4,450	-	-	-				
B - Income Eligible	**-**	**-**	**-**	**-**	**-**				
B1 - Income Eligible Existing Buildings	-	-	-	-	-				
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-				
C - Commercial & Industrial	**59**	**20,795**	**-**	**(18)**	**(18)**				
C2 - C&I Existing Buildings	59	20,795	-	(18)	(18)				
C2c - C&I Active Demand Reduction	59	20,795	-	(18)	(18)				
Grand Total	**8,079**	**25,245**	**-**	**(18)**	**(18)**				

2020 Evaluated Net Savings									
Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**16,553**	**12,148**	**-**	**(0)**	**(0)**				
A2 - Residential Existing Buildings	16,553	12,148	-	(0)	(0)				
A2e - Residential Active Demand Reduction	16,553	12,148	-	(0)	(0)				
B - Income Eligible		**-**	**-**	**-**	**-**				
B1 - Income Eligible Existing Buildings		-	-	-	-				
B1b - Income Eligible Active Demand Reduction		-	-	-	-				
C - Commercial & Industrial	**323**	**46,600**	**-**	**(39)**	**(39)**				
C2 - C&I Existing Buildings	323	46,600	-	(39)	(39)				
C2c - C&I Active Demand Reduction	323	46,600	-	(39)	(39)				
Grand Total	**16,876**	**58,748**	**-**	**(39)**	**(39)**				

2021 Planned Net Savings									
Program	# of Participants	Electric						Total Savings	
		Annual Capacity (kW)		Electric Energy (MWh)		Electric Energy (MMBTU)		MMBTU	
		Summer	Winter	Annual	Lifetime	Annual	Lifetime	Annual	Lifetime
A - Residential	**2,000**	**4,250**	**250**	**(11)**	**(11)**				
A2 - Residential Existing Buildings	2,000	4,250	250	(11)	(11)				
A2e - Residential Active Demand Reduction	2,000	4,250	250	(11)	(11)				
B - Income Eligible		**-**	**-**	**-**	**-**				
B1 - Income Eligible Existing Buildings		-	-	-	-				
B1b - Income Eligible Active Demand Reduction		-	-	-	-				
C - Commercial & Industrial	**300**	**96,000**	**22,750**	**(476)**	**(476)**				
C2 - C&I Existing Buildings	300	96,000	22,750	(476)	(476)				
C2c - C&I Active Demand Reduction	300	96,000	22,750	(476)	(476)				
Grand Total	**2,300**	**100,250**	**23,000**	**(488)**	**(488)**				

Notes

• The above tables reflect only demand response measures in the active demand reduction core initiatives. These savings cannot be summed across years, so are shown here for each individual year.

• The active demand reduction core initiatives may include other, non-demand response measures such as storage. If applicable, those measures are included in the previous savings tables.

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Benefits										
Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**6,515,744**	**2,039,920**	**8,769,641**	**18,472,223**	**216,869**	**36,014,398**	**30,133,757**	**11,712,044**	**16,984,651**	**58,830,452**
A1 - Residential New Buildings	1,810,863	7,042	1,966,568	4,142,346	21,072	7,947,892	5,364,049	1,145,698	2,879,975	9,389,722
A1a - Residential New Homes & Renovations	1,810,863	7,042	1,966,568	4,142,346	21,072	7,947,892	5,364,049	1,145,698	2,879,975	9,389,722
A2 - Residential Existing Buildings	4,704,881	2,032,878	6,803,073	14,329,877	195,797	28,066,505	24,769,708	10,566,346	14,104,676	49,440,730
A2a - Residential Coordinated Delivery	1,151,141	412,512	1,462,615	3,080,827	29,327	6,136,422	6,906,414	2,379,378	3,837,019	13,122,811
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,970,018	155,215	4,288,961	9,034,194	90,567	16,538,955	14,335,998	7,028,239	8,250,557	29,614,794
A2d - Residential Behavior	541,328	1,112,330	750,577	1,581,003	35,345	4,020,584	3,526,925	1,158,755	2,017,348	6,703,028
A2e - Residential Active Demand Reduction	42,394	352,820	300,920	633,854	40,557	1,370,544	371	(25)	(249)	98
B - Income Eligible	**899,460**	**129,998**	**1,147,357**	**2,416,774**	**20,887**	**4,614,476**	**7,801,121**	**2,421,680**	**4,391,617**	**14,614,418**
B1 - Income Eligible Existing Buildings	899,460	129,998	1,147,357	2,416,774	20,887	4,614,476	7,801,121	2,421,680	4,391,617	14,614,418
B1a - Income Eligible Coordinated Delivery	899,460	129,998	1,147,357	2,416,774	20,887	4,614,476	7,801,121	2,421,680	4,391,617	14,614,418
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**89,537,746**	**9,856,857**	**107,732,182**	**226,925,234**	**2,137,532**	**436,189,552**	**567,929,978**	**135,890,955**	**320,521,682**	**1,024,342,615**
C1 - C&I New Buildings	4,823,359	25,383	5,570,172	11,732,916	76,440	22,228,271	27,903,210	7,043,420	16,243,562	51,190,192
C1a - C&I New Buildings & Major Renovations	4,823,359	25,383	5,570,172	11,732,916	76,440	22,228,271	27,903,210	7,043,420	16,243,562	51,190,192
C2 - C&I Existing Buildings	84,714,386	9,831,474	102,162,010	215,192,318	2,061,092	413,961,281	540,026,768	128,847,535	304,278,120	973,152,423
C2a - C&I Existing Building Retrofit	72,862,999	1,053,948	83,163,232	175,173,616	1,084,547	333,338,341	493,604,923	113,587,186	277,058,628	884,250,737
C2b - C&I New & Replacement Equipment	10,885,753	741,069	13,505,787	28,448,359	236,228	53,817,195	46,407,230	15,257,737	27,228,327	88,893,294
C2c - C&I Active Demand Reduction	965,634	8,036,458	5,492,991	11,570,343	740,318	26,805,744	14,615	2,611	(8,835)	8,391
Grand Total	**96,952,949**	**12,026,776**	**117,649,181**	**247,814,231**	**2,375,288**	**476,818,425**	**605,864,855**	**150,024,679**	**341,897,950**	**1,097,787,485**

2020 Evaluated Benefits										
Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**5,616,449**	**5,049,791**	**8,270,336**	**17,420,495**	**329,700**	**36,686,770**	**29,128,708**	**9,847,005**	**16,343,242**	**55,318,956**
A1 - Residential New Buildings	675,065	63,029	736,174	1,550,664	8,778	3,033,709	4,448,287	750,069	2,337,300	7,535,656
A1a - Residential New Homes & Renovations	675,065	63,029	736,174	1,550,664	8,778	3,033,709	4,448,287	750,069	2,337,300	7,535,656
A2 - Residential Existing Buildings	4,941,384	4,986,762	7,534,162	15,869,831	320,922	33,653,061	24,680,422	9,096,936	14,005,942	47,783,300
A2a - Residential Coordinated Delivery	1,542,261	286,752	1,867,569	3,933,816	31,438	7,661,837	3,501,394	1,416,320	2,040,896	6,958,610
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,831,067	2,127,231	4,029,389	8,487,436	110,629	17,585,752	18,906,663	6,934,821	10,666,113	36,507,597
A2d - Residential Behavior	343,805	706,456	476,702	1,004,117	22,448	2,553,529	2,272,362	745,795	1,298,934	4,317,092
A2e - Residential Active Demand Reduction	224,251	1,866,323	1,160,502	2,444,461	156,407	5,851,944	2	(0)	(2)	0
B - Income Eligible	**536,064**	**113,555**	**710,915**	**1,497,460**	**14,240**	**2,872,234**	**4,710,154**	**1,557,488**	**2,670,875**	**8,938,517**
B1 - Income Eligible Existing Buildings	536,064	113,555	710,915	1,497,460	14,240	2,872,234	4,710,154	1,557,488	2,670,875	8,938,517
B1a - Income Eligible Coordinated Delivery	536,064	113,555	710,915	1,497,460	14,240	2,872,234	4,710,154	1,557,488	2,670,875	8,938,517
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**132,968,776**	**8,139,203**	**149,741,426**	**315,412,791**	**2,290,603**	**608,552,799**	**574,876,653**	**109,883,899**	**308,436,522**	**993,197,074**
C1 - C&I New Buildings	4,378,670	177,350	5,222,767	11,001,149	81,610	20,861,547	22,302,089	6,154,347	12,897,243	41,353,679
C1a - C&I New Buildings & Major Renovations	4,378,670	177,350	5,222,767	11,001,149	81,610	20,861,547	22,302,089	6,154,347	12,897,243	41,353,679
C2 - C&I Existing Buildings	128,590,106	7,961,852	144,518,659	304,411,643	2,208,992	587,691,252	552,574,564	103,729,552	295,539,279	951,843,395
C2a - C&I Existing Building Retrofit	122,618,696	1,283,986	133,092,084	280,342,900	1,475,367	538,813,034	529,249,809	93,750,457	281,632,452	904,632,717
C2b - C&I New & Replacement Equipment	5,237,832	572,692	6,974,887	14,691,782	133,649	27,610,841	23,322,576	9,979,364	13,908,285	47,210,224
C2c - C&I Active Demand Reduction	733,577	6,105,174	4,451,688	9,376,960	599,976	21,267,377	2,180	(269)	(1,458)	453
Grand Total	**139,121,289**	**13,302,549**	**158,722,677**	**334,330,746**	**2,634,542**	**648,111,804**	**608,715,515**	**121,288,392**	**327,450,639**	**1,057,454,546**

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned v. Evaluated Total Benefits Variances (%)										
Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**-14%**	**148%**	**-6%**	**-6%**	**52%**	**2%**	**-3%**	**-16%**	**-4%**	**-6%**
A1 - Residential New Buildings	-63%	795%	-63%	-63%	-58%	-62%	-17%	-35%	-19%	-20%
A1a - Residential New Homes & Renovations	-63%	795%	-63%	-63%	-58%	-62%	-17%	-35%	-19%	-20%
A2 - Residential Existing Buildings	5%	145%	11%	11%	64%	20%	0%	-14%	-1%	-3%
A2a - Residential Coordinated Delivery	34%	-30%	28%	28%	7%	25%	-49%	-40%	-47%	-47%
A2b - Residential Conservation Services (RCS)										
A2c - Residential Retail	-5%	1271%	-6%	-6%	22%	6%	32%	-1%	29%	23%
A2d - Residential Behavior	-36%	-36%	-36%	-36%	-36%	-36%	-36%	-36%	-36%	-36%
A2e - Residential Active Demand Reduction	429%	429%	286%	286%	286%	327%	-99%	-99%	-99%	-100%
B - Income Eligible	**-40%**	**-13%**	**-38%**	**-38%**	**-32%**	**-38%**	**-40%**	**-36%**	**-39%**	**-39%**
B1 - Income Eligible Existing Buildings	-40%	-13%	-38%	-38%	-32%	-38%	-40%	-36%	-39%	-39%
B1a - Income Eligible Coordinated Delivery	-40%	-13%	-38%	-38%	-32%	-38%	-40%	-36%	-39%	-39%
B1b - Income Eligible Active Demand Reduction										
C - Commercial & Industrial	**49%**	**-17%**	**39%**	**39%**	**7%**	**40%**	**1%**	**-19%**	**-4%**	**-3%**
C1 - C&I New Buildings	-9%	599%	-6%	-6%	7%	-6%	-20%	-13%	-21%	-19%
C1a - C&I New Buildings & Major Renovations	-9%	599%	-6%	-6%	7%	-6%	-20%	-13%	-21%	-19%
C2 - C&I Existing Buildings	52%	-19%	41%	41%	7%	42%	2%	-19%	-3%	-2%
C2a - C&I Existing Building Retrofit	68%	22%	60%	60%	36%	62%	7%	-17%	2%	2%
C2b - C&I New & Replacement Equipment	-52%	-23%	-48%	-48%	-43%	-49%	-50%	-35%	-49%	-47%
C2c - C&I Active Demand Reduction	-24%	-24%	-19%	-19%	-19%	-21%	-85%	-110%	-83%	-95%
Grand Total	**43%**	**11%**	**35%**	**35%**	**11%**	**36%**	**0%**	**-19%**	**-4%**	**-4%**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

Program	2020 Planned Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(1,853,546)**	**(708,361)**	**(809,966)**	**(3,371,872)**	**65,091,585**	**192,074**	**14,580,162**	**79,863,822**	**34,480,368**	**4,890,504**	**39,370,872**
A1 - Residential New Buildings	-	-	-	-	179,545	560	39,672	219,777	6,714,797	927,605	7,642,402
A1a - Residential New Homes & Renovations	-	-	-	-	179,545	560	39,672	219,777	6,714,797	927,605	7,642,402
A2 - Residential Existing Buildings	(1,853,546)	(708,361)	(809,966)	(3,371,872)	64,912,040	191,514	14,540,490	79,644,044	27,765,571	3,962,899	31,728,470
A2a - Residential Coordinated Delivery	1,312	259	660	2,231	54,749,491	163,304	12,256,016	67,168,811	10,277,159	1,460,508	11,737,667
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(1,854,858)	(708,619)	(810,626)	(3,374,103)	9,940,220	27,726	2,215,758	12,183,705	17,428,108	2,491,267	19,919,376
A2d - Residential Behavior	-	-	-	-	222,329	484	68,716	291,529	60,303	11,124	71,427
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**340,202**	**53,488**	**146,410**	**540,100**	**13,670,124**	**41,124**	**3,057,744**	**16,768,992**	**2,730,876**	**385,627**	**3,116,504**
B1 - Income Eligible Existing Buildings	340,202	53,488	146,410	540,100	13,670,124	41,124	3,057,744	16,768,992	2,730,876	385,627	3,116,504
B1a - Income Eligible Coordinated Delivery	340,202	53,488	146,410	540,100	13,670,124	41,124	3,057,744	16,768,992	2,730,876	385,627	3,116,504
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(258,215,816)**	**(33,335,416)**	**(118,102,769)**	**(409,654,001)**	**(12,863,631)**	**(32,902)**	**(3,695,441)**	**(16,591,973)**	**-**	**-**	**-**
C1 - C&I New Buildings	887,517	124,809	407,422	1,419,747	(1,207,128)	(3,360)	(342,411)	(1,552,900)	-	-	-
C1a - C&I New Buildings & Major Renovations	887,517	124,809	407,422	1,419,747	(1,207,128)	(3,360)	(342,411)	(1,552,900)	-	-	-
C2 - C&I Existing Buildings	(259,103,333)	(33,460,224)	(118,510,191)	(411,073,749)	(11,656,503)	(29,541)	(3,353,029)	(15,039,073)	-	-	-
C2a - C&I Existing Building Retrofit	(258,869,716)	(33,403,763)	(118,401,671)	(410,675,150)	(10,600,160)	(26,933)	(3,046,295)	(13,673,387)	-	-	-
C2b - C&I New & Replacement Equipment	(233,618)	(56,462)	(108,519)	(398,599)	(1,056,343)	(2,608)	(306,734)	(1,365,686)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(259,729,160)**	**(33,990,289)**	**(118,766,325)**	**(412,485,774)**	**65,898,078**	**200,296**	**13,942,466**	**80,040,840**	**37,211,245**	**5,276,131**	**42,487,376**

Program	2020 Evaluated Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(1,023,149)**	**(587,375)**	**(474,372)**	**(2,084,896)**	**55,676,647**	**166,923**	**12,356,232**	**68,199,802**	**21,104,480**	**2,941,883**	**24,046,363**
A1 - Residential New Buildings	-	-	-	-	382,762	1,238	83,700	467,699	7,222,510	985,933	8,208,443
A1a - Residential New Homes & Renovations	-	-	-	-	382,762	1,238	83,700	467,699	7,222,510	985,933	8,208,443
A2 - Residential Existing Buildings	(1,023,149)	(587,375)	(474,372)	(2,084,896)	55,293,885	165,685	12,272,532	67,732,103	13,881,970	1,955,950	15,837,920
A2a - Residential Coordinated Delivery	228,151	33,531	97,872	359,554	51,289,590	154,043	11,474,833	62,918,465	11,729,036	1,669,510	13,398,546
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(1,251,300)	(620,906)	(572,243)	(2,444,449)	3,998,500	11,630	795,908	4,806,038	2,150,175	285,931	2,436,105
A2d - Residential Behavior	-	-	-	-	5,796	13	1,791	7,600	2,760	509	3,269
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**212,258**	**25,384**	**91,221**	**328,863**	**6,524,727**	**19,644**	**1,459,647**	**8,004,018**	**1,187,706**	**167,834**	**1,355,540**
B1 - Income Eligible Existing Buildings	212,258	25,384	91,221	328,863	6,524,727	19,644	1,459,647	8,004,018	1,187,706	167,834	1,355,540
B1a - Income Eligible Coordinated Delivery	212,258	25,384	91,221	328,863	6,524,727	19,644	1,459,647	8,004,018	1,187,706	167,834	1,355,540
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(344,014,957)**	**(37,005,337)**	**(156,085,117)**	**(537,105,410)**	**(6,324,756)**	**(13,931)**	**(1,864,733)**	**(8,203,420)**	**1,023,155**	**151,290**	**1,174,446**
C1 - C&I New Buildings	(8,667,820)	(1,468,111)	(4,002,644)	(14,138,576)	(466,530)	(1,090)	(134,792)	(602,413)	-	-	-
C1a - C&I New Buildings & Major Renovations	(8,667,820)	(1,468,111)	(4,002,644)	(14,138,576)	(466,530)	(1,090)	(134,792)	(602,413)	-	-	-
C2 - C&I Existing Buildings	(335,347,137)	(35,537,226)	(152,082,472)	(522,966,835)	(5,858,226)	(12,840)	(1,729,941)	(7,601,007)	1,023,155	151,290	1,174,446
C2a - C&I Existing Building Retrofit	(335,351,439)	(35,508,416)	(152,081,915)	(522,941,770)	(5,379,149)	(11,750)	(1,584,458)	(6,975,356)	1,023,155	151,290	1,174,446
C2b - C&I New & Replacement Equipment	4,302	(28,810)	(557)	(25,065)	(479,078)	(1,090)	(145,483)	(625,651)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(344,825,848)**	**(37,567,327)**	**(156,468,268)**	**(538,861,443)**	**55,876,617**	**172,637**	**11,951,146**	**68,000,400**	**23,315,342**	**3,261,008**	**26,576,349**

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

Program	2020 Planned v. Evaluated Total Benefits Variances (%)										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**-45%**	**-17%**	**-41%**	**-38%**	**-14%**	**-13%**	**-15%**	**-15%**	**-39%**	**-40%**	**-39%**
A1 - Residential New Buildings					113%	121%	111%	113%	8%	6%	7%
A1a - Residential New Homes & Renovations					113%	121%	111%	113%	8%	6%	7%
A2 - Residential Existing Buildings	-45%	-17%	-41%	-38%	-15%	-13%	-16%	-15%	-50%	-51%	-50%
A2a - Residential Coordinated Delivery	17285%	12869%	14726%	16016%	-6%	-6%	-6%	-6%	14%	14%	14%
A2b - Residential Conservation Services (RCS)											
A2c - Residential Retail	-33%	-12%	-29%	-28%	-60%	-58%	-64%	-61%	-88%	-89%	-88%
A2d - Residential Behavior					-97%	-97%	-97%	-97%	-95%	-95%	-95%
A2e - Residential Active Demand Reduction											
B - Income Eligible	**-38%**	**-53%**	**-38%**	**-39%**	**-52%**	**-52%**	**-52%**	**-52%**	**-57%**	**-56%**	**-57%**
B1 - Income Eligible Existing Buildings	-38%	-53%	-38%	-39%	-52%	-52%	-52%	-52%	-57%	-56%	-57%
B1a - Income Eligible Coordinated Delivery	-38%	-53%	-38%	-39%	-52%	-52%	-52%	-52%	-57%	-56%	-57%
B1b - Income Eligible Active Demand Reduction											
C - Commercial & Industrial	**33%**	**11%**	**32%**	**31%**	**-51%**	**-58%**	**-50%**	**-51%**			
C1 - C&I New Buildings	-1077%	-1276%	-1082%	-1096%	-61%	-68%	-61%	-61%			
C1a - C&I New Buildings & Major Renovations	-1077%	-1276%	-1082%	-1096%	-61%	-68%	-61%	-61%			
C2 - C&I Existing Buildings	29%	6%	28%	27%	-50%	-57%	-48%	-49%			
C2a - C&I Existing Building Retrofit	30%	6%	28%	27%	-49%	-56%	-48%	-49%			
C2b - C&I New & Replacement Equipment	-102%	-49%	-99%	-94%	-55%	-58%	-53%	-54%			
C2c - C&I Active Demand Reduction											
Grand Total	**33%**	**11%**	**32%**	**31%**	**-15%**	**-14%**	**-14%**	**-15%**	**-37%**	**-38%**	**-37%**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

	2020 Planned Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**2,408,706**	**213,116,377**	**35,645,352**	**17,323,066**	**230,439,443**	**140**
A1 - Residential New Buildings	-	-	25,199,794	3,847,253	1,519,249	26,719,043	3,079
A1a - Residential New Homes & Renovations	-	-	25,199,794	3,847,253	1,519,249	26,719,043	3,079
A2 - Residential Existing Buildings	-	2,408,706	187,916,583	31,798,099	15,803,816	203,720,400	124
A2a - Residential Coordinated Delivery	-	2,384,260	100,552,201	17,554,203	11,397,360	111,949,561	5,320
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	24,446	74,907,172	12,146,957	4,406,456	79,313,628	84
A2d - Residential Behavior	-	-	11,086,568	2,097,188	-	11,086,568	18
A2e - Residential Active Demand Reduction	-	-	1,370,642	(249)	-	1,370,642	
B - Income Eligible	**-**	**888,689**	**40,543,178**	**7,981,398**	**30,077,381**	**70,620,558**	**3,323**
B1 - Income Eligible Existing Buildings	-	888,689	40,543,178	7,981,398	30,077,381	70,620,558	3,323
B1a - Income Eligible Coordinated Delivery	-	888,689	40,543,178	7,981,398	30,077,381	70,620,558	3,323
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**36,345**	**1,034,322,537**	**198,723,473**	**20,116,976**	**1,054,439,513**	**111,088**
C1 - C&I New Buildings	-	-	73,285,310	16,308,572	2,510,978	75,796,288	391,193
C1a - C&I New Buildings & Major Renovations	-	-	73,285,310	16,308,572	2,510,978	75,796,288	391,193
C2 - C&I Existing Buildings	-	36,345	961,037,226	182,414,901	17,605,998	978,643,224	105,337
C2a - C&I Existing Building Retrofit	-	3,528	793,244,069	155,610,662	17,101,163	810,345,232	227,229
C2b - C&I New & Replacement Equipment	-	32,817	140,979,021	26,813,073	504,835	141,483,856	25,029
C2c - C&I Active Demand Reduction	-	-	26,814,136	(8,835)	-	26,814,136	
Grand Total	**-**	**3,333,740**	**1,287,982,091**	**242,350,222**	**67,517,422**	**1,355,499,514**	**833**

	2020 Evaluated Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**4,639,075**	**186,806,071**	**31,166,985**	**18,129,783**	**204,935,854**	**71**
A1 - Residential New Buildings	-	-	19,245,508	3,406,933	1,414,398	20,659,906	3,163
A1a - Residential New Homes & Renovations	-	-	19,245,508	3,406,933	1,414,398	20,659,906	3,163
A2 - Residential Existing Buildings	-	4,639,075	167,560,563	27,760,053	16,715,385	184,275,948	64
A2a - Residential Coordinated Delivery	-	2,914,761	94,211,772	15,283,111	9,904,505	104,116,277	2,837
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	1,724,314	60,615,357	11,175,708	6,810,880	67,426,237	23
A2d - Residential Behavior	-	-	6,881,490	1,301,235	-	6,881,490	
A2e - Residential Active Demand Reduction	-	-	5,851,944	(2)	-	5,851,944	
B - Income Eligible	**-**	**836,734**	**22,335,906**	**4,389,577**	**16,093,265**	**38,429,171**	**2,034**
B1 - Income Eligible Existing Buildings	-	836,734	22,335,906	4,389,577	16,093,265	38,429,171	2,034
B1a - Income Eligible Coordinated Delivery	-	836,734	22,335,906	4,389,577	16,093,265	38,429,171	2,034
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**305,745**	**1,057,921,233**	**150,637,962**	**(47,668,337)**	**1,010,252,896**	**111,477**
C1 - C&I New Buildings	-	183,419	47,657,658	8,759,807	(532,561)	47,125,097	506,996
C1a - C&I New Buildings & Major Renovations	-	183,419	47,657,658	8,759,807	(532,561)	47,125,097	506,996
C2 - C&I Existing Buildings	-	122,325	1,010,263,575	141,878,156	(47,135,776)	963,127,800	107,521
C2a - C&I Existing Building Retrofit	-	31,511	914,734,582	128,117,369	(48,338,983)	866,395,599	250,475
C2b - C&I New & Replacement Equipment	-	90,814	74,261,164	13,762,244	1,203,207	75,464,371	12,928
C2c - C&I Active Demand Reduction	-	-	21,267,830	(1,458)	-	21,267,830	
Grand Total	**-**	**5,781,553**	**1,267,063,209**	**186,194,525**	**(13,445,289)**	**1,253,617,921**	**476**

Program Benefits, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

	2020 Planned v. Evaluated Total Benefits Variances (%)						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential		**93%**	**-12%**	**-13%**	**5%**	**-11%**	**-49%**
A1 - Residential New Buildings			-24%	-11%	-7%	-23%	3%
A1a - Residential New Homes & Renovations			-24%	-11%	-7%	-23%	3%
A2 - Residential Existing Buildings		93%	-11%	-13%	6%	-10%	-49%
A2a - Residential Coordinated Delivery		22%	-6%	-13%	-13%	-7%	-47%
A2b - Residential Conservation Services (RCS)							
A2c - Residential Retail		6954%	-19%	-8%	55%	-15%	-72%
A2d - Residential Behavior			-38%	-38%		-38%	-100%
A2e - Residential Active Demand Reduction			327%	-99%		327%	
B - Income Eligible		**-6%**	**-45%**	**-45%**	**-46%**	**-46%**	**-39%**
B1 - Income Eligible Existing Buildings		-6%	-45%	-45%	-46%	-46%	-39%
B1a - Income Eligible Coordinated Delivery		-6%	-45%	-45%	-46%	-46%	-39%
B1b - Income Eligible Active Demand Reduction							
C - Commercial & Industrial		**741%**	**2%**	**-24%**	**-337%**	**-4%**	**0%**
C1 - C&I New Buildings			-35%	-46%	-121%	-38%	30%
C1a - C&I New Buildings & Major Renovations			-35%	-46%	-121%	-38%	30%
C2 - C&I Existing Buildings		237%	5%	-22%	-368%	-2%	2%
C2a - C&I Existing Building Retrofit		793%	15%	-18%	-383%	7%	10%
C2b - C&I New & Replacement Equipment		177%	-47%	-49%	138%	-47%	-48%
C2c - C&I Active Demand Reduction			-21%	-83%		-21%	
Grand Total		**73%**	**-2%**	**-23%**	**-120%**	**-8%**	**-43%**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

2019 Evaluated Benefits

Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**9,359,088**	**3,498,504**	**11,813,881**	**24,884,558**	**327,924**	**49,883,955**	**44,667,143**	**18,139,857**	**25,650,199**	**88,457,199**
A1 - Residential New Buildings	1,050,894	14,543	1,141,281	2,403,976	13,195	4,623,890	4,536,676	901,711	2,452,007	7,890,393
A1a - Residential New Homes & Renovations	1,050,894	14,543	1,141,281	2,403,976	13,195	4,623,890	4,536,676	901,711	2,452,007	7,890,393
A2 - Residential Existing Buildings	8,308,193	3,483,961	10,672,600	22,480,582	314,728	45,260,065	40,130,467	17,238,146	23,198,192	80,566,806
A2a - Residential Coordinated Delivery	2,046,713	154,761	2,551,975	5,375,436	53,982	10,182,866	11,665,222	4,599,647	6,621,667	22,886,537
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	5,505,866	1,269,759	7,059,224	14,869,430	173,489	28,877,768	25,731,819	11,663,211	14,878,633	52,273,663
A2d - Residential Behavior	621,461	942,962	636,291	1,340,273	29,964	3,570,951	2,733,426	975,289	1,697,892	5,406,606
A2e - Residential Active Demand Reduction	134,152	1,116,480	425,110	895,444	57,294	2,628,480	-	-	-	-
B - Income Eligible	**1,252,394**	**92,820**	**1,625,688**	**3,424,322**	**32,347**	**6,427,571**	**9,283,079**	**3,404,015**	**5,380,201**	**18,067,294**
B1 - Income Eligible Existing Buildings	1,252,394	92,820	1,625,688	3,424,322	32,347	6,427,571	9,283,079	3,404,015	5,380,201	18,067,294
B1a - Income Eligible Coordinated Delivery	1,252,394	92,820	1,625,688	3,424,322	32,347	6,427,571	9,283,079	3,404,015	5,380,201	18,067,294
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**41,770,204**	**5,562,476**	**51,935,580**	**109,396,221**	**1,078,844**	**209,743,325**	**218,319,402**	**68,865,707**	**128,856,899**	**416,042,008**
C1 - C&I New Buildings	3,577,007	5,114	4,165,548	8,774,240	57,559	16,579,469	18,489,657	4,558,912	10,877,536	33,926,105
C1a - C&I New Buildings & Major Renovations	3,577,007	5,114	4,165,548	8,774,240	57,559	16,579,469	18,489,657	4,558,912	10,877,536	33,926,105
C2 - C&I Existing Buildings	38,193,197	5,557,362	47,770,031	100,621,981	1,021,285	193,163,857	199,829,746	64,306,795	117,979,363	382,115,904
C2a - C&I Existing Building Retrofit	22,669,910	829,704	27,154,294	57,197,343	424,349	108,275,600	143,565,958	45,443,754	84,661,242	273,670,954
C2b - C&I New & Replacement Equipment	15,041,196	715,471	18,629,149	39,240,122	329,194	73,955,132	56,262,646	18,862,346	33,318,773	108,443,765
C2c - C&I Active Demand Reduction	482,091	4,012,187	1,986,588	4,184,515	267,742	10,933,124	1,142	695	(652)	1,185
Grand Total	**52,381,686**	**9,153,801**	**65,375,149**	**137,705,101**	**1,439,115**	**266,054,851**	**272,269,624**	**90,409,579**	**159,887,298**	**522,566,501**

2020 Evaluated Benefits

Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**5,616,449**	**5,049,791**	**8,270,336**	**17,420,495**	**329,700**	**36,686,770**	**29,128,708**	**9,847,005**	**16,343,242**	**55,318,956**
A1 - Residential New Buildings	675,065	63,029	736,174	1,550,664	8,778	3,033,709	4,448,287	750,069	2,337,300	7,535,656
A1a - Residential New Homes & Renovations	675,065	63,029	736,174	1,550,664	8,778	3,033,709	4,448,287	750,069	2,337,300	7,535,656
A2 - Residential Existing Buildings	4,941,384	4,986,762	7,534,162	15,869,831	320,922	33,653,061	24,680,422	9,096,936	14,005,942	47,783,300
A2a - Residential Coordinated Delivery	1,542,261	286,752	1,867,569	3,933,816	31,438	7,661,837	3,501,394	1,416,320	2,040,896	6,958,610
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,831,067	2,127,231	4,029,389	8,487,436	110,629	17,585,752	18,906,663	6,934,821	10,666,113	36,507,597
A2d - Residential Behavior	343,805	706,456	476,702	1,004,117	22,448	2,553,529	2,272,362	745,795	1,298,934	4,317,092
A2e - Residential Active Demand Reduction	224,251	1,866,323	1,160,502	2,444,461	156,407	5,851,944	2	(0)	(2)	0
B - Income Eligible	**536,064**	**113,555**	**710,915**	**1,497,460**	**14,240**	**2,872,234**	**4,710,154**	**1,557,488**	**2,670,875**	**8,938,517**
B1 - Income Eligible Existing Buildings	536,064	113,555	710,915	1,497,460	14,240	2,872,234	4,710,154	1,557,488	2,670,875	8,938,517
B1a - Income Eligible Coordinated Delivery	536,064	113,555	710,915	1,497,460	14,240	2,872,234	4,710,154	1,557,488	2,670,875	8,938,517
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**132,968,776**	**8,139,203**	**149,741,426**	**315,412,791**	**2,290,603**	**608,552,799**	**574,876,653**	**109,883,899**	**308,436,522**	**993,197,074**
C1 - C&I New Buildings	4,378,670	177,350	5,222,767	11,001,149	81,610	20,861,547	22,302,089	6,154,347	12,897,243	41,353,679
C1a - C&I New Buildings & Major Renovations	4,378,670	177,350	5,222,767	11,001,149	81,610	20,861,547	22,302,089	6,154,347	12,897,243	41,353,679
C2 - C&I Existing Buildings	128,590,106	7,961,852	144,518,659	304,411,643	2,208,992	587,691,252	552,574,564	103,729,552	295,539,279	951,843,395
C2a - C&I Existing Building Retrofit	122,618,696	1,283,986	133,092,084	280,342,900	1,475,367	538,813,034	529,249,809	93,750,457	281,632,452	904,632,717
C2b - C&I New & Replacement Equipment	5,237,832	572,692	6,974,887	14,691,782	133,649	27,610,841	23,322,576	9,979,364	13,908,285	47,210,224
C2c - C&I Active Demand Reduction	733,577	6,105,174	4,451,688	9,376,960	599,976	21,267,377	2,180	(269)	(1,458)	453
Grand Total	**139,121,289**	**13,302,549**	**158,722,677**	**334,330,746**	**2,634,542**	**648,111,804**	**608,715,515**	**121,288,392**	**327,450,639**	**1,057,454,546**

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

2021 Planned Benefits										
Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**5,719,030**	**1,916,699**	**7,407,390**	**15,602,800**	**188,273**	**30,834,193**	**16,742,659**	**6,390,008**	**9,172,118**	**32,304,785**
A1 - Residential New Buildings	1,848,345	8,748	1,946,251	4,099,550	20,109	7,923,003	5,367,749	1,015,212	2,812,985	9,195,946
A1a - Residential New Homes & Renovations	1,848,345	8,748	1,946,251	4,099,550	20,109	7,923,003	5,367,749	1,015,212	2,812,985	9,195,946
A2 - Residential Existing Buildings	3,870,686	1,907,951	5,461,139	11,503,250	168,164	22,911,190	11,374,910	5,374,796	6,359,134	23,108,839
A2a - Residential Coordinated Delivery	1,092,200	244,417	1,343,618	2,830,175	23,968	5,534,377	5,843,988	1,938,466	3,229,468	11,011,922
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	2,310,523	124,034	3,016,582	6,354,076	56,752	11,861,967	1,612,294	2,190,583	961,154	4,764,031
A2d - Residential Behavior	406,727	1,029,871	694,935	1,463,800	32,725	3,628,059	3,917,720	1,245,787	2,168,926	7,332,433
A2e - Residential Active Demand Reduction	61,235	509,629	406,004	855,199	54,719	1,886,787	908	(41)	(415)	453
B - Income Eligible	**779,392**	**97,385**	**955,993**	**2,013,687**	**16,632**	**3,863,089**	**6,889,647**	**1,998,307**	**3,833,589**	**12,721,544**
B1 - Income Eligible Existing Buildings	779,392	97,385	955,993	2,013,687	16,632	3,863,089	6,889,647	1,998,307	3,833,589	12,721,544
B1a - Income Eligible Coordinated Delivery	779,392	97,385	955,993	2,013,687	16,632	3,863,089	6,889,647	1,998,307	3,833,589	12,721,544
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**48,510,163**	**16,576,281**	**63,678,900**	**134,132,150**	**2,089,091**	**264,986,584**	**303,223,834**	**90,375,950**	**176,026,136**	**569,625,920**
C1 - C&I New Buildings	5,079,763	25,473	5,717,433	12,043,104	78,111	22,943,884	29,083,834	7,192,485	16,661,464	52,937,783
C1a - C&I New Buildings & Major Renovations	5,079,763	25,473	5,717,433	12,043,104	78,111	22,943,884	29,083,834	7,192,485	16,661,464	52,937,783
C2 - C&I Existing Buildings	43,430,400	16,550,808	57,961,466	122,089,046	2,010,979	242,042,700	274,139,999	83,183,465	159,364,673	516,688,137
C2a - C&I Existing Building Retrofit	31,569,095	1,232,040	36,629,797	77,156,382	561,296	147,148,610	230,326,985	68,989,936	133,880,938	433,197,859
C2b - C&I New & Replacement Equipment	10,109,033	735,538	12,160,762	25,615,221	213,674	48,834,228	43,765,483	14,188,306	25,501,404	83,455,192
C2c - C&I Active Demand Reduction	1,752,273	14,583,231	9,170,907	19,317,443	1,236,009	46,059,862	47,532	5,222	(17,669)	35,085
Grand Total	**55,008,585**	**18,590,365**	**72,042,282**	**151,748,638**	**2,293,996**	**299,683,866**	**326,856,140**	**98,764,265**	**189,031,844**	**614,652,249**

2019-2021 Benefits										
Program	Electric Benefits									
	Capacity						Electric Energy			
	Summer Generation	Capacity DRIPE	Transmission	Distribution	Reliability	Total Capacity Benefits	Electric Energy	Electric Energy DRIPE	Electric Energy Environmental Compliance	Total Electric Energy Benefits
A - Residential	**20,694,567**	**10,464,994**	**27,491,607**	**57,907,853**	**845,896**	**117,404,918**	**90,538,510**	**34,376,870**	**51,165,559**	**176,080,940**
A1 - Residential New Buildings	3,574,304	86,319	3,823,706	8,054,190	42,082	15,580,602	14,352,712	2,666,992	7,602,291	24,621,995
A1a - Residential New Homes & Renovations	3,574,304	86,319	3,823,706	8,054,190	42,082	15,580,602	14,352,712	2,666,992	7,602,291	24,621,995
A2 - Residential Existing Buildings	17,120,263	10,378,675	23,667,901	49,853,663	803,814	101,824,316	76,185,798	31,709,878	43,563,268	151,458,945
A2a - Residential Coordinated Delivery	4,681,174	685,930	5,763,162	12,139,427	109,387	23,379,080	21,010,604	7,954,433	11,892,032	40,857,069
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	10,647,456	3,521,024	14,105,195	29,710,942	340,870	58,325,487	46,250,776	20,788,615	26,505,900	93,545,291
A2d - Residential Behavior	1,371,994	2,679,290	1,807,928	3,808,190	85,137	9,752,538	8,923,508	2,966,871	5,165,753	17,056,132
A2e - Residential Active Demand Reduction	419,639	3,492,431	1,991,615	4,195,105	268,420	10,367,210	911	(42)	(416)	453
B - Income Eligible	**2,567,850**	**303,760**	**3,292,596**	**6,935,469**	**63,219**	**13,162,895**	**20,882,880**	**6,959,810**	**11,884,665**	**39,727,355**
B1 - Income Eligible Existing Buildings	2,567,850	303,760	3,292,596	6,935,469	63,219	13,162,895	20,882,880	6,959,810	11,884,665	39,727,355
B1a - Income Eligible Coordinated Delivery	2,567,850	303,760	3,292,596	6,935,469	63,219	13,162,895	20,882,880	6,959,810	11,884,665	39,727,355
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**223,249,143**	**30,277,960**	**265,355,905**	**558,941,162**	**5,458,538**	**1,083,282,708**	**1,096,419,889**	**269,125,556**	**613,319,557**	**1,978,865,003**
C1 - C&I New Buildings	13,035,440	207,938	15,105,749	31,818,492	217,281	60,384,900	69,875,580	17,905,744	40,436,242	128,217,567
C1a - C&I New Buildings & Major Renovations	13,035,440	207,938	15,105,749	31,818,492	217,281	60,384,900	69,875,580	17,905,744	40,436,242	128,217,567
C2 - C&I Existing Buildings	210,213,703	30,070,023	250,250,156	527,122,670	5,241,257	1,022,897,808	1,026,544,309	251,219,811	572,883,315	1,850,647,436
C2a - C&I Existing Building Retrofit	176,857,701	3,345,730	196,876,176	414,696,626	2,461,012	794,237,245	903,142,751	208,184,147	500,174,632	1,611,501,530
C2b - C&I New & Replacement Equipment	30,388,060	2,023,700	37,764,797	79,547,126	676,517	150,400,200	123,350,704	43,030,016	72,728,462	239,109,182
C2c - C&I Active Demand Reduction	2,967,941	24,700,592	15,609,184	32,878,919	2,103,728	78,260,363	50,854	5,649	(19,779)	36,724
Grand Total	**246,511,559**	**41,046,715**	**296,140,109**	**623,784,485**	**6,367,653**	**1,213,850,520**	**1,207,841,279**	**310,462,236**	**676,369,781**	**2,194,673,297**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

Program	2019 Evaluated Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(2,702,443)**	**(1,304,854)**	**(1,285,026)**	**(5,292,323)**	**83,108,877**	**238,545**	**18,876,487**	**102,223,909**	**26,153,404**	**3,699,194**	**29,852,598**
A1 - Residential New Buildings	19,140	1,852	8,591	29,583	731,349	2,321	162,987	896,658	8,842,350	1,225,956	10,068,305
A1a - Residential New Homes & Renovations	19,140	1,852	8,591	29,583	731,349	2,321	162,987	896,658	8,842,350	1,225,956	10,068,305
A2 - Residential Existing Buildings	(2,721,583)	(1,306,705)	(1,293,617)	(5,321,906)	82,377,527	236,224	18,713,500	101,327,251	17,311,055	2,473,238	19,784,293
A2a - Residential Coordinated Delivery	198,805	22,132	84,363	305,300	67,070,574	195,922	15,338,266	82,604,762	9,956,067	1,440,916	11,396,984
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(2,920,388)	(1,328,837)	(1,377,980)	(5,627,205)	15,215,048	40,096	3,344,292	18,599,436	7,330,841	1,027,591	8,358,431
A2d - Residential Behavior	-	-	-	-	91,906	206	30,942	123,054	24,147	4,731	28,878
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**397,668**	**63,182**	**173,270**	**634,120**	**10,199,884**	**29,788**	**2,334,383**	**12,564,055**	**4,621,303**	**653,458**	**5,274,761**
B1 - Income Eligible Existing Buildings	397,668	63,182	173,270	634,120	10,199,884	29,788	2,334,383	12,564,055	4,621,303	653,458	5,274,761
B1a - Income Eligible Coordinated Delivery	397,668	63,182	173,270	634,120	10,199,884	29,788	2,334,383	12,564,055	4,621,303	653,458	5,274,761
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(22,230,135)**	**(3,344,725)**	**(10,356,522)**	**(35,931,382)**	**(8,556,080)**	**(20,628)**	**(2,554,038)**	**(11,130,746)**	**(9,791,822)**	**(1,389,344)**	**(11,181,166)**
C1 - C&I New Buildings	(3,023,293)	(409,490)	(1,403,777)	(4,836,560)	(413,797)	(1,140)	(120,245)	(535,182)	-	-	-
C1a - C&I New Buildings & Major Renovations	(3,023,293)	(409,490)	(1,403,777)	(4,836,560)	(413,797)	(1,140)	(120,245)	(535,182)	-	-	-
C2 - C&I Existing Buildings	(19,206,842)	(2,935,235)	(8,952,745)	(31,094,822)	(8,142,283)	(19,489)	(2,433,793)	(10,595,564)	(9,791,822)	(1,389,344)	(11,181,166)
C2a - C&I Existing Building Retrofit	(18,849,108)	(2,843,308)	(8,780,670)	(30,473,085)	(6,667,012)	(15,948)	(1,987,470)	(8,670,430)	(9,791,822)	(1,389,344)	(11,181,166)
C2b - C&I New & Replacement Equipment	(357,734)	(91,927)	(172,076)	(621,737)	(1,475,271)	(3,541)	(446,323)	(1,925,135)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(24,534,910)**	**(4,586,397)**	**(11,468,278)**	**(40,589,585)**	**84,752,681**	**247,705**	**18,656,832**	**103,657,218**	**20,982,886**	**2,963,308**	**23,946,194**

Program	2020 Evaluated Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(1,023,149)**	**(587,375)**	**(474,372)**	**(2,084,896)**	**55,676,647**	**166,923**	**12,356,232**	**68,199,802**	**21,104,480**	**2,941,883**	**24,046,363**
A1 - Residential New Buildings	-	-	-	-	382,762	1,238	83,700	467,699	7,222,510	985,933	8,208,443
A1a - Residential New Homes & Renovations	-	-	-	-	382,762	1,238	83,700	467,699	7,222,510	985,933	8,208,443
A2 - Residential Existing Buildings	(1,023,149)	(587,375)	(474,372)	(2,084,896)	55,293,885	165,685	12,272,532	67,732,103	13,881,970	1,955,950	15,837,920
A2a - Residential Coordinated Delivery	228,151	33,531	97,872	359,554	51,289,590	154,043	11,474,833	62,918,465	11,729,036	1,669,510	13,398,546
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(1,251,300)	(620,906)	(572,243)	(2,444,449)	3,998,500	11,630	795,908	4,806,038	2,150,175	285,931	2,436,105
A2d - Residential Behavior	-	-	-	-	5,796	13	1,791	7,600	2,760	509	3,269
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**212,258**	**25,384**	**91,221**	**328,863**	**6,524,727**	**19,644**	**1,459,647**	**8,004,018**	**1,187,706**	**167,834**	**1,355,540**
B1 - Income Eligible Existing Buildings	212,258	25,384	91,221	328,863	6,524,727	19,644	1,459,647	8,004,018	1,187,706	167,834	1,355,540
B1a - Income Eligible Coordinated Delivery	212,258	25,384	91,221	328,863	6,524,727	19,644	1,459,647	8,004,018	1,187,706	167,834	1,355,540
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(344,014,957)**	**(37,005,337)**	**(156,085,117)**	**(537,105,410)**	**(6,324,756)**	**(13,931)**	**(1,864,733)**	**(8,203,420)**	**1,023,155**	**151,290**	**1,174,446**
C1 - C&I New Buildings	(8,667,820)	(1,468,111)	(4,002,644)	(14,138,576)	(466,530)	(1,090)	(134,792)	(602,413)	-	-	-
C1a - C&I New Buildings & Major Renovations	(8,667,820)	(1,468,111)	(4,002,644)	(14,138,576)	(466,530)	(1,090)	(134,792)	(602,413)	-	-	-
C2 - C&I Existing Buildings	(335,347,137)	(35,537,226)	(152,082,472)	(522,966,835)	(5,858,226)	(12,840)	(1,729,941)	(7,601,007)	1,023,155	151,290	1,174,446
C2a - C&I Existing Building Retrofit	(335,351,439)	(35,508,416)	(152,081,915)	(522,941,770)	(5,379,149)	(11,750)	(1,584,458)	(6,975,356)	1,023,155	151,290	1,174,446
C2b - C&I New & Replacement Equipment	4,302	(28,810)	(557)	(25,065)	(479,078)	(1,090)	(145,483)	(625,651)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(344,825,848)**	**(37,567,327)**	**(156,468,268)**	**(538,861,443)**	**55,876,617**	**172,637**	**11,951,146**	**68,000,400**	**23,315,342**	**3,261,008**	**26,576,349**

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

Program	2021 Planned Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(740,630)**	**(302,599)**	**(317,765)**	**(1,360,993)**	**87,451,022**	**262,677**	**19,305,674**	**107,019,372**	**59,633,634**	**8,344,751**	**67,978,386**
A1 - Residential New Buildings	-	-	-	-	182,800	585	39,672	223,057	6,824,665	927,605	7,752,270
A1a - Residential New Homes & Renovations	-	-	-	-	182,800	585	39,672	223,057	6,824,665	927,605	7,752,270
A2 - Residential Existing Buildings	(740,630)	(302,599)	(317,765)	(1,360,993)	87,268,222	262,092	19,266,001	106,796,315	52,808,969	7,417,146	60,226,115
A2a - Residential Coordinated Delivery	1,337	259	660	2,256	60,282,594	185,460	13,219,820	73,687,873	13,659,656	1,908,305	15,567,961
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(741,967)	(302,857)	(318,425)	(1,363,249)	26,742,414	76,134	5,977,466	32,796,014	39,084,417	5,497,717	44,582,135
A2d - Residential Behavior	-	-	-	-	243,215	498	68,716	312,428	64,896	11,124	76,020
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**343,738**	**53,488**	**146,410**	**543,635**	**13,941,463**	**43,169**	**3,057,744**	**17,042,375**	**2,780,527**	**385,627**	**3,166,155**
B1 - Income Eligible Existing Buildings	343,738	53,488	146,410	543,635	13,941,463	43,169	3,057,744	17,042,375	2,780,527	385,627	3,166,155
B1a - Income Eligible Coordinated Delivery	343,738	53,488	146,410	543,635	13,941,463	43,169	3,057,744	17,042,375	2,780,527	385,627	3,166,155
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(92,864,287)**	**(12,373,523)**	**(42,137,082)**	**(147,374,891)**	**(12,801,538)**	**(34,276)**	**(3,575,076)**	**(16,410,890)**	**-**	**-**	**-**
C1 - C&I New Buildings	883,984	123,358	402,176	1,409,517	(1,284,348)	(3,837)	(353,672)	(1,641,857)	-	-	-
C1a - C&I New Buildings & Major Renovations	883,984	123,358	402,176	1,409,517	(1,284,348)	(3,837)	(353,672)	(1,641,857)	-	-	-
C2 - C&I Existing Buildings	(93,748,270)	(12,496,880)	(42,539,258)	(148,784,409)	(11,517,190)	(30,439)	(3,221,405)	(14,769,033)	-	-	-
C2a - C&I Existing Building Retrofit	(93,548,444)	(12,450,509)	(42,447,949)	(148,446,902)	(10,564,771)	(28,096)	(2,953,602)	(13,546,468)	-	-	-
C2b - C&I New & Replacement Equipment	(199,826)	(46,371)	(91,309)	(337,506)	(952,419)	(2,343)	(267,803)	(1,222,565)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(93,261,179)**	**(12,622,633)**	**(42,308,437)**	**(148,192,249)**	**88,590,947**	**271,569**	**18,788,342**	**107,650,857**	**62,414,161**	**8,730,379**	**71,144,540**

Program	2019-2021 Benefits										
	Natural Gas Benefits				Oil Benefits				Propane Benefits		
	Natural Gas	Natural Gas DRIPE	Natural Gas Environmental Compliance	Total Natural Gas Benefits	Oil	Oil DRIPE	Oil Environmental Compliance	Total Oil Benefits	Propane	Propane Environmental Compliance	Total Propane Benefits
A - Residential	**(4,466,222)**	**(2,194,827)**	**(2,077,163)**	**(8,738,212)**	**226,236,546**	**668,145**	**50,538,393**	**277,443,083**	**106,891,519**	**14,985,828**	**121,877,347**
A1 - Residential New Buildings	19,140	1,852	8,591	29,583	1,296,911	4,144	286,360	1,587,414	22,889,525	3,139,494	26,029,019
A1a - Residential New Homes & Renovations	19,140	1,852	8,591	29,583	1,296,911	4,144	286,360	1,587,414	22,889,525	3,139,494	26,029,019
A2 - Residential Existing Buildings	(4,485,362)	(2,196,679)	(2,085,754)	(8,767,795)	224,939,635	664,001	50,252,033	275,855,669	84,001,994	11,846,334	95,848,328
A2a - Residential Coordinated Delivery	428,293	55,922	182,895	667,109	178,642,757	535,424	40,032,919	219,211,100	35,344,759	5,018,732	40,363,490
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	-	-	-	-	-
A2c - Residential Retail	(4,913,655)	(2,252,601)	(2,268,649)	(9,434,904)	45,955,961	127,861	10,117,665	56,201,487	48,565,432	6,811,239	55,376,671
A2d - Residential Behavior	-	-	-	-	340,917	716	101,449	443,082	91,803	16,364	108,167
A2e - Residential Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
B - Income Eligible	**953,664**	**142,054**	**410,900**	**1,506,618**	**30,666,073**	**92,601**	**6,851,774**	**37,610,449**	**8,589,536**	**1,206,920**	**9,796,456**
B1 - Income Eligible Existing Buildings	953,664	142,054	410,900	1,506,618	30,666,073	92,601	6,851,774	37,610,449	8,589,536	1,206,920	9,796,456
B1a - Income Eligible Coordinated Delivery	953,664	142,054	410,900	1,506,618	30,666,073	92,601	6,851,774	37,610,449	8,589,536	1,206,920	9,796,456
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
C - Commercial & Industrial	**(459,109,379)**	**(52,723,584)**	**(208,578,721)**	**(720,411,684)**	**(27,682,374)**	**(68,835)**	**(7,993,847)**	**(35,745,056)**	**(8,768,666)**	**(1,238,054)**	**(10,006,720)**
C1 - C&I New Buildings	(10,807,130)	(1,754,243)	(5,004,246)	(17,565,618)	(2,164,675)	(6,068)	(608,708)	(2,779,451)	-	-	-
C1a - C&I New Buildings & Major Renovations	(10,807,130)	(1,754,243)	(5,004,246)	(17,565,618)	(2,164,675)	(6,068)	(608,708)	(2,779,451)	-	-	-
C2 - C&I Existing Buildings	(448,302,249)	(50,969,341)	(203,574,476)	(702,846,066)	(25,517,699)	(62,768)	(7,385,139)	(32,965,605)	(8,768,666)	(1,238,054)	(10,006,720)
C2a - C&I Existing Building Retrofit	(447,748,991)	(50,802,233)	(203,310,533)	(701,861,757)	(22,610,931)	(55,794)	(6,525,530)	(29,192,254)	(8,768,666)	(1,238,054)	(10,006,720)
C2b - C&I New & Replacement Equipment	(553,258)	(167,108)	(263,942)	(984,309)	(2,906,768)	(6,974)	(859,609)	(3,773,351)	-	-	-
C2c - C&I Active Demand Reduction	-	-	-	-	-	-	-	-	-	-	-
Grand Total	**(462,621,936)**	**(54,776,358)**	**(210,244,984)**	**(727,643,278)**	**229,220,245**	**691,911**	**49,396,320**	**279,308,476**	**106,712,389**	**14,954,694**	**121,667,083**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

	2019 Evaluated Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**3,428,743**	**268,554,081**	**46,940,854**	**23,931,543**	**292,485,624**	**149**
A1 - Residential New Buildings	-	-	23,508,829	3,849,541	1,270,372	24,779,201	3,670
A1a - Residential New Homes & Renovations	-	-	23,508,829	3,849,541	1,270,372	24,779,201	3,670
A2 - Residential Existing Buildings	-	3,428,743	245,045,252	43,091,313	22,661,170	267,706,422	137
A2a - Residential Coordinated Delivery	-	3,412,890	130,789,338	23,485,213	12,779,810	143,569,148	5,389
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	15,853	102,497,945	17,872,535	9,881,360	112,379,306	80
A2d - Residential Behavior	-	-	9,129,489	1,733,565	-	9,129,489	19
A2e - Residential Active Demand Reduction	-	-	2,628,480	-	-	2,628,480	
B - Income Eligible	**-**	**1,675,891**	**44,643,692**	**8,541,311**	**26,582,546**	**71,226,238**	**2,821**
B1 - Income Eligible Existing Buildings	-	1,675,891	44,643,692	8,541,311	26,582,546	71,226,238	2,821
B1a - Income Eligible Coordinated Delivery	-	1,675,891	44,643,692	8,541,311	26,582,546	71,226,238	2,821
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**451,783**	**567,993,823**	**114,556,995**	**65,758,692**	**633,752,515**	**49,947**
C1 - C&I New Buildings	-	(164,594)	44,969,238	9,353,514	583,908	45,553,146	328,243
C1a - C&I New Buildings & Major Renovations	-	(164,594)	44,969,238	9,353,514	583,908	45,553,146	328,243
C2 - C&I Existing Buildings	-	616,377	523,024,585	105,203,481	65,174,784	588,199,369	46,553
C2a - C&I Existing Building Retrofit	-	349,273	331,971,146	72,503,758	63,295,093	395,266,240	91,578
C2b - C&I New & Replacement Equipment	-	267,104	180,119,129	32,700,374	1,879,691	181,998,819	23,669
C2c - C&I Active Demand Reduction	-	-	10,934,310	(652)	-	10,934,310	
Grand Total	**-**	**5,556,417**	**881,191,595**	**170,039,160**	**116,272,781**	**997,464,376**	**483**

	2020 Evaluated Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**4,639,075**	**186,806,071**	**31,166,985**	**18,129,783**	**204,935,854**	**71**
A1 - Residential New Buildings	-	-	19,245,508	3,406,933	1,414,398	20,659,906	3,163
A1a - Residential New Homes & Renovations	-	-	19,245,508	3,406,933	1,414,398	20,659,906	3,163
A2 - Residential Existing Buildings	-	4,639,075	167,560,563	27,760,053	16,715,385	184,275,948	64
A2a - Residential Coordinated Delivery	-	2,914,761	94,211,772	15,283,111	9,904,505	104,116,277	2,837
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	1,724,314	60,615,357	11,175,708	6,810,880	67,426,237	23
A2d - Residential Behavior	-	-	6,881,490	1,301,235	-	6,881,490	
A2e - Residential Active Demand Reduction	-	-	5,851,944	(2)	-	5,851,944	
B - Income Eligible	**-**	**836,734**	**22,335,906**	**4,389,577**	**16,093,265**	**38,429,171**	**2,034**
B1 - Income Eligible Existing Buildings	-	836,734	22,335,906	4,389,577	16,093,265	38,429,171	2,034
B1a - Income Eligible Coordinated Delivery	-	836,734	22,335,906	4,389,577	16,093,265	38,429,171	2,034
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**305,745**	**1,057,921,233**	**150,637,962**	**(47,668,337)**	**1,010,252,896**	**111,477**
C1 - C&I New Buildings	-	183,419	47,657,658	8,759,807	(532,561)	47,125,097	506,996
C1a - C&I New Buildings & Major Renovations	-	183,419	47,657,658	8,759,807	(532,561)	47,125,097	506,996
C2 - C&I Existing Buildings	-	122,325	1,010,263,575	141,878,156	(47,135,776)	963,127,800	107,521
C2a - C&I Existing Building Retrofit	-	31,511	914,734,582	128,117,369	(48,338,983)	866,395,599	250,475
C2b - C&I New & Replacement Equipment	-	90,814	74,261,164	13,762,244	1,203,207	75,464,371	12,928
C2c - C&I Active Demand Reduction	-	-	21,267,830	(1,458)	-	21,267,830	
Grand Total	**-**	**5,781,553**	**1,267,063,209**	**186,194,525**	**(13,445,289)**	**1,253,617,921**	**476**

Program Benefits, Three-Year Total

2019-2021 Benefits

Eversource Electric

June 4, 2021

	2021 Planned Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**2,408,706**	**239,184,448**	**36,504,778**	**16,742,782**	**255,927,230**	**167**
A1 - Residential New Buildings	-	-	25,094,276	3,780,262	1,548,663	26,642,939	3,016
A1a - Residential New Homes & Renovations	-	-	25,094,276	3,780,262	1,548,663	26,642,939	3,016
A2 - Residential Existing Buildings	-	2,408,706	214,090,172	32,724,516	15,194,119	229,284,291	150
A2a - Residential Coordinated Delivery	-	2,384,260	108,188,649	18,358,253	12,094,422	120,283,071	5,452
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	24,446	92,665,344	12,117,912	3,099,697	95,765,041	116
A2d - Residential Behavior	-	-	11,348,940	2,248,766	-	11,348,940	19
A2e - Residential Active Demand Reduction	-	-	1,887,239	(415)	-	1,887,239	
B - Income Eligible	**-**	**888,689**	**38,225,487**	**7,423,370**	**26,578,000**	**64,803,488**	**3,133**
B1 - Income Eligible Existing Buildings	-	888,689	38,225,487	7,423,370	26,578,000	64,803,488	3,133
B1a - Income Eligible Coordinated Delivery	-	888,689	38,225,487	7,423,370	26,578,000	64,803,488	3,133
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**36,345**	**670,863,068**	**130,313,978**	**76,415,393**	**747,278,461**	**71,376**
C1 - C&I New Buildings	-	-	75,649,327	16,709,968	2,596,515	78,245,843	397,360
C1a - C&I New Buildings & Major Renovations	-	-	75,649,327	16,709,968	2,596,515	78,245,843	397,360
C2 - C&I Existing Buildings	-	36,345	595,213,740	113,604,010	73,818,878	669,032,618	64,637
C2a - C&I Existing Building Retrofit	-	3,528	418,356,627	88,479,388	73,707,138	492,063,765	108,946
C2b - C&I New & Replacement Equipment	-	32,817	130,762,166	25,142,291	111,740	130,873,906	24,357
C2c - C&I Active Demand Reduction	-	-	46,094,948	(17,669)	-	46,094,948	
Grand Total	**-**	**3,333,740**	**948,273,003**	**174,242,127**	**119,736,175**	**1,068,009,178**	**651**

	2019-2021 Benefits						
Program	**Wood**	**Water**	**Total Energy Benefits**	**Total Environmental Compliance Benefits**	**Non-Energy Impacts**	**Total TRC Test Benefits**	**Total Resource Benefits per Participant**
A - Residential	**-**	**10,476,524**	**694,544,599**	**114,612,617**	**58,804,108**	**753,348,707**	**118**
A1 - Residential New Buildings	-	-	67,848,612	11,036,736	4,233,433	72,082,046	3,260
A1a - Residential New Homes & Renovations	-	-	67,848,612	11,036,736	4,233,433	72,082,046	3,260
A2 - Residential Existing Buildings	-	10,476,524	626,695,987	103,575,882	54,570,674	681,266,661	107
A2a - Residential Coordinated Delivery	-	8,711,911	333,189,759	57,126,577	34,778,737	367,968,496	4,309
A2b - Residential Conservation Services (RCS)	-	-	-	-	-	-	
A2c - Residential Retail	-	1,764,613	255,778,646	41,166,156	19,791,938	275,570,584	55
A2d - Residential Behavior	-	-	27,359,919	5,283,565	-	27,359,919	25
A2e - Residential Active Demand Reduction	-	-	10,367,663	(416)	-	10,367,663	
B - Income Eligible	**-**	**3,401,314**	**105,205,085**	**20,354,259**	**69,253,811**	**174,458,896**	**2,697**
B1 - Income Eligible Existing Buildings	-	3,401,314	105,205,085	20,354,259	69,253,811	174,458,896	2,697
B1a - Income Eligible Coordinated Delivery	-	3,401,314	105,205,085	20,354,259	69,253,811	174,458,896	2,697
B1b - Income Eligible Active Demand Reduction	-	-	-	-	-	-	
C - Commercial & Industrial	**-**	**793,872**	**2,296,778,123**	**395,508,935**	**94,505,748**	**2,391,283,871**	**75,899**
C1 - C&I New Buildings	-	18,826	168,276,223	34,823,288	2,647,862	170,924,085	399,346
C1a - C&I New Buildings & Major Renovations	-	18,826	168,276,223	34,823,288	2,647,862	170,924,085	399,346
C2 - C&I Existing Buildings	-	775,047	2,128,501,900	360,685,647	91,857,886	2,220,359,786	71,331
C2a - C&I Existing Building Retrofit	-	384,311	1,665,062,355	289,100,516	88,663,249	1,753,725,603	149,776
C2b - C&I New & Replacement Equipment	-	390,735	385,142,458	71,604,910	3,194,637	388,337,096	20,571
C2c - C&I Active Demand Reduction	-	-	78,297,087	(19,779)	-	78,297,087	
Grand Total	**-**	**14,671,710**	**3,096,527,807**	**530,475,811**	**222,563,667**	**3,319,091,475**	**521**

Notes

• Benefits for each year are presented in real dollars (2019$).

• Total Energy Benefits are the sum of electric benefits, natural gas benefits, and other resource benefits.

Cost-Effectiveness, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**1.85**	**106,090,835**	**230,439,443**	**98,162,807**	**3,757,553**	**22,428,248**	**124,348,608**
A1 - Residential New Buildings	1.32	6,465,970	26,719,043	9,386,299	425,019	10,441,754	20,253,073
A1a - Residential New Homes & Renovations	1.32	6,465,970	26,719,043	9,386,299	425,019	10,441,754	20,253,073
A2 - Residential Existing Buildings	2.38	118,089,635	203,720,400	70,311,737	3,332,534	11,986,494	85,630,764
A2a - Residential Coordinated Delivery	2.79	71,846,538	111,949,561	29,590,540	1,863,129	8,649,354	40,103,023
A2b - Residential Conservation Services (RCS)	0.00	(6,806,411)	-	6,806,411	-	-	6,806,411
A2c - Residential Retail	2.31	44,983,886	79,313,628	29,746,897	1,245,705	3,337,140	34,329,742
A2d - Residential Behavior	3.18	7,597,327	11,086,568	3,307,925	181,316	-	3,489,242
A2e - Residential Active Demand Reduction	1.52	468,295	1,370,642	859,963	42,385	-	902,347
A3 - Residential Hard-to-Measure	0.00	(18,464,771)	-	18,464,771	-	-	18,464,771
B - Income Eligible	**2.20**	**38,537,503**	**70,620,558**	**31,002,639**	**1,081,101**	**(684)**	**32,083,055**
B1 - Income Eligible Existing Buildings	2.29	39,734,610	70,620,558	29,805,531	1,081,101	(684)	30,885,948
B1a - Income Eligible Coordinated Delivery	2.29	39,734,610	70,620,558	29,805,531	1,081,101	(684)	30,885,948
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(1,197,107)	-	1,197,107	-	-	1,197,107
C - Commercial & Industrial	**3.36**	**740,534,868**	**1,054,439,513**	**181,911,463**	**18,875,232**	**113,117,950**	**313,904,645**
C1 - C&I New Buildings	4.58	59,261,701	75,796,288	11,462,914	1,333,938	3,737,735	16,534,587
C1a - C&I New Buildings & Major Renovations	4.58	59,261,701	75,796,288	11,462,914	1,333,938	3,737,735	16,534,587
C2 - C&I Existing Buildings	3.35	686,325,449	978,643,224	165,396,267	17,541,295	109,380,214	292,317,776
C2a - C&I Existing Building Retrofit	3.33	567,336,147	810,345,232	133,157,432	14,171,554	95,680,099	243,009,085
C2b - C&I New & Replacement Equipment	3.43	100,244,300	141,483,856	25,080,622	2,458,819	13,700,116	41,239,557
C2c - C&I Active Demand Reduction	3.32	18,745,001	26,814,136	7,158,214	910,921	-	8,069,134
C3 - C&I Hard-to-Measure	0.00	(5,052,282)	-	5,052,282	-	-	5,052,282
Grand Total	**2.88**	**885,163,206**	**1,355,499,514**	**311,076,908**	**23,713,887**	**135,545,513**	**470,336,308**

Cost-Effectiveness, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Evaluated Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**1.74**	**87,139,201**	**204,935,854**	**103,201,339**	**3,259,648**	**11,335,666**	**117,796,653**
A1 - Residential New Buildings	2.92	13,594,534	20,659,906	6,539,150	337,717	188,505	7,065,372
A1a - Residential New Homes & Renovations	2.92	13,594,534	20,659,906	6,539,150	337,717	188,505	7,065,372
A2 - Residential Existing Buildings	1.92	88,201,595	184,275,948	82,005,260	2,921,931	11,147,161	96,074,353
A2a - Residential Coordinated Delivery	2.39	60,544,876	104,116,277	29,700,114	1,730,147	12,141,140	43,571,402
A2b - Residential Conservation Services (RCS)	0.00	(5,693,343)	-	5,693,343	-	-	5,693,343
A2c - Residential Retail	1.51	22,771,344	67,426,237	44,749,640	899,232	(993,979)	44,654,893
A2d - Residential Behavior	24.17	6,596,776	6,881,490	154,682	130,031	-	284,713
A2e - Residential Active Demand Reduction	3.13	3,981,942	5,851,944	1,707,482	162,521	-	1,870,003
A3 - Residential Hard-to-Measure	0.00	(14,656,928)	-	14,656,928	-	-	14,656,928
B - Income Eligible	**1.94**	**18,645,399**	**38,429,171**	**19,208,760**	**575,011**	**-**	**19,783,772**
B1 - Income Eligible Existing Buildings	2.04	19,558,082	38,429,171	18,296,077	575,011	-	18,871,089
B1a - Income Eligible Coordinated Delivery	2.04	19,558,082	38,429,171	18,296,077	575,011	-	18,871,089
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(912,683)	-	912,683	-	-	912,683
C - Commercial & Industrial	**3.86**	**748,759,961**	**1,010,252,896**	**151,151,145**	**18,238,280**	**92,103,511**	**261,492,935**
C1 - C&I New Buildings	5.39	38,384,392	47,125,097	5,832,580	849,080	2,059,045	8,740,705
C1a - C&I New Buildings & Major Renovations	5.39	38,384,392	47,125,097	5,832,580	849,080	2,059,045	8,740,705
C2 - C&I Existing Buildings	3.89	715,565,672	963,127,800	140,128,462	17,389,200	90,044,466	247,562,127
C2a - C&I Existing Building Retrofit	4.11	655,341,096	866,395,599	105,971,786	15,621,272	89,461,445	211,054,503
C2b - C&I New & Replacement Equipment	2.35	43,324,835	75,464,371	30,379,239	1,177,276	583,021	32,139,536
C2c - C&I Active Demand Reduction	4.87	16,899,741	21,267,830	3,777,437	590,652	-	4,368,088
C3 - C&I Hard-to-Measure	0.00	(5,190,103)	-	5,190,103	-	-	5,190,103
Grand Total	**3.14**	**854,544,561**	**1,253,617,921**	**273,561,244**	**22,072,939**	**103,439,177**	**399,073,360**

Cost-Effectiveness, Plan Year Summary

2020 Planned vs. Evaluated

Eversource Electric

June 4, 2021

2020 Planned v. Evaluated Total Resource Cost Test (2019$) Variances (%)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**-6%**	**-18%**	**-11%**	**5%**	**-13%**	**-49%**	**-5%**
A1 - Residential New Buildings	122%	110%	-23%	-30%	-21%	-98%	-65%
A1a - Residential New Homes & Renovations	122%	110%	-23%	-30%	-21%	-98%	-65%
A2 - Residential Existing Buildings	-19%	-25%	-10%	17%	-12%	-7%	12%
A2a - Residential Coordinated Delivery	-14%	-16%	-7%	0%	-7%	40%	9%
A2b - Residential Conservation Services (RCS)		-16%		-16%			-16%
A2c - Residential Retail	-35%	-49%	-15%	50%	-28%	-130%	30%
A2d - Residential Behavior	661%	-13%	-38%	-95%	-28%		-92%
A2e - Residential Active Demand Reduction	106%	750%	327%	99%	283%		107%
A3 - Residential Hard-to-Measure		-21%		-21%			-21%
B - Income Eligible	**-12%**	**-52%**	**-46%**	**-38%**	**-47%**	**-100%**	**-38%**
B1 - Income Eligible Existing Buildings	-11%	-51%	-46%	-39%	-47%	-100%	-39%
B1a - Income Eligible Coordinated Delivery	-11%	-51%	-46%	-39%	-47%	-100%	-39%
B1b - Income Eligible Active Demand Reduction							
B2 - Income Eligible Hard-to-Measure		-24%		-24%			-24%
C - Commercial & Industrial	**15%**	**1%**	**-4%**	**-17%**	**-3%**	**-19%**	**-17%**
C1 - C&I New Buildings	18%	-35%	-38%	-49%	-36%	-45%	-47%
C1a - C&I New Buildings & Major Renovations	18%	-35%	-38%	-49%	-36%	-45%	-47%
C2 - C&I Existing Buildings	16%	4%	-2%	-15%	-1%	-18%	-15%
C2a - C&I Existing Building Retrofit	23%	16%	7%	-20%	10%	-6%	-13%
C2b - C&I New & Replacement Equipment	-32%	-57%	-47%	21%	-52%	-96%	-22%
C2c - C&I Active Demand Reduction	47%	-10%	-21%	-47%	-35%		-46%
C3 - C&I Hard-to-Measure		3%		3%			3%
Grand Total	**9%**	**-3%**	**-8%**	**-12%**	**-7%**	**-24%**	**-15%**

Notes

• Costs and benefits for each year are presented in real dollars (2019$).

• The Total TRC Costs are the sum of the Total Program Costs, Performance Incentives, and Participant Costs.

• The plan year variances provided above are intended to indicate the Program Administrator's performance in the plan year only. The variances used to determine significant variances are provided separately. The variances above and the significant variances use different calculations to determine variances on an annual basis and over the three-year term, respectively.

Cost-Effectiveness, Three-Year Total

2019-2021 Total Resource Cost Test (2019$)

Eversource Electric

June 4, 2021

2019 Evaluated Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**2.03**	**148,677,600**	**292,485,624**	**117,915,389**	**4,765,495**	**21,127,139**	**143,808,023**
A1 - Residential New Buildings	2.31	14,040,238	24,779,201	6,468,625	413,391	3,856,947	10,738,964
A1a - Residential New Homes & Renovations	2.31	14,040,238	24,779,201	6,468,625	413,391	3,856,947	10,738,964
A2 - Residential Existing Buildings	2.33	152,565,696	267,706,422	93,518,430	4,352,105	17,270,192	115,140,726
A2a - Residential Coordinated Delivery	2.99	95,568,082	143,569,148	37,594,055	2,394,183	8,012,828	48,001,066
A2b - Residential Conservation Services (RCS)	0.00	(6,591,304)	-	6,591,304	-	-	6,591,304
A2c - Residential Retail	1.99	55,980,285	112,379,306	45,402,991	1,738,665	9,257,364	56,399,021
A2d - Residential Behavior	2.81	5,886,133	9,129,489	3,097,099	146,258	-	3,243,356
A2e - Residential Active Demand Reduction	2.90	1,722,501	2,628,480	832,980	72,998	-	905,979
A3 - Residential Hard-to-Measure	0.00	(17,928,334)	-	17,928,334	-	-	17,928,334
B - Income Eligible	**2.15**	**38,100,425**	**71,226,238**	**32,043,930**	**1,081,883**	**-**	**33,125,813**
B1 - Income Eligible Existing Buildings	2.21	38,997,626	71,226,238	31,146,728	1,081,883	-	32,228,612
B1a - Income Eligible Coordinated Delivery	2.21	38,997,626	71,226,238	31,146,728	1,081,883	-	32,228,612
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(897,202)	-	897,202	-	-	897,202
C - Commercial & Industrial	**2.63**	**393,023,872**	**633,752,515**	**133,105,830**	**11,006,472**	**96,616,341**	**240,728,642**
C1 - C&I New Buildings	4.03	34,260,228	45,553,146	8,137,591	791,776	2,363,551	11,292,918
C1a - C&I New Buildings & Major Renovations	4.03	34,260,228	45,553,146	8,137,591	791,776	2,363,551	11,292,918
C2 - C&I Existing Buildings	2.63	364,578,481	588,199,369	119,153,402	10,214,696	94,252,790	223,620,887
C2a - C&I Existing Building Retrofit	2.36	227,985,136	395,266,240	91,793,296	6,690,751	68,797,056	167,281,104
C2b - C&I New & Replacement Equipment	3.34	127,523,365	181,998,819	25,799,445	3,220,277	25,455,733	54,475,454
C2c - C&I Active Demand Reduction	5.87	9,069,980	10,934,310	1,560,661	303,668	-	1,864,329
C3 - C&I Hard-to-Measure	0.00	(5,814,837)	-	5,814,837	-	-	5,814,837
Grand Total	**2.39**	**579,801,897**	**997,464,376**	**283,065,149**	**16,853,851**	**117,743,480**	**417,662,479**

Cost-Effectiveness, Three-Year Total

2019-2021 Total Resource Cost Test (2019$)

Eversource Electric

June 4, 2021

2020 Evaluated Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**1.74**	**87,139,201**	**204,935,854**	**103,201,339**	**3,259,648**	**11,335,666**	**117,796,653**
A1 - Residential New Buildings	2.92	13,594,534	20,659,906	6,539,150	337,717	188,505	7,065,372
A1a - Residential New Homes & Renovations	2.92	13,594,534	20,659,906	6,539,150	337,717	188,505	7,065,372
A2 - Residential Existing Buildings	1.92	88,201,595	184,275,948	82,005,260	2,921,931	11,147,161	96,074,353
A2a - Residential Coordinated Delivery	2.39	60,544,876	104,116,277	29,700,114	1,730,147	12,141,140	43,571,402
A2b - Residential Conservation Services (RCS)	0.00	(5,693,343)	-	5,693,343	-	-	5,693,343
A2c - Residential Retail	1.51	22,771,344	67,426,237	44,749,640	899,232	(993,979)	44,654,893
A2d - Residential Behavior	24.17	6,596,776	6,881,490	154,682	130,031	-	284,713
A2e - Residential Active Demand Reduction	3.13	3,981,942	5,851,944	1,707,482	162,521	-	1,870,003
A3 - Residential Hard-to-Measure	0.00	(14,656,928)	-	14,656,928	-	-	14,656,928
B - Income Eligible	**1.94**	**18,645,399**	**38,429,171**	**19,208,760**	**575,011**	**-**	**19,783,772**
B1 - Income Eligible Existing Buildings	2.04	19,558,082	38,429,171	18,296,077	575,011	-	18,871,089
B1a - Income Eligible Coordinated Delivery	2.04	19,558,082	38,429,171	18,296,077	575,011	-	18,871,089
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(912,683)	-	912,683	-	-	912,683
C - Commercial & Industrial	**3.86**	**748,759,961**	**1,010,252,896**	**151,151,145**	**18,238,280**	**92,103,511**	**261,492,935**
C1 - C&I New Buildings	5.39	38,384,392	47,125,097	5,832,580	849,080	2,059,045	8,740,705
C1a - C&I New Buildings & Major Renovations	5.39	38,384,392	47,125,097	5,832,580	849,080	2,059,045	8,740,705
C2 - C&I Existing Buildings	3.89	715,565,672	963,127,800	140,128,462	17,389,200	90,044,466	247,562,127
C2a - C&I Existing Building Retrofit	4.11	655,341,096	866,395,599	105,971,786	15,621,272	89,461,445	211,054,503
C2b - C&I New & Replacement Equipment	2.35	43,324,835	75,464,371	30,379,239	1,177,276	583,021	32,139,536
C2c - C&I Active Demand Reduction	4.87	16,899,741	21,267,830	3,777,437	590,652	-	4,368,088
C3 - C&I Hard-to-Measure	0.00	(5,190,103)	-	5,190,103	-	-	5,190,103
Grand Total	**3.14**	**854,544,561**	**1,253,617,921**	**273,561,244**	**22,072,939**	**103,439,177**	**399,073,360**

Cost-Effectiveness, Three-Year Total

2019-2021 Total Resource Cost Test (2019$)

Eversource Electric

June 4, 2021

2021 Planned Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**1.96**	**125,515,743**	**255,927,230**	**96,806,273**	**4,240,260**	**29,364,954**	**130,411,486**
A1 - Residential New Buildings	1.35	6,839,070	26,642,939	9,177,353	423,907	10,202,609	19,803,869
A1a - Residential New Homes & Renovations	1.35	6,839,070	26,642,939	9,177,353	423,907	10,202,609	19,803,869
A2 - Residential Existing Buildings	2.48	136,878,583	229,284,291	69,427,010	3,816,353	19,162,345	92,405,708
A2a - Residential Coordinated Delivery	2.91	78,913,529	120,283,071	30,081,854	2,008,844	9,278,843	41,369,541
A2b - Residential Conservation Services (RCS)	0.00	(6,632,333)	-	6,632,333	-	-	6,632,333
A2c - Residential Retail	2.40	55,871,007	95,765,041	28,448,839	1,561,693	9,883,502	39,894,034
A2d - Residential Behavior	3.31	7,920,629	11,348,940	3,242,155	186,156	-	3,428,311
A2e - Residential Active Demand Reduction	1.75	805,751	1,887,239	1,021,828	59,660	-	1,081,488
A3 - Residential Hard-to-Measure	0.00	(18,201,909)	-	18,201,909	-	-	18,201,909
B - Income Eligible	**2.19**	**35,203,947**	**64,803,488**	**28,611,186**	**988,355**	**-**	**29,599,541**
B1 - Income Eligible Existing Buildings	2.28	36,392,896	64,803,488	27,422,237	988,355	-	28,410,591
B1a - Income Eligible Coordinated Delivery	2.28	36,392,896	64,803,488	27,422,237	988,355	-	28,410,591
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(1,188,949)	-	1,188,949	-	-	1,188,949
C - Commercial & Industrial	**2.47**	**444,444,330**	**747,278,461**	**170,244,197**	**13,462,464**	**119,127,471**	**302,834,131**
C1 - C&I New Buildings	4.74	61,748,759	78,245,843	11,426,330	1,374,971	3,695,782	16,497,083
C1a - C&I New Buildings & Major Renovations	4.74	61,748,759	78,245,843	11,426,330	1,374,971	3,695,782	16,497,083
C2 - C&I Existing Buildings	2.38	387,828,585	669,032,618	153,684,852	12,087,492	115,431,688	281,204,033
C2a - C&I Existing Building Retrofit	2.14	262,544,406	492,063,765	116,364,253	8,274,027	104,881,078	229,519,358
C2b - C&I New & Replacement Equipment	3.47	93,199,324	130,873,906	24,872,441	2,251,530	10,550,610	37,674,582
C2c - C&I Active Demand Reduction	3.29	32,084,855	46,094,948	12,448,158	1,561,935	-	14,010,093
C3 - C&I Hard-to-Measure	0.00	(5,133,015)	-	5,133,015	-	-	5,133,015
Grand Total	**2.31**	**605,164,020**	**1,068,009,178**	**295,661,655**	**18,691,079**	**148,492,424**	**462,845,158**

Cost-Effectiveness, Three-Year Total

2019-2021 Total Resource Cost Test (2019$)

Eversource Electric

June 4, 2021

2019-2021 Total Resource Cost Test (2019$)							
Program	Benefit-Cost Ratio	Net Benefits	Total TRC Test Benefits	Costs			
				Total Program Costs	Performance Incentive	Participant Costs	Total TRC Test Costs
A - Residential	**1.92**	**361,332,544**	**753,348,707**	**317,923,000**	**12,265,403**	**61,827,759**	**392,016,163**
A1 - Residential New Buildings	1.92	34,473,841	72,082,046	22,185,129	1,175,015	14,248,061	37,608,204
A1a - Residential New Homes & Renovations	1.92	34,473,841	72,082,046	22,185,129	1,175,015	14,248,061	37,608,204
A2 - Residential Existing Buildings	2.24	377,645,875	681,266,661	244,950,700	11,090,389	47,579,698	303,620,787
A2a - Residential Coordinated Delivery	2.77	235,026,487	367,968,496	97,376,023	6,133,174	29,432,811	132,942,009
A2b - Residential Conservation Services (RCS)	0.00	(18,916,979)	-	18,916,979	-	-	18,916,979
A2c - Residential Retail	1.96	134,622,636	275,570,584	118,601,470	4,199,591	18,146,887	140,947,948
A2d - Residential Behavior	3.93	20,403,538	27,359,919	6,493,936	462,444	-	6,956,381
A2e - Residential Active Demand Reduction	2.69	6,510,194	10,367,663	3,562,291	295,179	-	3,857,470
A3 - Residential Hard-to-Measure	0.00	(50,787,172)	-	50,787,172	-	-	50,787,172
B - Income Eligible	**2.11**	**91,949,770**	**174,458,896**	**79,863,877**	**2,645,249**	**-**	**82,509,126**
B1 - Income Eligible Existing Buildings	2.19	94,948,605	174,458,896	76,865,042	2,645,249	-	79,510,292
B1a - Income Eligible Coordinated Delivery	2.19	94,948,605	174,458,896	76,865,042	2,645,249	-	79,510,292
B1b - Income Eligible Active Demand Reduction		-	-	-	-	-	-
B2 - Income Eligible Hard-to-Measure	0.00	(2,998,834)	-	2,998,834	-	-	2,998,834
C - Commercial & Industrial	**2.97**	**1,586,228,163**	**2,391,283,871**	**454,501,171**	**42,707,215**	**307,847,322**	**805,055,709**
C1 - C&I New Buildings	4.68	134,393,379	170,924,085	25,396,501	3,015,827	8,118,379	36,530,707
C1a - C&I New Buildings & Major Renovations	4.68	134,393,379	170,924,085	25,396,501	3,015,827	8,118,379	36,530,707
C2 - C&I Existing Buildings	2.95	1,467,972,739	2,220,359,786	412,966,715	39,691,388	299,728,944	752,387,047
C2a - C&I Existing Building Retrofit	2.89	1,145,870,639	1,753,725,603	314,129,335	30,586,050	263,139,580	607,854,965
C2b - C&I New & Replacement Equipment	3.12	264,047,524	388,337,096	81,051,125	6,649,083	36,589,364	124,289,572
C2c - C&I Active Demand Reduction	3.87	58,054,576	78,297,087	17,786,256	2,456,255	-	20,242,511
C3 - C&I Hard-to-Measure	0.00	(16,137,955)	-	16,137,955	-	-	16,137,955
Grand Total	**2.59**	**2,039,510,478**	**3,319,091,475**	**852,288,048**	**57,617,868**	**369,675,081**	**1,279,580,997**

Notes

- Costs and benefits for each year are presented in real dollars (2019$).
- The Total TRC Costs are the sum of the Total Program Costs, Performance Incentives, and Participant Costs.

Core Initiatives, Plan Year Summary

Residential Programs

Eversource

June 4, 2021

A1 - Residential New Buildings, 2019 Summary

A1a - Residential New Homes & Renovations

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	5,764	6,008	5,180	4%	-10%	-14%
Lifetime Energy	MWh	82,966	96,700	66,914	17%	-19%	-31%
Annual Natural Gas	Therms	-	-	-			
Lifetime Natural Gas	Therms	-	-	-			
Total Benefits	2019$	26,719,043	41,901,106	20,659,906	57%	-23%	-51%
Total Program Costs	nominal$	9,605,000	6,691,512	6,691,512	-30%	-30%	0%
Total Resource Costs	2019$	20,724,969	7,229,995	7,229,995	-65%	-65%	0%
Benefit Cost Ratio	B/C	1.32	5.93	2.92	350%	122%	-51%

A2 - Residential Existing Buildings, 2019 Summary

A2a - Residential Coordinated Delivery

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	24,181	17,469	15,588	-28%	-36%	-11%
Lifetime Energy	MWh	107,497	59,734	58,075	-44%	-46%	-3%
Annual Natural Gas	Therms	237	21,901	16,885	9161%	7040%	-23%
Lifetime Natural Gas	Therms	1,656	298,269	249,909	17917%	14996%	-16%
Total Benefits	2019$	111,949,561	108,198,502	104,116,277	-3%	-7%	-4%
Total Program Costs	nominal$	30,280,000	30,392,127	30,392,127	0%	0%	0%
Total Resource Costs	2019$	41,037,423	44,586,615	44,586,615	9%	9%	0%
Benefit Cost Ratio	B/C	2.79	2.48	2.39	-11%	-14%	-4%

A2c - Residential Retail

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	41,513	89,755	92,709	116%	123%	3%
Lifetime Energy	MWh	228,386	525,281	296,785	130%	30%	-43%
Annual Natural Gas	Therms	(403,998)	(817,805)	(887,444)	102%	120%	9%
Lifetime Natural Gas	Therms	(2,023,685)	(4,015,178)	(1,409,327)	98%	-30%	-65%
Total Benefits	2019$	79,313,628	99,972,386	67,426,237	26%	-15%	-33%
Total Program Costs	nominal$	30,440,000	45,792,306	45,792,306	50%	50%	0%
Total Resource Costs	2019$	35,129,625	45,695,352	45,695,352	30%	30%	0%
Benefit Cost Ratio	B/C	2.31	2.24	1.51	-3%	-35%	-33%

A2d - Residential Behavior

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	55,370	-	35,649	-100%	-36%	
Lifetime Energy	MWh	55,370	-	35,649	-100%	-36%	
Annual Natural Gas	Therms	-	-	-			
Lifetime Natural Gas	Therms	-	-	-			
Total Benefits	2019$	11,086,568	-	6,881,490	-100%	-38%	
Total Program Costs	nominal$	3,385,000	158,286	158,286	-95%	-95%	0%
Total Resource Costs	2019$	3,570,541	291,347	291,347	-92%	-92%	0%
Benefit Cost Ratio	B/C	3.18	-	24.17	-100%	661%	

A2e - Residential Active Demand Reduction

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	-	-	-			
Lifetime Energy	MWh	-	-	-			
Annual Natural Gas	Therms	-	-	-			
Lifetime Natural Gas	Therms	-	-	-			
Total Benefits	2019$	1,370,642	5,851,953	5,851,944	327%	327%	0%
Total Program Costs	nominal$	880,000	1,747,266	1,747,266	99%	99%	0%
Total Resource Costs	2019$	923,372	1,913,574	1,913,574	107%	107%	0%
Benefit Cost Ratio	B/C	1.52	3.13	3.13	106%	106%	0%

Core Initiatives, Plan Year Summary

Income Eligible Programs

Eversource

June 4, 2021

B1 - Income Eligible Existing Buildings, 2019 Summary							
B1a - Income Eligible Coordinated Delivery							
Metric	**Units**	**Planned**	**Preliminary**	**Evaluated**	**Plan v Preliminary**	**Plan v Evaluated**	**Preliminary v Evaluated**
Annual Energy	MWh	14,114	9,870	9,902	-30%	-30%	0%
Lifetime Energy	MWh	123,558	75,116	74,920	-39%	-39%	0%
Annual Natural Gas	Therms	28,490	13,319	13,319	-53%	-53%	0%
Lifetime Natural Gas	Therms	373,030	174,329	234,605	-53%	-37%	35%
Total Benefits	2019$	70,620,558	37,978,531	38,429,171	-46%	-46%	1%
Total Program Costs	nominal$	30,500,000	18,722,376	18,722,376	-39%	-39%	0%
Total Resource Costs	2019$	31,605,590	19,310,785	19,310,785	-39%	-39%	0%
Benefit Cost Ratio	B/C	2.29	2.01	2.04	-12%	-11%	1%

B1b - Income Eligible Active Demand Reduction							
Metric	**Units**	**Planned**	**Preliminary**	**Evaluated**	**Plan v Preliminary**	**Plan v Evaluated**	**Preliminary v Evaluated**
Annual Energy	MWh	-	-	-			
Lifetime Energy	MWh	-	-	-			
Annual Natural Gas	Therms	-	-	-			
Lifetime Natural Gas	Therms	-	-	-			
Total Benefits	2019$	-	-	-			
Total Program Costs	nominal$	-	-	-			
Total Resource Costs	2019$	-	-	-			
Benefit Cost Ratio	B/C						

Core Initiatives, Plan Year Summary

C&I Programs

Eversource

June 4, 2021

C1 - C&I New Buildings, 2019 Summary

C1a - C&I New Buildings & Major Renovations

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	28,249	25,597	25,376	-9%	-10%	-1%
Lifetime Energy	MWh	467,827	374,990	372,253	-20%	-20%	-1%
Annual Natural Gas	Therms	58,490	(21,715)	(691,880)	-137%	-1283%	3086%
Lifetime Natural Gas	Therms	1,046,210	(345,614)	(10,248,517)	-133%	-1080%	2865%
Total Benefits	2019$	75,796,288	40,038,031	47,125,097	-47%	-38%	18%
Total Program Costs	nominal$	11,730,000	5,968,479	5,968,479	-49%	-49%	0%
Total Resource Costs	2019$	16,919,843	8,944,364	8,944,364	-47%	-47%	0%
Benefit Cost Ratio	B/C	4.58	4.58	5.39	0%	18%	18%

C2 - C&I Existing Buildings, 2019 Summary

C2a - C&I Existing Building Retrofit

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	491,211	407,913	403,164	-17%	-18%	-1%
Lifetime Energy	MWh	7,907,175	8,224,606	8,122,291	4%	3%	-1%
Annual Natural Gas	Therms	(15,609,553)	(516,658)	(16,457,118)	-97%	5%	3085%
Lifetime Natural Gas	Therms	(305,659,457)	(5,463,214)	(396,781,714)	-98%	30%	7163%
Total Benefits	2019$	810,345,232	866,827,021	866,395,599	7%	7%	0%
Total Program Costs	nominal$	136,260,000	108,440,929	108,440,929	-20%	-20%	0%
Total Resource Costs	2019$	248,671,197	215,972,073	215,972,073	-13%	-13%	0%
Benefit Cost Ratio	B/C	3.33	4.11	4.11	23%	23%	0%

C2b - C&I New & Replacement Equipment

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	65,740	44,000	47,627	-33%	-28%	8%
Lifetime Energy	MWh	772,677	457,787	391,706	-41%	-49%	-14%
Annual Natural Gas	Therms	(27,761)	(26,973)	(17,384)	-3%	-37%	-36%
Lifetime Natural Gas	Therms	(274,537)	(235,255)	2,544	-14%	-101%	-101%
Total Benefits	2019$	141,483,856	81,547,000	75,464,371	-42%	-47%	-7%
Total Program Costs	nominal$	25,665,000	31,087,075	31,087,075	21%	21%	0%
Total Resource Costs	2019$	42,200,438	32,888,387	32,888,387	-22%	-22%	0%
Benefit Cost Ratio	B/C	3.43	2.54	2.35	-26%	-32%	-7%

C2c - C&I Active Demand Reduction

Metric	Units	Planned	Preliminary	Evaluated	Plan v Preliminary	Plan v Evaluated	Preliminary v Evaluated
Annual Energy	MWh	-	-	-			
Lifetime Energy	MWh	-	-	-			
Annual Natural Gas	Therms	-	-	-			
Lifetime Natural Gas	Therms	-	-	-			
Total Benefits	2019$	26,814,136	26,204,666	21,267,830	-2%	-21%	-19%
Total Program Costs	nominal$	7,325,000	3,865,451	3,865,451	-47%	-47%	0%
Total Resource Costs	2019$	8,257,145	4,469,865	4,469,865	-46%	-46%	0%
Benefit Cost Ratio	B/C	3.32	6.00	4.87	81%	47%	-19%

Core Initiatives, Three-Year Total

Residential Programs

Eversource

June 4, 2021

A1 - Residential New Buildings, 2019-2021 Summary

A1a - Residential New Homes & Renovations

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	5,729	5,180	5,380	16,289
Lifetime Energy	MWh	70,304	66,914	81,212	218,430
Annual Natural Gas	Therms	1,142	-	-	1,142
Lifetime Natural Gas	Therms	22,224	-	-	22,224
Total Benefits	2019$	24,779,201	20,659,906	26,642,939	72,082,046
Total Program Costs	nominal$	6,468,625	6,691,512	9,610,000	22,770,138
Total Resource Costs	2019$	10,738,964	7,229,995	20,737,481	38,706,439
Benefit Cost Ratio	B/C	2.31	2.92	1.35	1.86

A2 - Residential Existing Buildings, 2019-2021 Summary

A2a - Residential Coordinated Delivery

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	39,038	15,588	17,144	71,769
Lifetime Energy	MWh	184,829	58,075	90,693	333,596
Annual Natural Gas	Therms	10,981	16,885	237	28,103
Lifetime Natural Gas	Therms	219,063	249,909	1,656	470,627
Total Benefits	2019$	143,569,148	104,116,277	120,283,071	367,968,496
Total Program Costs	nominal$	37,594,055	30,392,127	31,500,000	99,486,182
Total Resource Costs	2019$	48,001,066	44,586,615	43,319,821	135,907,502
Benefit Cost Ratio	B/C	2.99	2.39	2.91	2.71

A2c - Residential Retail

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	114,673	92,709	17,279	224,661
Lifetime Energy	MWh	411,987	296,785	23,562	732,334
Annual Natural Gas	Therms	(1,185,759)	(887,444)	(197,259)	(2,270,462)
Lifetime Natural Gas	Therms	(3,424,362)	(1,409,327)	(793,196)	(5,626,885)
Total Benefits	2019$	112,379,306	67,426,237	95,765,041	275,570,584
Total Program Costs	nominal$	45,402,991	45,792,306	29,790,000	120,985,298
Total Resource Costs	2019$	56,399,021	45,695,352	41,774,754	143,869,127
Benefit Cost Ratio	B/C	1.99	1.51	2.40	1.92

A2d - Residential Behavior

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	46,603	35,649	59,530	141,782
Lifetime Energy	MWh	46,603	35,649	59,530	141,782
Annual Natural Gas	Therms	-	-	-	-
Lifetime Natural Gas	Therms	-	-	-	-
Total Benefits	2019$	9,129,489	6,881,490	11,348,940	27,359,919
Total Program Costs	nominal$	3,097,099	158,286	3,395,000	6,650,385
Total Resource Costs	2019$	3,243,356	291,347	3,589,932	7,124,635
Benefit Cost Ratio	B/C	2.81	24.17	3.31	3.84

A2e - Residential Active Demand Reduction

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	-	(0)	(11)	(11)
Lifetime Energy	MWh	-	(0)	(11)	(11)
Annual Natural Gas	Therms				-
Lifetime Natural Gas	Therms				-
Total Benefits	2019$	2,628,480	5,851,944	1,887,239	10,367,663
Total Program Costs	nominal$	832,980	1,747,266	1,070,000	3,650,247
Total Resource Costs	2019$	905,979	1,913,574	1,132,473	3,952,025
Benefit Cost Ratio	B/C	2.90	3.13	1.75	2.62

Core Initiatives, Three-Year Total

Income Eligible Programs

Eversource

June 4, 2021

B1 - Income Eligible Existing Buildings, 2019-2021 Summary					
B1a - Income Eligible Coordinated Delivery					
Metric	**Units**	**2019 Evaluated**	**2020 Evaluated**	**2021 Planned**	**2019-2021 Total**
Annual Energy	MWh	19,307	9,902	11,524	40,734
Lifetime Energy	MWh	150,881	74,920	107,917	333,719
Annual Natural Gas	Therms	32,978	13,319	28,490	74,787
Lifetime Natural Gas	Therms	441,646	234,605	373,030	1,049,281
Total Benefits	2019$	71,226,238	38,429,171	64,803,488	174,458,896
Total Program Costs	nominal$	31,146,728	18,722,376	28,715,000	78,584,104
Total Resource Costs	2019$	32,228,612	19,310,785	29,749,949	81,289,345
Benefit Cost Ratio	B/C	2.21	2.04	2.28	2.15

B1b - Income Eligible Active Demand Reduction					
Metric	**Units**	**2019 Evaluated**	**2020 Evaluated**	**2021 Planned**	**2019-2021 Total**
Annual Energy	MWh	-	-	-	-
Lifetime Energy	MWh	-	-	-	-
Annual Natural Gas	Therms				-
Lifetime Natural Gas	Therms				-
Total Benefits	2019$	-	-	-	-
Total Program Costs	nominal$	-	-	-	-
Total Resource Costs	2019$	-	-	-	-
Benefit Cost Ratio	B/C				#DIV/0!

Core Initiatives, Three-Year Total

C&I Programs

Eversource

June 4, 2021

C1 - C&I New Buildings, 2019-2021 Summary

C1a - C&I New Buildings & Major Renovations

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	18,558	25,376	28,882	72,817
Lifetime Energy	MWh	312,489	372,253	479,866	1,164,608
Annual Natural Gas	Therms	(191,581)	(691,880)	57,812	(825,648)
Lifetime Natural Gas	Therms	(3,616,995)	(10,248,517)	1,032,660	(12,832,852)
Total Benefits	2019$	45,553,146	47,125,097	78,245,843	170,924,085
Total Program Costs	nominal$	8,137,591	5,968,479	11,965,000	26,071,070
Total Resource Costs	2019$	11,292,918	8,944,364	17,274,804	37,512,085
Benefit Cost Ratio	B/C	4.03	5.39	4.74	4.56

C2 - C&I Existing Buildings, 2019-2021 Summary

C2a - C&I Existing Building Retrofit

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	190,717	403,164	294,909	888,790
Lifetime Energy	MWh	2,406,168	8,122,291	3,818,131	14,346,590
Annual Natural Gas	Therms	(1,330,713)	(16,457,118)	(5,827,008)	(23,614,838)
Lifetime Natural Gas	Therms	(22,639,889)	(396,781,714)	(109,479,307)	(528,900,910)
Total Benefits	2019$	395,266,240	866,395,599	492,063,765	1,753,725,603
Total Program Costs	nominal$	91,793,296	108,440,929	121,850,000	322,084,225
Total Resource Costs	2019$	167,281,104	215,972,073	240,339,564	623,592,741
Benefit Cost Ratio	B/C	2.36	4.11	2.14	2.81

C2b - C&I New & Replacement Equipment

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	85,888	47,627	60,283	193,799
Lifetime Energy	MWh	944,134	391,706	723,775	2,059,615
Annual Natural Gas	Therms	(48,746)	(17,384)	(22,263)	(88,393)
Lifetime Natural Gas	Therms	(435,215)	2,544	(231,004)	(663,676)
Total Benefits	2019$	181,998,819	75,464,371	130,873,906	388,337,096
Total Program Costs	nominal$	25,799,445	31,087,075	26,045,000	82,931,520
Total Resource Costs	2019$	54,475,454	32,888,387	39,450,670	126,814,512
Benefit Cost Ratio	B/C	3.34	2.35	3.47	3.06

C2c - C&I Active Demand Reduction

Metric	Units	2019 Evaluated	2020 Evaluated	2021 Planned	2019-2021 Total
Annual Energy	MWh	(18)	(39)	(476)	(533)
Lifetime Energy	MWh	(18)	(39)	(476)	(533)
Annual Natural Gas	Therms				-
Lifetime Natural Gas	Therms				-
Total Benefits	2019$	10,934,310	21,267,830	46,094,948	78,297,087
Total Program Costs	nominal$	1,560,661	3,865,451	13,035,000	18,461,112
Total Resource Costs	2019$	1,864,329	4,469,865	14,670,569	21,004,763
Benefit Cost Ratio	B/C	5.87	4.87	3.29	3.73

Greenhouse Gas Reductions, Plan Year Summary

GHG reductions are provided for information purposes only. They are not included in the TRC test.

Eversource Electric

June 4, 2021

2020 Planned Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	205,748	(1,121,515)	89,324	49,198	33.82	8.73	105,710
B - Income Eligible	14,114	28,490	28,138	4,386	2.32	0.60	9,715
C - Commercial & Industrial	651,222	(16,908,383)	(63,063)	-	107.04	27.62	217,701
Grand Total	**871,084**	**(18,001,408)**	**54,399**	**53,583**	**143.18**	**36.95**	**333,126**

2020 Evaluated Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	323,945	(2,701,693)	(46,943)	(7,096)	53.25	13.74	139,942
B - Income Eligible	9,902	13,319	13,402	1,888	1.63	0.42	6,183
C - Commercial & Industrial	533,083	(18,663,632)	(39,001)	2,887	87.62	22.61	151,214
Grand Total	**866,930**	**(21,352,006)**	**(72,542)**	**(2,321)**	**142.50**	**36.77**	**297,339**

2020 Planned v. Evaluated Greenhouse Gas Reductions Variances (%)							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	57%	141%	-153%	-114%	57%	57%	32%
B - Income Eligible	-30%	-53%	-52%	-57%	-30%	-30%	-36%
C - Commercial & Industrial	-18%	10%	-38%		-18%	-18%	-31%
Grand Total	**0%**	**19%**	**-233%**	**-104%**	**0%**	**0%**	**-11%**

Notes

The Program Administrators have worked with the Department of Environmental Protection ("DEP") to properly capture the full impact of energy efficiency measures on GHG emissions. These reductions are calculated using factors prepared by DEP, which are based on adjusted gross annual electric energy, natural gas, oil, and propane savings. For projected emissions reductions in future years for the electric sector, Program Administrators are using values that are consistent with the values used in the Massachusetts Clean Energy and Climate Plan for 2020, as provided by DEP.

Greenhouse Gas Reductions, Three-Year Total

GHG reductions are provided for information purposes only. They are not included in the TRC test.

Eversource Electric

June 4, 2021

2019 Evaluated Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	377,914	(2,964,199)	16,173	757	62.12	16.03	170,707
B - Income Eligible	19,307	32,978	21,477	6,344	3.17	0.82	11,905
C - Commercial & Industrial	336,787	(1,707,328)	(43,880)	(14,764)	55.36	14.29	151,817
Grand Total	**734,008**	**(4,638,549)**	**(6,230)**	**(7,662)**	**120.65**	**31.14**	**334,429**

2020 Evaluated Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	323,945	(2,701,693)	(46,943)	(7,096)	53.25	13.74	139,942
B - Income Eligible	9,902	13,319	13,402	1,888	1.63	0.42	6,183
C - Commercial & Industrial	533,083	(18,663,632)	(39,001)	2,887	87.62	22.61	151,214
Grand Total	**866,930**	**(21,352,006)**	**(72,542)**	**(2,321)**	**142.50**	**36.77**	**297,339**

2021 Planned Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	151,373	(616,251)	167,372	103,409	24.88	6.42	91,875
B - Income Eligible	11,524	28,490	28,138	4,386	1.89	0.49	8,435
C - Commercial & Industrial	436,738	(6,293,690)	(62,702)	-	71.79	18.53	173,871
Grand Total	**599,635**	**(6,881,451)**	**132,809**	**107,794**	**98.56**	**25.44**	**274,181**

2019-2021 Greenhouse Gas Reductions							
Sector	Adjusted Gross Annual Savings				Annual Emissions Reductions (Short Tons)		
	Electric Energy (MWh)	Natural Gas (Therm)	Oil (MMBTU)	Propane (MMBTU)	NOX	SO2	CO2
A - Residential	853,232	(6,282,143)	136,602	97,070	140.24	36.19	402,524
B - Income Eligible	40,734	74,787	63,017	12,618	6.70	1.73	26,523
C - Commercial & Industrial	1,306,607	(26,664,650)	(145,582)	(11,876)	214.77	55.42	476,902
Grand Total	**2,200,573**	**(32,872,006)**	**54,037**	**97,811**	**361.71**	**93.34**	**905,949**

Notes

The Program Administrators have worked with the Department of Environmental Protection ("DEP") to properly capture the full impact of energy efficiency measures on GHG emissions. These reductions are calculated using factors prepared by DEP, which are based on adjusted gross annual electric energy, natural gas, oil, and propane savings. For projected emissions reductions in future years for the electric sector, Program Administrators are using values that are consistent with the values used in the Massachusetts Clean Energy and Climate Plan for 2020, as provided by DEP.

Calculated Fields

Formulas used in pivot tables

Eversource Electric

June 4, 2021

Field	Formula
B/C Ratio	='Total Benefits '/'Total Resource Costs (First Yr$)'
Net Benefits	='Total Benefits '-'Total Resource Costs (First Yr$)'
Avg Measure Life	=ROUND('Net Lifetime Electric Energy (MWh) No FS or DR'/'Net Annual Electric Energy (MWh) No FS or DR',0)
PA Budget (First Yr$)	='Total Program Costs (First Yr$)'+'Performance Incentive (First Yr$)'
Summer Cost (TRC Cost First Yr$/Summer kW)	='Total Resource Costs (First Yr$)'/'Net Summer Capacity (kW)'
Energy Cost (TRC Cost First Yr$/Annual MWh)	='Total Program Costs (First Yr$)'/'Net Annual Electric Energy (MWh)'
Natural Gas Costs (PA Cost First Yr$/Annual Therm)	='PA Budget (First Yr$)'/'Net Annual Natural Gas (Therms)'
Summer Cost (PA Cost First Yr$/Summer kW)	='PA Budget (First Yr$)'/'Net Summer Capacity (kW)'
Energy Cost (PA Cost First Yr$/Annual MWh)	='PA Budget (First Yr$)'/'Net Annual Electric Energy (MWh)'
Natural Gas Costs (TRC Cost First Yr$/Annual Therm)	='Total Program Costs (First Yr$)'/'Net Annual Natural Gas (Therms)'
Total Savings Cost (PA Cost First Yr$/Annual MMBTU)	='PA Budget (First Yr$)'/'Total Net Annual Adjusted (MMBTU)'
Total Savings Cost (TRC Cost First Yr$/Annual MMBTU)	='Total Resource Costs (First Yr$)'/'Total Net Annual Adjusted (MMBTU)'
Total PA Budget (Programs + PI + Benefit Burden)	='Total Program Costs'+'Performance Incentive'+'Benefit Burden'
Total Resource Benefits per Participant	='Total Resource Benefits'/Participants
Total PA Budget	='Total Program Costs'+'Performance Incentive'
Program Cost per Participant	='Total Program Costs'/Participants
Resource Benefit per Program Cost	='Total Resource Benefits'/'Total Program Costs'

Notes

- The above calculations are used to prepare the previous data tables.
- This table is provided consistent with the Department's directives in D.P.U. 18-110 through D.P.U. 18-119, at 75 to provide a detailed list of calculated fields used in creating the pivot tables.

APPENDIX 1

Significant Core Initiative Variances & Cost-Effectiveness

Company-Specific Narrative Explanations for NSTAR Electric Company d/b/a Eversource Energy (the "Company") are as follows.

I. RESIDENTIAL PROGRAMS

The actual 2020 benefit-cost ratio for the Residential sector is 1.74.

A. RESIDENTIAL NEW BUILDINGS

The actual 2020 benefit-cost ratio for the Residential New Buildings program is 2.92. The projected benefit-cost ratio for the 2019-2021 plan term is 1.92 after accounting for actual results from 2019 and 2020.

1. Residential New Homes & Renovations

a. Significant Variances [1]

Significant variances exist between: (1) planned and actual budget and (2) preliminary and evaluated total resource benefits. The primary reason(s) for such variances are:

(1) Planned Budget and Actual Expenditure

Actual spending is 32 percent less than the planned budget. The Company is seeing lower participation than expected in the program overall. In 2019 and 2020, the Company planned for 16,235 participants but only had 12,522 actual participants. Additionally, the Company over-estimated the per-participant incentive costs that would be incurred, particularly for residential single-family buildings. As a result, the whole program is under-spent.

(2) Preliminary and Evaluated Total Resource Benefits

[1] Plan-year core initiative significant variances are defined in the D.P.U. 11-120, Phase II Plan-Year Report Template as: (1) variances between planned and actual core initiative budget of 15 percent or greater; (2) variances between planned and preliminary core initiative total lifetime savings showing a decrease of 15 percent or greater; (3) variances between planned and preliminary core initiative total benefits showing a decrease of 15 percent or greater; and (4) variances between preliminary and evaluated core initiative total resource benefits showing a decrease of 15 percent or greater.

Evaluated resource benefits are 52 percent less than preliminary resource benefits. This decrease represents a reduction in attributable energy savings resulting from two distinct baseline updates from recent evaluation studies.

The first study is the 2019 Residential New Construction Baseline and Code Compliance Study (D.P.U. 20-50, 2019 Plan-Year Report, Appendix 4D, Study 19-27) that updated the User Defined Reference Home ("UDRH") for new low-rise residential buildings. This study found that program homes are significantly more efficient than non-program homes, but the difference between program and non-program homes has decreased since the previous UDRH update in 2016.

The second study is the Renovations and Additions Market Characterization and Potential Savings Study (D.P.U. 20-50, 2019 Plan-Year Report, Appendix 4D, Study 19-6) that recommended the program transition from an "existing conditions" baseline for renovations projects to an Industry Standard Practice ("ISP") baseline starting in 2020. For example, instead of using the pre-existing insulation in a home as the baseline condition for calculating savings, the program now assumes the wall cavities in the renovated area of the home would have been filled to code, regardless of the pre-existing insulation. This categorical baseline change has been applied retrospectively to 2020 projects.

Despite committed efforts to increase program production, the Company is not projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative. Savings within the New Construction programs are highly dependent upon overall market activity, which is outside of the PAs' control.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Residential New Homes & Renovations core initiative is 2.92. The projected benefit-cost ratio for the 2019-2021 plan term is 1.92 after accounting for actual results from 2019 and 2020.

B. RESIDENTIAL EXISTING BUILDINGS

The actual 2020 benefit-cost ratio for the Residential Existing Buildings Program is 1.92. The projected benefit-cost ratio for the 2019-2021 plan term is 2.24 after accounting for actual results from 2019 and 2020.

1. Residential Coordinated Delivery

a. Significant Variances

There are no significant variances to report for this core initiative.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Residential Coordinated Delivery core initiative is 2.39. The projected benefit-cost ratio for the 2019-2021 plan term is 2.77 after accounting for actual results from 2019 and 2020.

2. Residential Conservation Services

a. Significant Variances

There are no significant variances to report for this core initiative.

3. Residential Retail

a. Significant Variances

Significant variances exist between: (1) planned and actual budget; and (2) preliminary and evaluated total resource benefits. The primary reason(s) for such variances are:

(1) Planned Budget and Actual Expenditure

Actual spending was 41 percent higher than planned due to greater program participation than anticipated in nearly every measure, especially lighting and heating and hot water systems.

(2) Preliminary and Evaluated Total Resource Benefits

Evaluated total resource benefits were 35 percent lower than planned due to a reduction in the claimable measure lives for lighting measures. The method that the Program Administrators use to calculate an adjusted measure life for residential lighting measures considers both regulatory and market conditions, both of which changed substantially since the Plan was filed. The adjusted measure lives were derived via a consensus process and the result is lives that are much shorter than planned, and a corresponding decrease in benefits.

The Company is projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Residential Retail core initiative is 1.51. The projected benefit-cost ratio for the 2019-2021 plan term is 1.96 after accounting for actual results from 2019 and 2020.

4. Residential Behavior

The Residential Behavior core initiative includes two initiatives – Behavior and Active Demand Reduction.

a. Residential Behavior

i. Significant Variances

Significant variances exist between: (1) planned and actual budget; (2) planned and preliminary total lifetime savings; and (3) planned and preliminary total benefits. Actual spending is 52 percent less than the planned budget. Preliminary total lifetime savings are 56 percent lower than planned. Preliminary total benefits are 57 percent lower than planned.

Eversource ceased sending Home Energy Reports ("HERs") via Opower at the end of 2019 to allow for testing of alternative behavioral communications at scale. With nearly all eligible electric and gas customers in the Opower experiment, concurrent testing of alternative communications would not have been possible at scale that could produce statistically significant results within a reasonable amount of time, which is key to enabling continued innovation. HERs, which were first launched with Eversource Electric customers in 2009, have relied solely on normative messaging via a neighbor/similar home comparison to motivate customers to take energy-saving actions. Eversource felt it was important to develop and test alternative types of behavioral messaging and as such launched Delivered Energy Insights ("DEIs") emails in January 2021. With DEIs, the Company is providing customized usage information in different ways to generate savings, such as personal usage comparisons and seasonal usage summaries, layered in with greater customization of the experience based on what is known about customers, their homes, and historical interactions.

Eversource does not anticipate being able to claim savings from DEIs until 2022. However, Eversource has determined that it is appropriate to claim some residual savings from HERs in the interim. Eversource contracted with an independent evaluation consultant to conduct an analysis of the persistence and

decay of savings for Eversource's discontinued HER initiative. The evaluation was conducted with EEAC EM&V Consultant guidance under the guidelines of the EM&V framework. The evaluation consultant found that in the first year after HER discontinuation, the electric and gas savings decayed slightly, but remained large in absolute terms. Specifically, electric savings declined by 10.3% from the final year of HER to 35,640,043 kWh in the first year after HER. Gas savings declined 8.5% from the final year of HER to 802,165 in the first year after HER. Eversource used these persistence savings values from the evaluation to claim savings for 2020.

Due to the changes described above, Eversource is not projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this initiative.

ii. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Residential Behavior initiative is 24.17. The projected benefit-cost ratio for the 2019-2021 plan term is 3.93 after accounting for actual results from 2019 and 2020.

b. Residential Active Demand Reduction

i. Significant Variances

Significant variances exist between planned and actual budget. Actual spending was 55 percent higher than planned, due to substantially greater program participation. The COVID-19 pandemic may partially explain why the Company was able to enroll more participants than anticipated, as customers were home and may be more aware of their energy use.

The Company is projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this initiative.

ii. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Residential Active Demand Reduction initiative is 3.13. The projected benefit-cost ratio for the 2019-2021 plan term is 2.69 after accounting for actual results from 2019 and 2020.

II. INCOME ELIGIBLE PROGRAMS

The actual 2020 benefit-cost ratio for the Income Eligible sector is 1.94.

A. INCOME ELIGIBLE EXISTING BUILDINGS

The actual 2020 benefit-cost ratio for the Income Eligible Existing Buildings program is 2.04. The projected benefit-cost ratio for the 2019-2021 plan term is 2.19 after accounting for actual results from 2019 and 2020.

1. Income Eligible Coordinated Delivery

a. Significant Variances

Significant variances exist between: (1) planned and actual budget and (2) planned and preliminary total benefits. The 2020 actual low-income expenditures were 20 percent lower than the 2020 planned low-income budget; preliminary total benefits were 24 percent lower than planned.

The primary reason for these variances was the COVID-19 pandemic. Due to the customer and staff safety concerns related to the pandemic, all on-premise work was paused between March and June of 2020. Thereafter, the PAs changed program implementation to offer energy assessments by phone or video call, combined with strict health and safety guidelines for contractors. However, fewer than expected income eligible customers moved forward with work because they were disproportionately affected by the pandemic. This was particularly true for multifamily projects, as many income eligible multifamily buildings are for residents who are elderly, have disabilities, or other conditions that make them more susceptible to COVID-19. As a result, local housing authorities and other owners paused any work on multifamily facilities for most of 2020.

The programs are experiencing pandemic-related supply challenges as well; for example, a national shortage of large appliances that began in summer of 2020 as a result of the COVID-19 pandemic affected the program's appliance distributors, who were not able to fulfill orders in a timely fashion.

Eversource will continue to work toward spending 10 percent of total costs on the low-income sector. One priority spending area that Eversource is focusing on is strategic electrification. The Company is working with its lead vendor to increase outreach to multifamily affordable housing owners, combined with use of assessor's data, to identify more potential candidates for heat pump installation, as well as to identify further savings opportunities. The Company is also working with its lead vendor to identify and address barriers that might prevent building owners from installing heat pumps. Furthermore, the Company is working with its lead vendor and marketing department on additional outreach to single family income eligible customers who

would be candidates for heat pumps, such as coordination with Resident Owned Communities (ROC) to work with cooperatively owned manufactured home communities on installation of heat pumps. The Company is also working with its lead vendor on additional training for contractors and energy specialists on air source heat pump technologies in order to better promote heat pumps to both single and multifamily customers.

Due to the challenges described above, the Company is not projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative. However, the Company remains committed to serving the income eligible population, and will be redoubling efforts in 2021.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the Income Eligible Coordinated Delivery core initiative is 2.04. The projected benefit-cost ratio for the 2019-2021 plan term is 2.19 after accounting for actual results from 2019 and 2020.

III. COMMERCIAL & INDUSTRIAL ("C&I") PROGRAMS

The actual 2020 benefit-cost ratio for the C&I sector is 3.86.

A. C&I NEW BUILDINGS

The actual 2020 benefit-cost ratio for the C&I New Buildings program is 5.17. The projected benefit-cost ratio for the 2019-2021 plan term is 4.63 after accounting for actual results from 2019 and 2020.

1. C&I New Buildings & Major Renovations

a. Significant Variances

Significant variances exist between: (1) planned and actual budget; (2) planned and preliminary total lifetime savings; (3) planned and preliminary total benefits. Actual spending was 40 percent lower than planned. Preliminary total lifetime savings were 24 percent lower than planned. Preliminary total benefits were 41 percent lower than planned.

The Company saw less activity than anticipated in the C&I new construction market, partially as a result of the COVID-19 pandemic. Although the Company adjusted incentive structures to drive higher savings, the overall dip in construction activity limited savings opportunities. The Company continues to work to push more customers into the new program pathways described in the 2019-2021 Plan, but the lead times for

large new construction are such that most of those projects will not complete until the 2022-2024 cycle (or later).

As a result of these challenges, the Company is not projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the C&I New Buildings & Major Renovations core initiative is 5.17. The projected benefit-cost ratio for the 2019-2021 plan term is 4.63 after accounting for actual results from 2019 and 2020.

B. C&I EXISTING BUILDINGS

The actual 2020 benefit-cost ratio for the C&I Existing Buildings program is 3.62. The projected benefit-cost ratio for the 2019-2021 plan term is 2.88 after accounting for actual results from 2019 and 2020.

1. C&I Existing Building Retrofit

a. Significant Variances

A significant variance exists between planned and actual budget. Actual spending is 18 percent less than planned for this initiative. Contributing to this variance are participant incentives 15 percent less than budgeted, Program Planning & Administration ("PP&A") spending 46 percent less than budgeted, and the Sales, Technical Assistance, and Training ("STAT") spending 48 percent less than budgeted. The lower PP&A spending is primarily the result of Eversource pursuing administrative efficiencies in the delivery of the program, while the lower STAT spending is the result of new technical assistance and training initiatives – like Equipment & System Performance Optimization ("ESPO") – scaling more slowly than expected, especially as a result of the COVID-19 pandemic, which made customers leery of making changes to ventilation systems.

The Company is projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the C&I Existing Building Retrofit core initiative is 4.11. The projected benefit-cost ratio for the 2019-2021 plan term is 2.89 after accounting for actual results from 2019 and 2020.

2. C&I New & Replacement Equipment

a. Significant Variances

There are no significant variances for this initiative.

The Company is projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative.

b. Cost-Effectiveness

The actual 2020 benefit-cost ratio for the C&I New & Replacement Equipment core initiative is 2.35. The projected benefit-cost ratio for the 2019-2021 plan term is 3.12 after accounting for actual results from 2019 and 2020.

3. C&I Active Demand Reduction

a. Significant Variances

Significant variances exist between: (1) planned and actual budget and (2) preliminary and evaluated total resource benefits. The primary reason(s) for such variances are:

(1) Planned Budget and Actual Expenditure

Actual spending is 49 percent less than planned. This variance is the result of two factors: (i) cost savings achieved in the STAT budget category by pursuing administrative cost efficiencies at the outset of the new program, including successful negotiation of new contracts with vendors, and (ii) less participant incentives paid than planned by successfully targeting lower cost options for demand reductions (i.e. interruptible curtailment).

(2) Preliminary and Evaluated Resource Benefits

Evaluated resource benefits were 19 percent lower than preliminary benefits because of a lower realization rate for interruptible load measure, based on the Cross-State C&I Demand Response Program Summer 2019 Evaluation Report (see DPU 20-50, 2019 Plan Year Report, Appendix 4D.) The realization rate is the result of calculation differences between reported and evaluated savings, specifically, whether a symmetric or asymmetric baseline is used (id.).

The Company is projecting to achieve its savings and benefits goals by the end of the Three-Year Plan term for this core initiative.

b. Program Cost-Effectiveness

The actual 2020 benefit-cost ratio for the C&I Active Demand Reduction core initiative is 4.87. The projected benefit-cost ratio for the 2019-2021 plan term is 3.87 after accounting for actual results from 2019 and 2020.

APPENDIX 2

Benefit-Cost Ratio Screening Tool

Please see the Microsoft Excel file accompanying this report for the Benefit-Cost Ratio Screening Tool.

APPENDIX 3

Statewide Technical Reference Manual – 2020 Report Version

Please see Statewide Appendix 3: Technical Reference Manual – 2020 Report Version, filed under separate cover. The electronic version, the eTRM, is available at:

http://www.masssavedata.com/Public/TechnicalReferenceLibrary.

APPENDIX 4

Statewide Evaluation Studies Summary

A. Table of Evaluation Studies

STUDY NAME	STUDY LOCATION AND NUMBER	FUEL	EM&V CONTRACTOR
Residential Studies			
Residential New Construction Non-Program Model Review (MA19R19)	Appendix D, Study 20-1	Electric & Gas	NMR Group, Inc.
Lighting Supplier Insights (MA19R13)	Appendix D, Study 20-2	Electric	NMR Group, Inc.
Passive House Offering Program Theory and Logic Model (MA19R05)	Appendix D, Study 20-3	Electric & Gas	NMR Group, Inc.
Lighting Sales Data Regional Analysis (MA20R22)	Appendix D, Study 20-4	Electric	NMR Group, Inc.
2019 Residential Lighting On-Sites (MA19R15)	Appendix D, Study 20-5	Electric	NMR Group, Inc.
Residential Coordinated Delivery Virtual Home Energy Assessment Study (MA20R26)	Appendix D, Study 20-6	Electric & Gas	Guidehouse Inc.
Renovations and Additions Incremental Cost Study (MA20R27)	Appendix D, Study 20-7	Electric & Gas	NMR Group, Inc.
Comprehensive TRM Review (MA19R17)	Appendix D, Study 20-8	Electric & Gas	Guidehouse Inc.
2019/20 Massachusetts Winter Thermostat Optimization Evaluation	Appendix D, Study 20-9	Electric	Guidehouse Inc.
Eversource Home Energy Report Program Year One Persistence Savings and Decay Rate Study	Appendix D, Study 20-10	Electric & Gas	Guidehouse Inc.
Commercial & Industrial Studies			
Impact Evaluation of PY2019 Massachusetts C&I Upstream Lighting Initiative (MA19C06)	Appendix D, Study 20-11	Electric	DNV-GL
Gross Impact Framework - Decision Guide (MA20C06)	Appendix D, Study 20-12	Electric & Gas	DNV-GL
C&I Lighting Market Characterization Study(MA20C09)	Appendix D, Study 20-13	Electric	DNV-GL

STUDY NAME	STUDY LOCATION AND NUMBER	FUEL	EM&V CONTRACTOR
Impact Evaluation of PY2018-2019 Custom Electric Installations (MA20C04)	Appendix D, Study 20-14	Electric	DNV-GL
Massachusetts Custom Electric CDA (MA20C16)	Appendix D, Study 20-15	Electric	DNV-GL
Steam Trap and Boiler Efficiency Research (MA20C05)	Appendix D, Study 20-16	Gas	DNV-GL
Massachusetts C&I Impact Evaluation of PY2018 Custom Gas Installations (MA20C01)	Appendix D, Study 20-17	Gas	DNV-GL
Franchise Controls Deemed Savings Study (MA20C07-E-DUN)	Appendix D, Study 20-18	Electric	DNV-GL
Ground Source Heat Pump eTRM Measure Review (MA20C15)	Appendix D, Study 20-19	Electric & Gas	DNV-GL
C&I ISP Research and Repository: Food Services Equipment Pre-Research Memo (MA20C02)	Appendix D, Study 20-20	Electric & Gas	DNV-GL
Special & Cross Sector Studies			
Code Promulgation Attribution Study (MA19X07)	Appendix D, Study 20-21	Electric & Gas	NMR Group, Inc.
2013-2017 Residential Customer Profile Study: Stakeholder Summary and Comprehensive Report (MA19X08)	Appendix D, Study 20-22	Electric & Gas	DNV-GL
2018 Commercial and Industrial Customer Profile Study: Stakeholder Summary and Comprehensive (MA20X01)	Appendix D, Study 20-23	Electric & Gas	DNV-GL
Consistent Methodology for Self-Reported Residential Net-to-Gross Measurement (MA19X03)	Appendix D, Study 20-24	Electric & Gas	NMR Group, Inc.
Municipal Partnership Initiative Program Theory and Logic Model Development Memo (MA19X12)	Appendix D, Study 20-25	Electric & Gas	Opinion Dynamics
Demand Response Studies			
2019 Electric Vehicle Supply Equipment Direct Load Control Demonstration - Process evaluation	Appendix D, Study 20-26	Electric	Guidehouse, Inc.
2019 National Grid Behavioral Demand Response Evaluation	Appendix D, Study 20-27	Electric	Guidehouse, Inc.
2019/2020 Residential Energy Storage Demand Response Demonstration Evaluation - Winter Season	Appendix D, Study 20-28	Electric	Guidehouse, Inc.

APPENDIX 4

Statewide Evaluation Studies Summary

B. Summary of the Studies with the Most Significant Effects

The Massachusetts Program Administrators completed 28 evaluation studies for the 2020 Energy Efficiency Plan-Year Report. The studies that produced the most significant results in 2020 were the:

1. Passive House Offering Program Theory and Logic Model
2. Comprehensive TRM Review
3. C&I Lighting Market Characterization Study
4. Custom Impact Evaluations (Impact Evaluation of PY2018-2019 Custom Electric Installations and Massachusetts C&I Impact Evaluation of PY2018 Custom Gas Installations)
5. Code Promulgation Attribution Study

1. Passive House Offering Program Theory and Logic Model

The purpose of this study was to document the Mass Save Residential New Construction program's intention and plan to fundamentally shift building practices in Massachusetts to include passive design practices and super-insulation of building shells. In particular, this study focused on the multifamily Passive House program, as designed and initiated by Mass Save in 2019.

The Program Administrators used NMR's 2019 MA Residential New Construction Passive House Assessment report in designing the Passive House program. This research builds on that study by leveraging interviews with program staff to map the PAs' multifaceted approach to transforming the multifamily construction market. This study identifies the actions taken by the program, including:

- Outreach to market actors in the form of trainings and marketing,
- Incentives and technical support for potential projects from pre-design through occupancy, and
- Post-construction/occupancy data collection to increase transparency on this burgeoning market, highlight best practices for construction, and facilitate future program evaluation.

Additionally, the study isolates the program's stated goals, and identifies the metrics and potential data sources for measuring the success of those goals. These metrics enable the ongoing assessment of program success in meeting short-term objectives (like project enrollment in the

Multifamily Passive House offering) to long-term objectives (such as enabling the transition to more advanced building codes by priming the market to achieve those levels of efficiency).

Future evaluation of these metrics identified in the study will enable the estimation of the program's effect on the overall market. Subsequent research on these market effects will aim to identify attributable and claimable savings and benefits actualized by the program through this market transformation effort. This work is currently being explored in the Passive House Market Effects Baseline Study, scheduled to conclude later this year. A copy of the full Passive House Offering Program Theory and Logic Model study can be found in Appendix 4D, Study 20-3.

2. Comprehensive TRM Review

The purpose of this study was to review the assumptions and values in the Massachusetts Technical Reference Manual ("TRM") to ensure that the TRM assumptions reflect the results of recent residential studies, such as the Residential Baseline Study. The study also assessed the quality of the values in the residential portion of the TRM and conducted analysis, where relevant, to improve these parameters.

The review focused on identifying TRM parameters that were out-of-date, that were based on less relevant data sources (*i.e.*, not Massachusetts or New England-specific), or that have a significant effect on the energy efficiency program's energy, demand, or fossil fuel savings. A scoring methodology was designed and implemented that accounted for these factors and flagged select parameters as a high priority to update. Conversely, parameters from recently published, relevant data sources or that have a low savings impact received a low priority score. The resulting priority scores helped determine which parameters were candidates for updating.

The team reviewed data collected in the Residential Baseline Study and other available data sources to identify newer or more robust data available for updating parameter values. Other data sources include but are not limited to federal standard updates, ENERGY STAR updates, and recent evaluation studies.

This study led to multiple updates in gross savings and lifetime assumptions for residential measures. The study also identified measures and parameters that could be updated through future studies or through additional data collection in future iterations of the Baseline Study. A copy of the complete study can be found in Appendix 4D, Study 20-8.

3. 2020 C&I Lighting Market Characterization

The primary goal of the 2020 Lighting Market Characterization Study was to produce adjusted measure lives ("AMLs") for major commercial and industrial ("C&I") lighting applications using lighting market data collected to improve the Lighting Market Model (the "Model"). As part of updating the Model, the study analyzed market trends in C&I lighting, including saturation (the percentage of fixtures of different types installed across the C&I sector) and market share (the percentage of sales of different lighting types in the C&I sector).

The research conducted during this study focused on three main C&I lighting applications: ambient linear, high & low bay, and building exterior & outdoor lighting. This study also presents AMLs for traditional screw-based lighting categories (a-line, downlight/track, and decorative lighting).

The evaluation team used a variety of methods to research C&I lighting market indicators, which were used to refine the Model's saturation and market share forecasts and the resulting AML calculations. Methods included: onsite lighting inventory assessments via phone interviews, distributor and manufacturer interviews, contractor web surveys, customer surveys, reviewing program tracking data, web scraping, reviewing secondary data sources, and developing a stock turnover model to compare modeled results to national and regional forecasts.

The study found that AMLs for ambient linear LED lighting ranged from 8.5 to 8.8 years for 2020. AMLs for high/low bay LED lighting ranged from 8.2 to 8.6 years for 2020. AMLs for exterior/outdoor LED lighting ranged from 6.9 to 7.4 years in 2020. AMLs for screw-based LED lighting ranged from 3.0 to 6.0 years in 2020. AML values decreased for all lighting types between 2019-2021. When compared to 2019 AML values, the 2020 AMLs are considerably lower. This finding is primarily driven by a change in methodology and effective useful life ("EUL") assumptions serving as the basis for measure life adjustments, rather than differences between previously forecasted and actual adoption of LEDs. Further detail is provided in the report.

The study concluded that the LED C&I Market is continuing to advance, and it will become increasingly difficult to fund opportunities for program savings. With regard to ambient linear lighting, the study found that TLEDs and LED integrated fixtures continue to replace fluorescent technologies at a rapid pace and the market is expected to be largely transformed by 2024. Having said that, the program is steering customers towards higher efficiency products, such as linear LED fixtures, which present future opportunities for controls savings. With regard to high/low bay lighting, the dominant technology type is linear, so the largest opportunity in this market is for TLEDs and LED integrated fixtures to continue to replace the T8s and the T12s that continue to persist in the market. Like the ambient linear submarket, the market is expected to be largely transformed by 2024, though pockets of potential are still expected. With regard to building exterior/outdoor lighting, the diversity of available products is decreasing, and as of 2020 there are few, non-LED options for customers. Consequently, this submarket is transforming rapidly as well. A copy of the complete study can be found in Appendix 4D, Study 20-13.

4. Impact Evaluations of C&I Custom Installations

Two C&I custom impact studies were conducted to verify the savings generated through C&I custom electric and gas installations. Custom installations account for approximately 15% of planned lifetime electric savings and 7% of planned lifetime gas savings. Impact studies for C&I custom installations are conducted on a rolling basis, with updates to the sample of facilities evaluated each year. Impact evaluations produce realization rates, which are used to calibrate savings estimates. These impact evaluations also produced Lifetime Savings Adjustment Factors ("LSAF"), which will be applied for the first time in 2020 to PA reported savings values. In

addition, these evaluations produce recommendations for program improvements, including opportunities to make initial program savings estimates more accurate.

Impact Evaluation of PY2018-2019 Custom Electric Installations
The objective of this impact evaluation is to provide verification or re-estimation of electric energy and demand savings estimates for a sample of custom lighting and non-lighting electric projects through site-specific inspection, monitoring, and analysis.

The study approach involved selecting a representative sample of large C&I custom electric projects from 2018 and 2019. Evaluators then conducted a comprehensive desk review of each sample project to support an independent analysis of achieved gross electric savings realization rates. Where possible, evaluators also conducted a site visit and measurement and verification supported by metering for a subset of sample projects, in accordance with PA pandemic protocols. The site level evaluation results were aggregated using the final adjusted case weights. The sample for the PY2018-19 impact evaluation was generated with the intention of pooling the annual evaluation results with the prior PY2016 and PY2017-18 results to produce a rolling updated result.

The results of this study are realization rates and LSAF for custom lighting and non-lighting electric energy efficiency measures. Realization rates and LSAF were determined at the statewide level as well as separately for Cape Light Compact, Eversource, and National Grid. Statewide, two-year pooled realization rates for gross annual MWh savings were 100%±5% for custom lighting, and 75%±6% for custom non-lighting measures. Realization rates are reported at a 90% confidence level. Realization rates for both lighting and non-lighting measures improved from the prior year analysis. Statewide, the improvements in realization rates between the three-year pooled results and the previous two-year pooled results for gross annual MWh are + 0.2% for custom lighting and + 3.1% for custom non-lighting. LSAF values were calculated at both the statewide and PA-specific level. At the statewide level, the LSAF for custom lighting was calculated to be 97.5%, and for custom non-lighting, 101.3%. A copy of the complete study can be found in Appendix 4D, Study 20-13.

Impact Evaluation of PY2018 Custom Gas Installations
The primary objective of this impact evaluation was to verify and re-estimate the energy savings for a sample of statistically selected PY2018 custom gas projects through site-specific inspection, monitoring, and analysis.

The study approach consisted of desk reviews, on-site visits, and metering of a randomly selected sample of projects at participating facilities. The sample for the PY2018 impact evaluation was generated with the intention of pooling the annual evaluation results with the prior PY2016 and PY2017 results to produce a rolling updated result.

The study produced statewide realization rates and LSAF, as well as specific realization rates and LSAF for Columbia Gas, Eversource, and National Grid. The statewide realization rate for the three-year pooled sample (PY2016-PY2018) was 80% ±7% at an 80% confidence level. This

realization rate represented a decrease of 5% compared to the prior year analysis. PA-specific realization rates changed by +7% for Columbia Gas, -15% for Eversource, and -4% for National Grid. LSAF values were calculated to be 103% at the statewide level, 108% for Columbia Gas, 102% for Eversource, and 102% for National Grid. A copy of the complete study can be found in Appendix 4D, Study 20-17.

5. Code Promulgation Attribution Study

The purpose of the Code Promulgation Attribution Study was to develop an attribution factor for PA efforts to promulgate five more stringent energy code requirements into state building energy codes (the code amendments for both the MA residential and commercial portions of the 2018 IECC were approved in 2019 and took effect in November 2020). An additional goal of this study was to estimate the gross technical potential ("GTP") of the approved code amendments.

To achieve these goals, the evaluated conducted the following research activities:

- Reviewed PA documentation of code promulgation efforts: The evaluators reviewed over 130 documents provided by the PAs that were relevant to their involvement in the 2018 IECC code amendment and adoption process in Massachusetts, as well as all publicly posted materials.
- Conducted code promulgation interviews to help assess attribution: The evaluators conducted in-depth interviews ("IDIs") with seven stakeholders to gain more perspective on what occurred during the code amendment and adoption process.
- Estimated the GTP savings associated with each of the five 2018 IECC amendments proposed by the PAs that were incorporated into the state-level building energy code.

The study found that it is unlikely that proposals similar to those of the PAs would have been promulgated without the PAs' efforts. The PAs submitted their proposals late in the code-cycle and were thus able to pick proposals that were not being advanced by other parties. The document review provided evidence of the PAs' efforts and the lack of any similar efforts from another party. IDI participants also indicated that it was unlikely that another party would have advanced similar proposals.

Based on these findings, the study recommended that the PAs use an attribution factor of 90% for the savings generated from their efforts to promulgate the five approved amendments to the 2018 IECC. The 90% value reflects the fact that it is unlikely, though not impossible, that similar amendments to the PAs' proposals would have been promulgated without the PAs' efforts.

In addition, the study estimated the combined electric and gas GTP savings from the amendments as 138,153 MBTU accumulated through 2026. This includes 29,103 MWh of GTP electric savings and 388,574 therms of GTP gas savings, assuming 100% compliance with the PAs amendments. To put these values into context, these savings represent between 1% and 6% of combined electric

and gas 2018 new construction savings annually. Note that the GTP analysis in this report was intended as a forecast rather than an evaluation of actual savings.

The study suggested that the PAs consider developing guidelines for evaluation methods that may be applicable for future codes and standards promulgation efforts, plus consider conducting additional research that will increase the accuracy of GTP estimates during the 2022-2026 program years.

Ultimately, the results of the PAs' code promulgation efforts have implications for other PA new construction programs as they affect the entire new construction market. A copy of the complete study can be found in Appendix 4D, Study 20-21.

APPENDIX 4

Statewide Evaluation Studies Summary

C. Evaluation Study Summaries

Table of Contents

Study 20-1: Residential New Construction Non-Program Model Review (MA19R19-B) 3
Study 20-2: Lighting Supplier Insights (MA19R13-E) 5
Study 20-3: Passive House Offering Program Theory and Logic Model (MA19R05) 8
Study 20-4: Lighting Sales Data Regional Analysis (MA20R22-E) 10
Study 20-5: 2019 Residential Lighting On-Sites (MA19R15-E) 14
Study 20-6: Residential Coordinated Delivery Virtual Home Energy Assessment Study (MA20R26-B-VHEA) 16
Study 20-7: Renovations and Additions Incremental Cost Study (MA20R27) 19
Study 20-8: Comprehensive TRM Review (MA19R17-B-TRM) 21
Study 20-9: 2019/20 Massachusetts Winter Thermostat Optimization Evaluation 26
Study 20-10: Eversource Home Energy Report Program Year One Persistence Savings and Decay Rate Study 31
Study 20-11: Impact Evaluation of PY2019 Massachusetts C&I Upstream Lighting Initiative (MA19C06-E_UPLGHT) 33
Study 20-12: Gross Impact Framework - Decision Guide (MA20C06-B-GIF) 35
Study 20-13: C&I Lighting Market Characterization Study (MA20C09-E-LMC) 37
Study 20-14: Impact Evaluation of PY2018-2019 Custom Electric Installations (MA20C04) ... 39
Study 20-15: Massachusetts Custom Electric CDA (MA20C16-B-CDA) 42
Study 20-16: Steam Trap and Boiler Efficiency Research (MA20C05-G-STBE) 44
Study 20-17: Massachusetts C&I Impact Evaluation of PY2018 Custom Gas Installations (MA20C01-G-CUSTGAS) 46
Study 20-18: Franchise Controls Deemed Savings Study (MA20C07-E-DUN) 48
Study 20-19: Ground Source Heat Pump eTRM Measure Review (MA20C15-B-GSHP) 51
Study 20-20: C&I ISP Research and Repository: Food Services Equipment Pre-Research Memo (MA20C02-B-ISPREPOS) 53

Study 20-21: Code Promulgation Attribution Study (MA19X07-B-CDPROMATT) 55

Study 20-22: 2013-2017 Residential Customer Profile Study: Stakeholder Summary and Comprehensive Report (MA19X08 2017 RESCUSTPRO) 57

Study 20-23: 2018 Commercial and Industrial Customer Profile Study: Stakeholder Summary and Comprehensive (MA20X01-B-2018CICUSTPRO) 61

Study 20-24: Consistent Methodology for Self-Reported Residential Net-to-Gross Measurement (MA19X03-B-RSRNTG) 64

Study 20-25: Municipal Partnership Initiative Program Theory and Logic Model Development Memo (MA19X12-B-PTLMMuni) 66

Study 20-26: 2019 Electric Vehicle Supply Equipment Direct Load Control Demonstration - Process /evaluation..... 69

Study 20-27: 2019 National Grid Behavioral Demand Response Evaluation..... 71

Study 20-28: 2019/2020 Residential Energy Storage Demand Response Demonstration Evaluation - Winter Season 74

Study 20-1: Residential New Construction Non-Program Model Review (MA19R19-B)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 6/6/2020

Study Objective and Summary of Results:

The purpose of this study was to assess the relative merits of using Home Energy Rating System (HERS) data, obtained from Ekotrope Inc., as an additional data source to inform research on the performance of new homes built outside of the Program Administrators' (PAs') low-rise residential new construction (RNC) program. Given the cost and difficulty of collecting data for baseline studies via conventional site visits, alternative methods of data collection, such as registered HERS ratings, could be a valuable source for learning more about how non-program homes are built. These methods might allow for the development of more statistically robust, lower-cost, and/or more frequent updates to the User Defined Reference Home (UDRH), which serves as the RNC program's baseline.

The study provides the following key findings:

- Registered HERS ratings for non-program participant homes are heavily weighted toward stretch code communities.
- HERS ratings are not statistically different between the registered non-program participant sample from Ekotrope and the MA19X02-B-RNCBL baseline sample.
- MA-REC compliance scores are significantly different between the samples.
- Duct leakage to outside (LTO) is not significantly different between the samples.
- Air infiltration is significantly lower in the registered HERS ratings sample than in the baseline sample.
- Baseline audits captured freezers, coolers, and secondary refrigerators absent from the registered HERS ratings sample, representing an additional 361 kWh/yr per home of electric consumption.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential & Income-Eligible
- New Homes & Renovations
- Envelope & HVAC
- Electric & Gas

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

The study does not directly affect program results rather, it explores new methods to conduct future evaluations in a more timely and cost-effective manner.

Overview of Study Method:

Our team made statistical comparisons for numerous measures between 292 Ekotrope non-participant energy models of single-family detached homes and the sample of 100 baseline homes that participated in the MA19X02-B-RNCBL study. This study compared data for all key shell measures, mechanical equipment, lighting, appliances, HERS ratings, and MA-REC compliance.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix D, Study 20-1.

Study 20-2: Lighting Supplier Insights (MA19R13-E)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group
DNV GL

Date Evaluation Completed: 8/14/2020

Study Objective and Summary of Results:

This report summarizes findings from 19 in-depth interviews (IDIs) conducted in 2020 with manufacturers, retail buyers (collectively termed *suppliers*), and advocacy groups with knowledge of the lighting market. The study was designed to provide information on the current state of the market and the regulatory environment to inform whether the Massachusetts Program Administrators (PAs) should make mid-cycle changes to the lighting portion of the Residential Retail Initiative (the program).

The study objectives included the following:

- Estimates of LED market share for 2019 and predictions of market share for 2021 and 2023 (LED market share is the percentage of bulbs sold that are LEDs)
- Opinions on when LEDs would become the dominant bulb type and how suppliers define market dominance
- Insights on how federal and state regulations affect suppliers' business practices

Key findings in this study include:

Lighting suppliers provided their companies' estimated 2019 and predicted 2021 and 2023 LED market shares in non-program areas by bulb shape. The average market share estimates were at 66% or higher for all bulb types. Suppliers were asked to estimate the LED proportion of their companies' light bulb sales in areas of the country without upstream lighting programs for 2019 and to predict those proportions for 2021 and 2023. Importantly, the estimates / predictions focused on each individual company rather than the entire market. Every supplier produces or sells LEDs – some of them exclusively – so their estimates / predictions do not reflect the entire market, which would also include suppliers who do not make or sell LEDs. **Table 1** lists the average shares, which are likely higher than the overall market due towards the bias towards LED suppliers.

Table 1: Average LED Market Share Estimates / Predictions, 2019 to 2023
(Limited to Respondents' Companies, all of which make or sell LEDs)

Product	2019	2021	2023
A-line (n=10)	72%	76%	78%
Reflector (n=11)	72%	75%	78%
Specialty (n=10)	66%	66%	70%

Lighting suppliers predicted that standard LEDs would become the dominant bulb technology in 2023, reflectors in 2025, and specialty bulbs in 2026. Suppliers generally defined dominance as achieving 50% to 70% market share. Comparing this range with estimates of suppliers' market share predictions for their companies seems to indicate that the market has achieved dominance already; however, this is not necessarily the case. Unlike market share estimates / predictions, the year of dominance predications reflect the entire market, including the influence of non-LED suppliers. As LED suppliers, respondents believed that their companies' sell a greater proportion of LEDs than found throughout the entire market.

Most suppliers expected little to no impact on their short- or mid-term business practices due to the recent Department of Energy (DOE) decisions. These decision included rescinding the expanded definition of general service lamps (GSLs) and rejecting the 45 lumens per watt (Lm/W) backstop. However, respondents were less certain about the impact of the decisions on their long-term business practices.

Suppliers offered mixed responses when asked whether the uncertainty regarding federal standards affected their bulb ordering / shipment practices. Five of the nine respondents who answered this question said that they did not expect any changes to their practices. Two of the nine who said they did expect changes planned to increase their manufacture and/or stocking of LEDs, while the other two planned to do the opposite and reduce their LED efforts.

Most suppliers reported little variation in stocking practices based on program activity, but three reported differences in LED proportions in program vs. non-program areas. The most commonly mentioned difference in stocking involved ENERGY STAR® qualified LEDs: Suppliers argued that retailers carry a greater proportion of ENERGY STAR models in program areas.

Suppliers preferred the consistency of federal regulations for the efficiencies in manufacturing, shipping, and other business practices. Respondents argued that state-specific regulations lead to inefficiencies that ultimately serve to increase product prices.

More suppliers (six) reported that retailers will sell through their remaining stock rather than ship stock to states with lower standards (three), citing logistics and costs and that they would not vary their stocking practices based on state regulations. Shipping products between states creates challenges and increases costs, leading some suppliers to say they would not ship inefficient product from states with regulations to states with others. Other suppliers, however, argued the opposite – that they would ship products between states.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Residential Retail
- Lighting
- Electric Only

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

The study provided insights into the lighting and regulatory market in which the Residential Lighting Initiative is operating, including markets in areas unaffected by programs.

Overview of Study Method:

The evaluation team conducted in-depth interviews over the phone from January to March 2020 with 14 manufacturers and three retailers. These companies manufactured, supplied, or sold lighting products that received upstream incentives from the program from January through October 2019. Collectively, the lighting suppliers interviewed accounted for 67% of total program sales in Massachusetts for the first ten months of 2019. The evaluation team also conducted IDIs with two stakeholders: one representing an energy-efficiency advocacy group and one representing a consumer advocacy group.

The interviews addressed LED market share by bulb shape in non-program areas for each company, when the respondents thought that LEDs would become the dominant bulb on the market and how they defined dominance, and the current and future impact of federal and state lighting regulations on their production, shipping, and stocking practices.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-2.

Study 20-3: Passive House Offering Program Theory and Logic Model (MA19R05)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 6/26/2020

Study Objective and Summary of Results:

The purpose of this study was to follow-up on the MA19R05 Passive House Assessment study and develop a final program theory and logic model (PTLM) for the Passive House program.

The study provides the following key findings:

- A final PTLM for the Passive House program

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- New Homes & Renovations
- All End Uses
- Electric & Gas

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

The results of this study were used to finalize market effects indicators that can be measured over time and used to quantify attributable market effects savings to the PAs efforts in this area. In addition, this study lays out the planned program processes and interactions so that they are easily digestible.

Overview of Study Method:

This study leveraged the results of the MA19R05 Passive House Assessment, along with conversations with program implementation staff, to develop a PTLM of the new Passive House offering.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-3.

Study 20-4: Lighting Sales Data Regional Analysis (MA20R22-E)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 12/2/2020

Study Objective and Summary of Results:

This report describes recent screw-base light bulb market share, shipments, and prices in Connecticut, Massachusetts, New Hampshire, Rhode Island, and program and non-program states. The analyses draw on light bulb sales data compiled by the LightTracker Initiative of the Consortium for Residential Energy Efficiency Data (CREED) and shipment data reported by the National Electrical Manufacturers of America (NEMA). The primary purpose of this study is to characterize the current lighting market and track market share over time. The Massachusetts Program Administrators (PAs) partnered with the Connecticut Energy Efficiency Board, the New Hampshire PAs, and National Grid Rhode Island on this study. The study refers to these four states as the Study States.

The objectives of this study were:

- Examine current market share in the Study States individually, the states with upstream lighting programs, the states without upstream lighting programs, and the entire nation.
- Provide breakdowns of market share by bulb type (i.e., LEDs, CFLs, halogens, and incandescents), shape (A-line, reflector, globes, and candelabras), and ENERGY STAR® status for each of the Study States (individually) and non-program states (collectively).
- Investigate if there are differential growth rates in market shares across areas.
- Create adoption curves of overall market share by bulb technology (inclusive of all shapes) for each Study State and non-program areas from 2009 to 2019.
- Explore trends in NEMA reported quarterly bulb shipment share from 2017 through the second quarter of 2020.
- Assess market share in very low (<310) and very high lumen bins (>2,600), which roughly coincide with ranges that are exempt from Phase 1 of the Energy Independence and Security Act (EISA), which was the original incandescent phase-out that went into effect between 2012 and 2014.
- Compare average prices of LEDs and halogens over time.

Key findings in this study include:

- **In 2019, LEDs made up the majority of light bulb sales in all areas, including non-program states.** Massachusetts (67%) and Rhode Island (68%) had higher market shares than Connecticut (56%) and New Hampshire (60%). LED market share in non-program areas was 54%.
- **Prior to 2018 and in all areas examined, LEDs mainly displaced CFL market share; after 2018, LEDs also displaced halogen shares.** Prior to 2018, LED growth in market share primarily displaced CFL market share. In or after 2018, LED market share began to displace halogen market share as well across all the areas.
- **LED market share differed across retail channels overall and for all shapes.** Overall LED market share in the combined hardware and home improvement stores (non-POS channels) was 59% or higher in all areas, while LED market share in discount, dollar, drug, grocery, mass merchandise, and some membership stores (POS channels) did not exceed 52% in all areas. For every bulb shape and in all areas, LED market shares in non-POS channels exceeded those in POS channels.
- **While reflectors had the highest LED market share in all areas studied, candelabras saw the largest growth in market share between 2018 and 2019. A-line LED market share in non-program areas increased by only 3 percentage points.** As in 2018, reflector market share continued to exceed that of all other shapes, with market shares at 80% or higher in all areas. Candelabra market shares were 46% or higher and had increased by at least 25 percentage points. Market share for globes was 42% or higher and A-lines was 51% or higher.
- **Halogens are the most common alternative to LEDs for A-lines, whereas incandescents are the primary LED alternative to globes and candelabras. For reflectors, consumers across the areas are nearly equally as likely to opt for halogens and incandescents if they do not select an LED.** Halogens made up the second largest market share for A-lines (ranging from 21% to 42% across the areas) and reflectors (4% to 11%) after LEDs whereas incandescents dominated the market for candelabras (31% to 53%) and globes (24% to 42%).
- **LED market share continues to grow in both program and non-program states. Program areas still have higher LED market share, but non-program areas are closing the gap.** LED market share of program states had a nine to ten percentage point lead over non-program states between 2016 and 2017 and a seven percentage point lead between 2018 and 2019. While the percentage difference between program and non-program states has mostly remained unchanged, the relative difference has declined because LED market share increased in non-program states. LED market share of program states had a 37 percent relative lead over non-program states in 2016 and a 12 relative percent lead in 2019.

- **Market share of ENERGY STAR qualified LEDs was at least 66% or higher, including in non-program areas.** ENERGY STAR qualified LEDs accounted for 91% of LED sales in Rhode Island, 88% in Massachusetts and New Hampshire, and 84% in Connecticut. **ENERGY STAR** qualified LED market share in program areas (74%) was still notably higher than non-program areas (66%).
- **LEDs dominated the A-line market in lumen bins most closely associated with 60 Watt incandescent bulbs, but incandescents remained the most common bulb in low and high lumen bins (representing 2% to 6% of the market) in most areas.** Bulbs most closely associated with a 60 watt incandescent bulb have the highest sales volumes. LEDs made up at least 68% of sales in this lumen bin across the four Study States and 62% in non-program areas.
- **Across all channels, LED prices continued to fall in non-program areas, but the pace slowed. In POS channels, LED prices for reflectors in non-program areas fell below those for halogens, but remained higher than incandescents.** LED prices in non-program areas fell from $4.93 in 2016 to $2.59 in 2018. At the same time, halogen prices fell from $1.75 to $1.43. Both bulbs saw slight upticks in 2019, to $2.68 for LEDs and $1.48 for halogens.. Reflector LED prices were $3.99 in POS channels in non-program areas, compared to $4.63 for halogens and $3.18 for incandescents.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Residential Retail
- Lighting
- Electric Only

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

The Study provided valuable context as the PAs continue to monitor the residential lighting market and the impact of the Residential Lighting Initiative. The results suggest that, in 2019, the Residential Lighting Initiative contributed to increased market share and lower shelf prices of ENERGY STAR LEDs, but the impact of the program on the market as a whole appears to be dwindling as the market naturally progresses towards LEDs.

Overview of Study Method:

Using lighting bulb sales data compiled by CREED as part of the LightTracker Initiative (2009 to 2019), shipment data (2011-2020) from NEMA, and program activity data, NMR employed a series of descriptive analysis tasks. The CREED data were generated from point-of-sale (POS) sales data (from grocery, drug, dollar, discount, mass merchandiser, and selected club stores), and National Consumer Panel state sales data (from home improvement, hardware, online, and selected club stores).

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-4.

Study 20-5: 2019 Residential Lighting On-Sites (MA19R15-E)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 12/9/2020

Study Objective and Summary of Results:

The goal of this study was to update estimates of lighting saturation and other critical market indicators in Massachusetts. The data for this study came from on-site lighting inventories conducted in the summer of 2017 and between October 2019 and March 2020 in Massachusetts homes that are a part of the Residential Baseline Study (RES 1).

Evidence from this study suggests the following:

- Light Emitting Diode (LED) saturation in 2020 was 45% in RES1 Baseline homes, an increase from 2017 when saturation was 27% in the Baseline study homes.
- Massachusetts households chose LEDs as replacements for two-thirds (66%) of bulbs replaced since the 2017 visit.
- Over one-third of all installed bulbs (37%) were ENERGY STAR® LEDs, and 92% of all LEDs that households recalled purchasing or obtaining in the last year were verified to be ENERGY STAR-certified.
- Saturation of specialty LED lamps in Massachusetts was highest for reflectors (60%), followed by candelabras (47%) and globes (35%).
- While compact fluorescent lamps (CFLs) and inefficient bulbs (halogens + incandescents) made up about equal proportions of non-LED A-line sockets, inefficient bulbs accounted for nearly all of the non-LED specialty bulbs.
- However, the RES1 Baseline sample includes a disproportionately high number of households verified to have taken part in a direct install program between 2017 and 2020, which has important implications:
  - Some of the observed changes to lighting use reflect program influence. Findings for socket saturation, bulb replacement, and newly purchased or obtained bulbs may be biased towards LEDs as a result.
  - Socket saturation for households not taking part in a direct install program was 39%; therefore, true socket saturation in 2020 was likely between 39% and 45%.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Residential Retail

- Lighting
- Electric Only

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

Estimates of saturation and other market indicators help inform program design, planning, and implementation of the upstream lighting program.

Overview of Study Method:

The data for this study came from on-site lighting inventories of 301 homes in Massachusetts completed between October 2019 and March 2020. Of these, 199 homes had been previously visited in 2017 as part of the RES1 Baseline study The other 102 homes were visited for the time in 2019/2020. Trained technicians visited the homes and identified all light bulbs installed in sockets or in storage. They noted key characteristics, such as technology, shape, and wattage. They also collected model numbers for LEDs to determine if the bulbs were ENERGY STAR qualified. For homes visited in 2017, the technicians also identified bulbs that had been switched between sockets, removed from storage, or newly brought into the home.

NMR weighted the on-site survey data to reflect the population proportions for home ownership (tenure) and education in Massachusetts based on the American Community Survey (ACS) Five-Year Estimates.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-5.

Study 20-6: Residential Coordinated Delivery Virtual Home Energy Assessment Study (MA20R26-B-VHEA)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: Guidehouse

Date Evaluation Completed: 3/12/2021

Study Objective and Summary of Results:

In March 2020, in response to COVID-19 social distancing requirements, the Massachusetts Program Administrators (the PAs) temporarily replaced the Residential Coordinated Delivery (RCD) initiative's customary in-person home energy assessments (HEA) with virtual (i.e., remote home energy assessments (VHEA). As part of a VHEA, RCD assessors:

- Virtually complete the basic functions of the in-person HEA using common communication software like Zoom and Google Meet/Duo.
- Mail the participant a customized package of instant savings measures (ISMs) for self-installation.
- Develop a scope of work to address any identified air sealing and insulation opportunities and/or mechanical system upgrades.

The PAs expanded the RCD assessment repertoire in July 2020 to include "hybrids". Hybrids, which combined VHEA elements with a shorter follow-up in-person visit, typically occurred for customers with physical limitations, complex properties, those who expressed a strong preference for in-person engagement, or when a VHEA findings were inconclusive (i.e., assessors needed more information to develop recommendations or work scopes).

After nearly a year and more than 20,000 VHEAs, the PAs and Energy Efficiency Advisory Council (EEAC) want to identify lessons learned from the transition to VHEAs and determine how best to interact virtually with customers as part of future initiative cycles.

The key findings are:

1. Most VHEA participants were satisfied with their virtual experience.
2. VHEA-based scopes of work are less accurate, which has adverse implications for contractors.
3. In-service rates are much lower for self-installed measures.
4. VHEAs are a viable, yet imperfect, delivery method.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Weatherization
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation #1 - The evaluation team recommends using the weighted In-Service Rates by measure:

Measure	Weighted ISR (By Assessment Type and Assessor)
LED lightbulbs	87%
Showerheads	66%
Faucet aerators	74%
Smart power strip	73%
Thermostats	79%

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

The study identified lessons learned from VHEAs so the PAs can apply them to future RCD cycles and maximize the value of this new delivery mechanism.

Overview of Study Method:

The methodology was developed to provide the PAs with insights on VHEAs from a variety of perspectives. To provide this, the evaluation team completed the following tasks.

Task 1 | Program Manager Interviews (n=11)

The evaluation team began by interviewing the PA and LV managers that oversee RCD. The evaluation team used these initial interviews to gain program managers' perspectives on the lessons they learned launching VHEAs, as well as their thoughts about the potential role of VHEAs (or other forms of virtual customer interaction) as part of future program delivery. The team spoke with representatives from each PA and LV, in addition to EEAC implementation consultants.

Task 2 | Assessor Interviews (n=22)

Next, the evaluation team conducted 22 interviews—10 with LV Energy Specialists and 12 with HPCs, including HPC technicians and management. The interviews focused on their experience completing VHEAs, the advantages and disadvantages of the approach, technological difficulties, and customer feedback. As with the program manager interviews, the team asked for their perspective on the long-term role for VHEAs in RCD and what, if anything, could be done to streamline VHEA delivery, increase effectiveness, or add value for participating customers.

Task 3 | Participant Surveys (n=332)

Customer's experience with VHEAs was central to this study. To gain this, the team surveyed 332 participants who completed a virtual assessment between May and September 2020. The web-based survey focused on participants' experience conducting the VHEA, their interaction with their ES/HPC, and installation rates for mailed self-install measures. See Appendix A for a list of respondents by PA and the analysis weights the team applied to estimate statewide values.

Task 4 | Nonparticipant Surveys (n=77)

To understand why some customers decided not to proceed with the VHEA, the evaluation team surveyed 77 customers—henceforth referred to as "nonparticipants"—that declined to have a virtual assessment when their in-person assessment was cancelled. The team used the web-based survey to ask nonparticipants why they declined the VHEA, their concerns about the VHEA, and their awareness of the increased insulation incentive.

Task 5 | Contractor Interviews (n=20)

The evaluation team interviewed 20 contractors (14 IICs and 6 HPCs) to determine the accuracy of weatherization scopes based on VHEAs and how, if at all, their business has been impacted by the transition to virtual assessments.

Task 6 | Program Data Analysis

To complement and support Tasks 1-5, the team also analyzed 2019 (HEA only) and 2020 (mostly VHEA) program tracking data. The team explored for potential differences in recommendation rates by measure, participating building types, and renter/landlord participation.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-6.

Study 20-7: Renovations and Additions Incremental Cost Study (MA20R27)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 5/18/2021

Study Objective and Summary of Results:

The purpose of this study was to provide an estimate of the incremental costs associated with participating in the Massachusetts Renovations and Additions (R&A) program. This study applies to single-family homes and low-rise (three stories or less) multifamily housing units that conduct a renovation and/or addition. Incremental costs were calculated on a per square foot of conditioned floor area (CFA) basis to move from baseline construction practices (ISP for renovation and the residential new construction baseline for additions, referred to as the RNC UDRH) to construction practices applied in recent R&A program projects. The study also included a summary of program practices based on the review of 973 participant projects.

The study provides the following key findings:

- Incremental costs for the renovations portion of the program, using the ISP baseline, were $3.05 per square foot. The incremental costs for the addition portion of the program were $1.28 per square foot. The overall cumulative incremental cost for the R&A program is $2.77 per square foot.
- Only 32% of homes initially conducted air sealing tests before any work was conducted. The homes that did not conduct air infiltration testing applied default efficiency values, making it unclear whether air sealing practices occurred during the renovation.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- New Homes & Renovations
- Envelope & All End Uses
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: The savings for the R&A program were recalculated with the ISP baseline; therefore, we recommend using the incremental cost of $2.77 per CFA for the R&A program retrospectively and prospectively.

Recommendation 2: The program would benefit from an increased focus on air sealing. This may increase the frequency of air infiltration testing during the initial audit and after the work is completed to allow for assessment on savings that are a result of air sealing that occurred on

the project. If air sealing is not being conducted on R&A projects, the program has an opportunity to intervene.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

The findings from this study provide insight into the incremental costs currently faced by contractors or homeowners who decide to participate in the R&A Program. This information is used for cost-effectiveness testing and may inform the incentives offered to participants.

Overview of Study Method:

In this study, NMR leveraged the methodology used in the MA19R18 Residential New Construction Incremental Cost Study to calculate incremental costs. The incremental cost estimates were evaluated against two separate baselines: a renovation baseline (ISP) and an addition baseline (RNC UDRH). The team assessed the measure-level data for 973 projects to determine, at the measure-level, what was a renovation and what was an addition. NMR then assessed costs for recently-renovated program homes against the ISP baseline, to provide an estimate of the incremental costs associated with program participation using two baselines.[1]

The study approach relied on cost data from the National Renewable Energy Laboratory's (NREL) National Residential Efficiency Measures Database (NREMD), to construct cost regression models that estimated costs based on efficiency for various measures. The costs were calculated, by measure, for baseline conditions and for the improved conditions, the incremental cost is based on the delta between these estimates.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-7.

[1] The study also included an incremental cost estimate for the previous baseline scenario that the program used, pre-existing conditions, which ultimately was replaced with the ISP baseline to calculate savings for the R&A program. The pre-existing baseline incremental cost results are included in the final report for reference, but are no longer applicable due to programmatic changes.

Study 20-8: Comprehensive TRM Review (MA19R17-B-TRM)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: Guidehouse

Date Evaluation Completed: 3/9/2021

Study Objective and Summary of Results:

The Technical Reference Manual (TRM) documents the calculations used by the state's Program Administrators (PAs) to claim savings through their energy efficiency programs. It is critical that the TRM use the best available data and that its deemed savings values are based on credible, standardized assumptions. The primary goal of this review was to ensure that relevant data from the Residential Baseline Study and other recent studies are incorporated into the TRM. A secondary goal was to assess the quality of the values in the residential portion of the TRM and to conduct analysis, where relevant, to improve these parameters.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- New Buildings & Major Renovations
- Behavior & HVAC
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Table 1 describes the measure parameters for which the evaluation team recommends the PAs adopt updated TRM values. Table 1 is organized by measure title, with measures presented in the order in which they appear in the 2019-2021 Plan Version of the MA TRM.

Measure Name	Parameter Name	Unit	Existing Value	Proposed Value
Boiler, Gas Forced Hot Water (RES-HVAC-BGFHW)	Effective Useful Life (EUL)	Years	20	23
	Baseline Efficiency, ER	AFUE	80.0% nameplate 77.4% actual	85.5% nameplate 77.4% actual
	Baseline Efficiency, ROF	AFUE	82.0% nameplate 79.3% actual	86.5% nameplate 83.7% actual
	Baseline Efficiency, Oil, ROF	AFUE	83.0%	Through 2020: 83.0% 2021 and on: 86.0%

Measure Name	Parameter Name	Unit	Existing Value	Proposed Value
Boiler, Oil/Propane Forced Hot Water (RES-HVAC-BFHW)	Baseline Efficiency, Propane, ROF	AFUE	82.0% nameplate 79.3% actual	86.5% nameplate 83.6% actual
Central Air Conditioning (RES-HVAC-CAC)	Baseline Efficiency, ER	SEER	10.0	13.5 nameplate 12.0 actual
	Baseline Efficiency, ROF	SEER	13.0	14.0
Central Ducted HP Fully Displacing Existing Furnace (RES-HVAC-FSHP)	Baseline Efficiency, Oil, ER	AFUE	78%	79%
Central Ducted HP Partially Displacing Existing Furnace (RES-HVAC-FSHP-P)	Baseline Efficiency, Oil, ER	AFUE	78%	79%
Clothes Dryer (RES-A-CD)	EUL, Electric	Years	12	16
	EUL, Gas	Years	12	17
Combo Condensing Boiler/Water Heater (RES-HVAC-CCBWH)	Baseline % Split of Indirect vs Storage Water Heater (WH)	%	80% Indirect, 20% Storage	24% Indirect, 76% Storage
	Baseline Efficiency, Boiler, ER	AFUE	80.0% nameplate 77.4% actual	85.5% nameplate 77.4% actual
	Baseline Efficiency, Boiler, ROF	AFUE	82.0% nameplate 79.3% actual	86.5% nameplate 83.7% actual
	Baseline Efficiency, WH, ER Blended Medium-, High-Draw	UEF	0.55	0.58
Dehumidifier (RES-PL-DH)	Capacity	Pints/Day	35	*Remove*
	Efficiency	Liters/kWh	Retirement: 1.0 Baseline: 1.5 Measure: 2.0	Retirement: 1.6 Baseline: 2.8 Measure: 3.3
	Hours of Operation	Hours/Year	Undocumented	*Remove*
	Dehumidification Load	Liters/Year	n/a	1,520
	Energy Savings	kWh/Year	New: 167.6 Retirement: 152.7	New: 82.3 Retirement: 407.1
	Demand Savings	kW	New: 0.04 Retirement: 0.04	New: 0.02 Retirement: 0.10
	EUL	Years	12	17
ECM Circulator Pump (RES-HVAC-ECMCP)	CF_{WP}	-	0.16	0.53
Furnace, Gas (RES-HVAC-FG)	EUL	Years	18	17
	Baseline Efficiency, ER	AFUE	78.0% nameplate 78.9% actual	85.0% nameplate 81.0% actual
	Baseline Efficiency, ROF	AFUE	85.0%	89.0% nameplate 90.1% actual

Measure Name	Parameter Name	Unit	Existing Value	Proposed Value
Furnace, Oil/Propane (RES-HVAC-FOP)	Baseline Efficiency, Propane, ROF	AFUE	85.0%	89.0% nameplate 90.1% actual
Heat Recovery Ventilator (RES-HVAC-HRV)	HRV Gas Savings	MMBtu	7.7	8.6
	HRV Electricity Savings	kWh	-133	-171
	HRV Demand Savings	kW	-0.10	-0.02
	ERV Gas Savings	MMBtu	-	8.8
	ERV Electricity Savings	kWh	-	-127
	ERV Demand Savings	kW	-	-0.014
Insulation (RES-BS-I)	Heating Degree-Days, Cooling Degree-Hours	HDD, CDH	Varies by City, see Table 3-20	
Low-Flow Showerhead (RES-WH-S)	EUL	Years	7	15
Low-Flow Showerhead with Thermostatic Valve (RES-WH-STV)	EUL	Years	7	15
	Electric (Single Family)	kWh	372	247
	Electric (Single Family)	kW	0.08	0.06
	Gas (Single Family)	MMBtu	1.84	1.22
	Oil (Single Family)	MMBtu	2.09	1.32
	Other (Single Family)	MMBtu	1.84	1.22
	Electric (Multi-family)	kWh	335	183
	Electric (Multi-family)	kW	0.09	0.04
	Gas (Multi-family)	MMBtu	1.66	1.41
	Oil (Multi-family)	MMBtu	1.88	1.44
	Other (Multi-family)	MMBtu	1.66	1.41
Pool Pump (RES-MAD-PP)	Operating Days per Year	Days/Year	91	122
	Pool Size	Gallons	20,000 to 23,000	22,000
	Flow Rates	gpm	Baseline: 64 2S: 66 high, 33 low VS: 50 high	Baseline: 97 2S: 97 high, 48 low VS: 77 high, 31 low
	Daily Operating Hours	Hours/day	Baseline: 8.5 2S: 2 high, 12.5 low VS: 2 high, 18 low	Baseline: 5.7 2S: 2 high, 9.5 low VS: 2 high, 15.7 low
	Energy Factor	EF	Baseline: 2.1 2S: 2.0 high, 5.2 low VS: 4.0 high, 8.8 low	Baseline: 2.0 2S: 1.9 high, 5.3 low VS: 2.9 high, 10.5 low
	Energy Savings	kWh/year	2S: 842, VS: 1,062	2S: 639, VS: 1,284
	Demand Savings	kW	2S: 0.87, VS: 1.12	2S: 0.67, VS: 1.35
	EUL	Years	10	6
Programmable Thermostat (RES-HVAC-PT)	EUL	Years	15	19
	Energy Savings	kWh/year	513	230

Measure Name	Parameter Name	Unit	Existing Value	Proposed Value
Quality Installation with Duct Modification (RES-HVAC-QIDM)	Demand Savings	kW	0.85	0.18
Room Air Cleaner (RES-PL-RAC)	Energy Savings	kWh	391	Varies; see Table 3-28
Room Air Conditioner (RES-PL-ROOMAC)	EUL	Years	8	12
Stand Alone Water Heater (RES-WH-SASWH)	Baseline Efficiency, ER	UEF	Medium Draw: 0.52 High Draw: 0.58 Blended: 0.55	Medium Draw: 0.56 High Draw: 0.60 Blended: 0.58
	EUL	Years	13	10
Thermostatic Valve (RES-WH-TV)	EUL	Years	7	15
Variable Frequency Drive (RES-MAD-VFD)	Energy Savings	kWh/HP	Varies by type; see Table 3-34	
	Demand Savings, Summer	kW/HP_{SP}	Varies by type; see Table 3-34	
	Demand Savings, Winter	kW/HP_{WP}	Varies by type; see Table 3-34	

Recommendation 2: The team identified several measures and parameters for which updated parameter values are not recommended. Table 2 lists these measures and the reasons why this study does not recommend updated parameter values for them.

Measure Names and Codes	Reason for Not Updating
• Air Source Central Heat Pumps (RES-HVAC-ASHP) • Central Air Conditioning (RES-HVAC-CAC), efficient level • Ductless Mini-Split Heat Pumps (RES-HVAC-DMHP)	The PAs use program data to update measure parameters.
• Central Ducted Heat Pump Fully Displacing Existing Furnace (RES-HVAC-FSHP) • Central Ducted Heat Pump Partially Displacing Existing Furnace, Oil (RES-HVAC-FSHP-P) • Ductless Mini-Split Heat Pump with Integrated Controls – Fully Displacing Existing Boiler (RES-HVAC-FS-DMSHP) • Ductless Mini-Split Heat Pump with Integrated Controls – Partially Displacing Existing Boiler (RES-HVAC-FS-DMSHP-P)	This study recommends revised measure lifetime values. Revised measure savings values will be informed by a new energy optimization study.
• Refrigerator/Freezer Recycling (RES-A-RFR)	Improved data is not available.
• Faucet Aerators (RES-WH-FA) • Pipe Wrap, Water Heating (RES-WH-PW) • Early Retirement Clothes Washers (RES-A-ERCW) • Clothes Dryers (RES-A-CD) • Heat Pump Quality Installation Verification (RES-HVAC-HPQIV) • Heat Pump Digital Check-up/Tune-up (RES-HVAC-HPDCU)	Measures represent a small portion of program savings.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

The study identified measure parameters in the TRM for which the evaluate team recommends the PAs adopt.

Overview of Study Method:

The evaluation team's review focused on identifying TRM parameters that were out-of-date, that were based on less relevant data sources (i.e., not Massachusetts or New England-specific), or that have a significant effect on the energy efficiency program's energy, demand, or fossil fuel savings. The team designed and implemented a scoring methodology that accounted for these factors and flagged select parameters as a high priority to update. Conversely, parameters from recently published, relevant data sources or that have a low savings impact received a low priority score. The resulting priority scores helped determine which parameters are candidates for updating.

The team reviewed data collected in the Residential Baseline Study and other available data sources to identify newer or more robust data available for updating parameter values. Other data sources include but are not limited to federal standard updates, ENERGY STAR updates, and recent evaluation studies.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-8.

Study 20-9: 2019/20 Massachusetts Winter Thermostat Optimization Evaluation

Type of Study: Impact Evaluation

Evaluation Conducted by: Guidehouse

Date Evaluation Completed: 10/23/2020

Study Objective and Summary of Results:

The purpose of this study was to estimate energy savings for the winter thermostat optimization program (called Seasonal Savings, hereafter SS) deployed in Cape Light Compact (CLC), Eversource, and (National Grid service territories in winter 2019/20, and to estimate associated energy and demand savings and calculate realization rates.

The study provides the following key findings:

- 47% of ITT thermostats and 61% of qualified ITT thermostats enrolled in the program across all three PAs.
- Enrollment and qualification rates for ITT devices are lower for Cape Light Compact than National Grid and Eversource (63% qualified and 38% of those qualified enrolled for Cape Light Compact versus 78% and 48%, respectively, for National Grid and Eversource combined). Such differences are likely due to different home usage and heating needs on Cape Cod.
- Enrollment rates by PA were similar to 2018/19. Almost two-thirds of devices that enrolled in 2018/19 and were offered the program again in 2019/20 reenrolled.
- Scheduled and actual setpoints and runtime all show evidence of the program effect for the ITT versus control groups. The stay-at-home period from the pandemic does not seem to affect the relative positioning of the ITT and control groups.
- Reviewing scheduled and actual setpoints and runtime based on when customers were treated (2018/19, 2019/20, both, or neither) shows some persistence in setpoints and shows the program effect builds over time.
- Scheduled setpoints for natural gas customers were about 0.25°F lower in the pre-period than in 2018/19. The SS impact on scheduled setpoints was roughly the same as 2018/19 (-0.80°F this year compared with -0.67°F last year).
- Average daily runtime for natural gas customers in the pre-period was similar across the two years (~250 minutes); however, it was lower in the 2019/20 program period (~190 minutes) compared with 2018/19 (~220 minutes), likely driven by milder weather in January to March. The SS impact on runtime was smaller (-4 minutes this year compared with -6 minutes last year).
- Across all three PAs, the program achieved 62,681 MMBtu of fuel energy savings and 319 MWh of electric energy savings (91 MWh on-peak and 228 MWh off-peak) between January 8 and April 30, 2020.
- For natural gas devices, the average energy savings per treated thermostat over the season was 11.6 therms (3.6% of heating load) and 5.4 kWh (3.6% of heating load) between

January 8 and April 30, 2020. This was a decrease of approximately 26% from 2018/19, likely driven by milder weather.

- For non-natural gas devices, average energy savings per treated thermostat over the season were 8.2 therms (2.7% of heating load) and 15.2 kWh (6.0% of heating load) between January 8 and April 30, 2020. This was a decrease of approximately 12% from 2018/19, likely driven by milder weather resulting in lower baseline usage.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- New Buildings & Major Renovations
- Behavior & HVAC
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: In 2019/20, the PAs should claim the fuel and electric savings listed in the following table.

PA	Heating Fuel Type	Measure Life	Participating Thermostats	Verified MMBtu Savings†	Verified kWh Savings†
Statewide	**Natural Gas**	**1**	**52,285**	**60,796**	**281,641**
Eversource	Natural Gas	1	15,977	18,578	86,064
National Grid	Natural Gas	1	36,308	42,219	195,582
Statewide	**Non-Natural Gas**	**1**	**2,449**	**1,886**	**37,167**
Cape Light Compact	Electric	1	32	-	486
	Oil	1	700	575	10,624
	Propane	1	228	187	3,460
Eversource	Electric	1	46	-	698
	Oil	1	392	322	5,949
	Propane	1	129	106	1,958
National Grid	Electric	1	77	-	1,169
	Oil	1	644	529	9,774
	Propane	1	201	165	3,050

Recommendation 2: In 2019/20, the PAs should claim electric savings broken down into on-peak and off-peak savings based on the following percentages:

- Natural gas: 28% on-peak, 72% off-peak
- Non-natural gas: 32% on-peak, 68% off-peak

These percentages should be multiplied by the verified kWh savings shown in the table in recommendation 1.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The study found average energy savings of approximately 11.6 therms and 5.4 kWh per treated natural gas thermostat and 8.2 therms and 15.2 kWh per treated non-natural gas thermostat in winter 2019/20. This is the last year SS will be evaluated as Google has integrated it as a standard offering for all Nest thermostats.

Overview of Study Method:

The study relied on thermostat telemetry data and thermostat-level participation data. A total of 145,659 thermostats (98,622 in National Grid's service territory, 41,925 in Eversource's service territory, and 5,112 in CLC's service territory) were included in the study (93% of the 145,659 thermostats in the PAs combined service territories were eligible for savings and approximately 11% were excluded from the analysis due to data quality).

1. An exploratory analysis of the data was performed to:
    - Compare enrollment and reenrollment rates across PAs to assess customer acceptance of the program over multiple years.
    - Analyze setpoints (scheduled and actual) and thermostat heating runtime to assess whether the impact of thermostat optimization was evident in the data.
    - Compare data for devices treated in both 2018/19 and 2019/20 with those treated just one year or the other.
    - Analyze differences between weekdays and weekends.
2. Guidehouse conducted an impact analysis to estimate the energy savings from SS for treated devices. The impact analysis for natural gas devices consisted of a runtime to energy conversion, regression modeling to calculate savings, and a comparison with Google's calculated savings. For non-natural gas devices, Guidehouse applied percentage savings from the 2018/19 evaluation to baseline usage (converted from runtime) for 2019/20.

    A regression-based modeling approach was used to estimate energy savings for natural gas devices over the heating season. The SS program uses a randomized encouragement design

(RED) in which all customers in a PA's service territory with a Nest thermostat were randomly assigned into one of two groups. These two groups are the intent to treat (ITT) group, where participants are randomly assigned to receive the program offering, and the control group, where participants are randomly assigned to *not* receive the program offering.[2]

All qualified customers were provided the program offering on the thermostat itself and through Nest's mobile app. Some portion of ITT customers chose to opt in and enrolled into the program, while others did not. The group of customers that opted in is referred to as the treated group. Thermostats that were part of the ITT group but either did not qualify or did not opt in are referred to as the untreated group.

SS savings are evaluated by comparing the ITT group (both treated and untreated thermostats) to the control group using a linear fixed effects (or difference-in-differences) regression model to estimate energy and demand savings. The estimate of savings is then scaled by the program opt-in rate to calculate savings per treated thermostat.
For the 2019/20 season, National Grid and Eversource only offered the SS program to natural gas customers, dramatically reducing the number of customers available to model non-natural gas device savings. In the 2018/19 evaluation, almost 18,000 non-natural gas devices participated in the program compared with less than 2,500 in 2019/20. With so few non-natural gas devices, Guidehouse and Google agreed that regression modeling was unreliable to estimate savings.[3]

Instead, Guidehouse estimated savings using the same percentage savings as the 2018/19 evaluation and applied them to the 2019/20 usage baselines. Although the same savings were claimed for all non-natural gas devices in the 2018/19 evaluation, the evaluation team used the per fuel type savings to account for the change in mix of non-natural gas devices by fuel type between the two years.[4]

Due to the design of the program, targeted thermostats could not be linked directly to customers and their billing data. Therefore, the study relied exclusively on thermostat telemetry data to estimate impacts after converting thermostat runtime to energy consumption. Based on a combination of geographic location, self-reported heating types, and thermostat wiring, each Nest thermostat was assigned a heating fuel and equipment type. To develop conversion factors for each heating and equipment type, Guidehouse leveraged various data sources to obtain accurate estimates of average capacity and

[2] For each PA, 80% of thermostats were randomly assigned to the ITT group while the remaining 20% were assigned to the control group.
[3] Google did run regressions for non-natural gas devices but found the relative precision at 90% confidence to be 69% of the savings estimate for fuel and 116% for electric (compared with 39% and 55% for 2018/19).
[4] In 2018/19, 75% of non-natural gas devices were oil, 16% propane, and 10% electric; in 2019/20, the same percentages were 71%, 23%, and 6%. This result shows a shift away from oil and electric and toward propane, which is likely explained by the higher share of Cape Light Compact thermostats among the non-natural gas devices in 2019/20 compared with 2018/19.

operating efficiency, including previous potential studies, the RES 1 Baseline Load Shape Study, past DOE regulatory analyses and the Massachusetts Technical Reference Manual.

Because Guidehouse received daily rather than hourly data from Google this year, electric savings for on-peak, off-peak, and demand periods could not be directly estimated using 2019/20 data. The evaluation team estimated on- and off-peak electric savings using the same percentage of savings these periods made up in the 2018/19 analysis (28% on-peak and 72% off-peak for natural gas devices; 32% on-peak and 68% off-peak for non-natural gas devices). No electric winter demand savings were found in 2018/19, so no demand savings can be claimed for 2019/20.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-9.

Study 20-10: Eversource Home Energy Report Program Year One Persistence Savings and Decay Rate Study

Type of Study: Impact Evaluation

Evaluation Conducted by: Guidehouse Inc.
Illume Advising

Date Evaluation Completed: 2/26/2021

Study Objective and Summary of Results:

The purpose of this study was to determine how savings persisted after the November 2019 discontinuation of the Eversource Home Energy Reports (HER) program. The study identified first year persistence savings realized during calendar year 2020 and final year savings realized between November 2018 and October 2019. Using these findings, decay rates and persistence factors were provided to measure the extent to which savings persisted following termination of program treatment. For calendar year 2020, the persistence factor was defined as the ratio of percentage savings realized in 2020 and the percentage savings realized in the final year of program treatment, and the decay rate was equal to one minus the persistence factor. For a program with savings declining after discontinuation of program treatment persistence factors and decay rates will be between zero and one.

The study provides the following key findings:

- Net savings realized between November 2018 and October 2019:
  - 39,619,661 kWh
  - 873,955 Therms
- Net savings realized between January and December 2020:
  - 37,359,250 kWh
  - 857,253 Therms
  -

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential & Income-Eligible
- Residential Behavior
- Behavior & All End Uses
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: While the savings from the study reflect reasonable statistical significance, the decay rate results indicate that forecasting future persistence may be unreliable. If Eversource claims persistence savings in the future, the evaluation team

recommends periodically updating the study to learn how persistence savings are changing year-over-year, which will allow for more certainty during future planning cycles and filings.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

Evaluation findings will help Eversource understand the persistence savings that exist from the discontinued HER program. The evaluation findings will also help Eversource understand the extent to which savings decay over time.

Overview of Study Method:

To evaluate electric and gas savings during the final year and first persistence year of the HER program, the evaluation team utilized billing data and customer tracking data. A lagged dependent variable (LDV) model was estimated using these data for each electric and gas wave independently, which included program treatment status, monthly fixed effects, and pre-program energy use variables.

Since HER program participation may impart a lift in other program participation (participant uplift), the evaluation team estimated the degree to which this occurred. To conduct uplift analysis the evaluation team utilized program tracking data for all HER waves between 2018 and 2020. These data did not include pre-period program participation for most treatment groups. Therefore, the evaluation team estimated uplift due to suggested actions contained in this HER evaluation period through a post-only differences (POD) approach.

Once uplift savings were estimated, the evaluation team deducted these uplift savings from the savings evaluated via the billing analysis. The result of this difference was program savings net of uplift. These savings are provided above as net savings realized between November 2018 and October 2019 and net savings realized between January and December 2020.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-10.

Study 20-11: Impact Evaluation of PY2019 Massachusetts C&I Upstream Lighting Initiative (MA19C06-E_UPLGHT)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 3/5/2021

Study Objective and Summary of Results:

The purpose of this study was to build upon prior research to understand the extent to which program performance is meeting program and policy goals and objectives. Research objectives included updating building-type hours of use (HOU) and compiling space-type HOU; assessing the quality control (QC) process and documenting potential improvements; and surveying, inventorying, and metering customer lighting controls.

The study provides the following key findings:

- Two savings values were calculated for each site in the study: connected demand savings (kW) and energy savings (kWh).
- The 2020 retrospective energy savings realization rate (RR) is 85.8%, ±15.3 at the 90% confidence level. We recommend the PAs apply these results retrospectively to PY2020.
- The overall short-term ISR is 83.4%, with a precision of ±7.4% at the 90% confidence level, and the long-term ISR is 84.0% with a precision of ±7.4% at 90% confidence.
- The delta watts RRs for evaluation categories 1-5 are all near or over 100%. For high/low bay LEDs, the delta watts realization rate is 57.3%, producing an overall RR of 102.3% with a ±14.5% precision at 90% confidence.
- Connected demand (ISR times delta watts) is 85.4%, with a precision of ±14.3% at 90% confidence.
- The overall demand interactive factor is 1.06, with a precision of ±9.9 at the 90% confidence level.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- C&I New & Replacement Equipment
- Lighting
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: For retrospective application of results (PY2020), the initiative should use the realization rates provided in the study. We recommend using the overall realization rate of 85.8% that covers all evaluation categories, given the high variance in individual evaluation categories.

Recommendation 2: In 2021, the initiative should use the realization rates of 96.8% for screw-in LEDs and 82.3% for non-screw-in LEDs, which exclude the impact of HOU updates that the PAs already adopted in 2021. Beginning in 2022, the PAs should use the updated impact factors provided in the first section of the study.

Recommendation 3: As with the prior HOU study, if a building type is unknown, use the overall result of 4,569 hours for upstream lighting, which represents the average operating hours of all building types combined.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt and/or are considering some of the recommendations, as described below.

Recommendations 1 and 2 are/will be implemented by PAs. Recommendation 3 is currently being considered by PAs.

How the Study Affects Program Results and Its Significance:

Lighting is an important energy end use in Massachusetts' energy portfolio, and the Upstream Lighting Initiative represents a significant share of C&I savings. Since the Initiative tracks estimated savings based on deemed savings values, the PAs must evaluate the program to determine RRs and update deemed values for future programs.

Overview of Study Method:

This study had four phases of evaluation. In the sample design and sample selection phase, DNV gathered electric account and measure-level population data and developed stratified sample designs by evaluation category and QC or non-QC. In the file and savings reviews, we acquired files supporting savings claims for sampled sites and performed savings reviews with savings validation. For on-site data collection, we recruited 75 in-person and 17 virtual sites; did measure verification, observed operational conditions, and deployed metering, which will remain installed until June 2021. For the site and aggregate savings analysis phase, we made measure-level engineering estimates of connected kWh and kW savings and provided statistical expansion of results and realization rates with precisions.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-11.

Study 20-12: Gross Impact Framework - Decision Guide (MA20C06-B-GIF)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 1/20/2021

Study Objective and Summary of Results:

The purpose of this study was to make decisions related to key processes and issues that the PAs, the EEAC Consultants, and the DNV team have addressed since the publication of the previous Gross Impact Framework – Decision Guide Memo in March 2020, following the implementation of the Gross Impact Evaluation Framework adopted in February 2017.

The memo provides decisions on the following topics:

- Limits on projects per site for evaluations
- Subcategorization of operational differences
- Baseline for Replace on Failure (ROF) projects that involve a change in technology
- Custom express tool adoption
- Lifetime savings and measure life
- Ex-ante review process
- Special considerations of statewide results and prospective evaluation results

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- All End Uses
- Electric & Gas

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

This memo is one iteration of a living document that will continue to be updated with EM&V decisions made in consultation with the PAs and EEAC Consultants.

Overview of Study Method:

All decisions were discussed among the PAs, the EEAC Consultants, and DNV team.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-12.

Study 20-13: C&I Lighting Market Characterization Study (MA20C09-E-LMC)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 3/25/2021

Study Objective and Summary of Results:

The purpose of this study was to update the adjusted measure lives (AMLs) for C&I upstream, prescriptive, and custom lighting program installations. The AMLs are based on market share estimates from the LED Market Model, so to ensure that the model reflects the most up-to-date information, this study also collected data to inform the model forecasts, including saturation, market share, volume of sales, product availability, and jurisdictional comparisons.

The study provides the following key findings:

- The AMLs calculated from the market share forecasts in the program-ending scenario in the LED market model are presented in a table.
- Overall, the LED C&I market is continuing to transform, and it will become increasingly difficult to find opportunities for program savings. COVID-19 had an impact on the uptake of LED technologies in 2020, although it's unclear how long these impacts will last.
- Even in the absence of the program, we expect the ambient linear submarket to be nearly transformed by 2024. However, the program is pushing the market toward higher efficiency LED integrated fixtures, with opportunities for more advanced control capabilities over the more traditional TLED replacements. If the programs continue as-is, we expect to see overall LED saturations near 85% by 2024.
- The high/low bay submarket looks much like the ambient linear submarket in MA, meaning it is dominated by linear technologies trending toward TLEDs and LED integrated fixtures, with the largest growth area in integrated fixtures. By the end of 2024, we estimate that the market saturation of LEDs will be 77% with the program. However, specific segments of the market may have lower saturation, which could provide more targeted opportunities for lighting programs.
- The building exterior/outdoor submarket is already highly saturated with LED technologies, leaving little room for additional market transformation. However, trade allies indicated that lighting programs will be driving a slightly higher percentage of LED market share in the future. There are not as many non-LED products available in the marketplace, so customers will likely be forced to replace non-LEDs with LEDs as equipment burns out or fails.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- Lighting
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

> **Recommendation 1:** We recommend the PAs adopt the PY2020 retrospective AMLs for all ER and ROF measures reflected in the results table for upstream, prescriptive, and custom lighting program installations. New construction and major renovation measures should continue using the full measure lives rather than the AML.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

While the AMLs were the primary output of this study, it also provides insights into the current state of the C&I lighting market and how it is expected to evolve. These additional research insights are intended to help program planners and evaluators assess how to shape C&I lighting programs in the future.

Overview of Study Method:

The team conducted a saturation survey by doing phone re-visits for 103 sites that had had on-site visits in 2018 and 2019; developed and conducted a web survey of 32 contractors to estimate their market share; conducted in-depth interviews with 21 lighting manufacturers and 16 distributors that participated in the 2019 Upstream Initiative, with the primary goal of understanding how the PAs' programs have influenced all LED sales; developed a web-scraping tool to collect information on the types of products available on manufacturer and distributor websites; and re-calibrated the LED Market Model to reflect observed changes more accurately in the market over time.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-13.

Study 20-14: Impact Evaluation of PY2018-2019 Custom Electric Installations (MA20C04)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 3/17/2021

Study Objective and Summary of Results:

The purpose of this study was to provide verification and re-estimation of energy and demand savings for a sample of statistically selected custom electric projects through site-specific verification, monitoring, and analysis of Project Year 2018/2019 installations.

The study provides the following key findings:

- For almost all energy and peak demand savings parameters, the three-year pooled realization rates improved over the previous two-year rolling results. Statewide, operational effects represents the largest discrepancy adjustment for lighting and baseline the largest for non-lighting.
- Custom non-lighting projects are generally more complex than lighting projects, so the realization rates (RRs) tend to have more variation. However, the programs could gain some ground in some areas. In particular, a large portion of the savings were reduced due to adjusted baselines—something the PAs are committed to improving upon.
- A handful of projects did not claim savings for some portions of the project, possibly to use more conservative tracking savings estimates. Since these have typically been quantified via measurement & verification (M&V), and to stay consistent with past studies, we included these only for sites with full M&V, which was not the case for many of the projects due to impacts of the COVID-19 pandemic on conducting full M&V.
- The lifetime savings adjustment factors (LSAF) reported in this memo represents evaluation changes made to measure event type and measure life selection and does not include the new lighting EUL and adjusted measure life (AML) values from the most recent MA Lighting Market Characterization study. The evaluation found that the claimed custom measure life was typically supported by the documentation provided in the project file.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- Custom
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Apply the results from the Interim Results Memo to the PY2020 tracking savings reported in the 2020 Plan Year Report filed in 2021.

Recommendation 2: Apply the LSAF to the PY2020 lifetime tracking savings reported in the 2020 Plan Year Report filed in 2021.

Recommendation 3: As the application files are not always complete, be diligent in gathering the technical assistance studies, spreadsheets, and models used to define and develop the project and include them in the electronic documentation.

Recommendation 4: Separate fixture replacement and lighting controls savings when calculating annual and lifetime savings estimates. If this isn't possible, a weighted measure life should be applied to better represent early replacement projects with both lighting fixture and control savings.

Recommendation 5: Adopt the recommendation made in the "Memorandum on Dual Baseline Calculation Practices and Assumptions, November 27, 2019" to maximize the accuracy of lifetime savings, and continue to evaluate lifetime savings impacts and calculate a lifetime adjustment factor to be applied to tracking lifetimes.

Recommendation 6: Develop a weighted measure life for multi-measure projects that fall in the same line of tracking data or isolate the individual measure savings into unique lines in the tracking data so that each measure claims an accurate measure life.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The results from this study should be combined with the next round of custom electric impact evaluation, which is expected to be applied to the PY2021 tracking savings and reported in the 2021 Plan Year Report filed in spring 2022. This aligns with the MA impact evaluation framework by maintaining an annual rolling custom electric impact evaluation result.

Overview of Study Method:

Methods used for this year's evaluation were similar to last year's, except for modifications due to the COVID-19 pandemic. The key modifications were an increased scope of desk review tasks, including a more in-depth review of applicants' assumptions and calculation methodology; the use of virtual audits to verify technology, assess HVAC interaction, and validate measure installation; and realization rates based on verified non-operational parameters of the current and PY2016 and PY2017/18 samples, verified operational parameters of the current sample where available and

historical operation adjustments from the past two studies where not available and the pooling of this sample's results with PY2016 and PY2017/18 results.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-14.

Study 20-15: Massachusetts Custom Electric CDA (MA20C16-B-CDA)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 3/23/2021

Study Objective and Summary of Results:

The purpose of this study was to re-analyze the 2018 Custom Comprehensive Design Approach (CDA) energy and peak demand savings realization rates using new standard lighting power densities (LPD) derived from the recent new construction baseline market characterization study as well as current baseline practices used by the program. The analysis also includes adjustments for other non-lighting industry standard practice (ISP) impacts.

The study provides the following key findings:

- For current CDA projects, as well as other performance lighting projects, the lighting baseline depends on the permitting code. For projects permitted under IECC 2015/ASHRAE 90.1-2013, the PAs use a baseline that is 0.8 of code LPD. For projects permitted under IECC 2018/ASHRAE 90.1-2016, the PAs use the Massachusetts Amendments to code. These requirements are documented each year in the Mass Save Baseline Document.
- DNV completed a detailed analysis for each site in the sample. The resulting program-level realization rate, which is the weighted result using the original sample design case weights, is 48% for annual electric energy savings. This is reduced from the 57% realization rate from the prior CDA impact evaluation. However, the removal of the FCU ISP baseline from the revised realization rates brings the result back to 57%.
- DNV applied the same ratio of annual energy savings realization rates between the old study and this study to re-calculate summer and winter on-peak demand savings, producing revised peak demand savings estimates of 58% for summer and 44% for winter.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- New Buildings & Major Renovations
- Custom
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Use RRs from this study to apply retrospectively to CDA projects completed in 2020:

- Gross annual electric kWh savings RR: 57%
- Gross summer on-peak kW reduction RR: 58%
- Gross winter on-peak kW reduction RR: 44%

Recommendation 2: Lighting baselines for new CDA studies should adopt the new LPD adjustment of 0.6 of IECC 2015 code.

Recommendation 3: Upon finalization of the Non-Residential New Construction Baseline study, incorporate any other non-lighting baseline findings to new construction projects going forward.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt and/or are considering some of the recommendations, as described below.

Electric RR recommendations have been employed by PAs retrospectively for 2020. Other recommendations are currently under consideration by the PAs.

How the Study Affects Program Results and Its Significance:

This study found that lighting savings were significantly impacted by the use of the new LPD adjustment factor and by the appropriate application of current baseline practices to the older CDA study results. The opportunity for lighting savings given these new requirements has decreased.

Overview of Study Method:

This study used the same sampled CDA projects as the 2018 study to recalculate electric savings realization rates. For most projects in the impact evaluation sample, ex-ante baselines were defined in accordance with the 8th edition of the Massachusetts Energy Code. This analysis recalculated the custom electric CDA gross annual savings realization rate by applying the new LPD adjustment factor of 0.6 from the current NRNC project to the sample of sites from the prior impact evaluation.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-15.

Study 20-16: Steam Trap and Boiler Efficiency Research (MA20C05-G-STBE)

Type of Study: Technology Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 10/20/2020

Study Objective and Summary of Results:

The purpose of this study was to research factors related to estimating savings for steam traps and the annual heating plant efficiency factor, which is a primary steam trap savings input, and to recommend future research and/or updates to the steam trap tool to improve consistency and accuracy in use of the tool.

The study provides the following key findings:

- Steam trap measures can be identified within the custom population through BCR measure IDs. A steam-trap-specific realization rate (RR) can be integrated into tracking if segmented from the rest of the custom gas measures.
- Stakeholders and tool users are satisfied with the general algorithmic approach of the steam trap tool (STT). However, the Team found variation among the PAs in how some variables are being assessed and input into the tool. PA staff do not believe vendors are systematically overstating hours of operation but have indicated the need for more guidance in the application of parameters, specifically hours. Implementing limits and caps in the tool may prevent gross overstatement but could create other issues. Application reviewers could benefit from built-in tool checks. Calibration of the STT is useful for approximating values of parameters that cannot be measured directly but increases the risk of double-counting some effects.
- While annual heating plant efficiency (AHPE) values vary within a narrow range with respect to firing rate at any site, efficiency values vary more significantly from site to site based on boiler type.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- C&I New & Replacement Equipment
- Custom
- Gas Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Continue current evaluation sample design practices, such as the current practice of reporting all custom gas measures with a single statewide or PA-specific

RR, and reviewing the desk review results from the new calibration projects to further assess PA variability.

Recommendation 2: Modify the STT to clarify inputs and streamline QC review process. Update fields to improve consistency among various users and bolster the review process with a number of automated QC checks.

Recommendation 3: Update STT parameters via billing analysis calibration. Recalibrate using projects from PY2017 and PY2018.

Recommendation 4: Post the STT online with a summary of revisions and communicate updates to vendors and reviewers when the revised STT is rolled out.

Recommendation 5: For measures that reduce the boiler output, **use deemed AHPE values** based on average combustion efficiency measurements representative of typical boilers serving steam trap and insulation measures.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

Steam traps constitute a large share of custom program savings, rely on a single statewide calculator for estimating savings, and have had poorer RRs than other custom measures. These factors raise the question of whether steam trap measures should be evaluated as contributing to overall individual PA custom RRs as they are now, evaluated as a statewide measure, or evaluated in some other way.

Overview of Study Method:

The team researched factors associated with the evaluation of steam trap measures; interviewed experts nominated by stakeholders to gather feedback on the STT and annual heating plant efficiency methods; analyzed past evaluation project data to develop findings related to steam trap discrepancies and factors associated with AHPE methods; and organized five Working Group sessions attended by experts nominated by stakeholders to discuss the findings of each of the three other tasks.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-16.

Study 20-17: Massachusetts C&I Impact Evaluation of PY2018 Custom Gas Installations (MA20C01-G-CUSTGAS)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 2/24/2021

Study Objective and Summary of Results:

The purpose of this study was to verify and re-estimate the energy savings for a sample of statistically selected PY2018 custom gas projects through site-specific inspection, monitoring, and analysis. The study provides the following key findings:

- The three-year pooled statewide precision target was met with an achieved relative precision value better than ±10% at the 80% confidence interval.
- When the results for the most recent three program years where pooled, PA-specific precision targets of ±20% at the 80% were met by Columbia Gas and National Grid, while Eversource achieved relative precision of ±27%, which is greater than the target.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- All End Uses
- Gas Only
- Custom installations

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Use the appropriate realization rates. The relative precision of the RRs for National Grid (±8%), and Columbia (±7%) meet the target and each PA had more than ten sites (when PY16, PY17, and PY18 are pooled), therefore their individual PA realization rates will be applied. Eversource will use the statewide (EV) results that achieved a relative precision of ±11%. Because fewer than ten sites were evaluated in their territory, Berkshire, Liberty, and Unitil will use the Statewide (BLU) results that achieved a relative precision of ±7%.

Recommendation 2: Use the appropriate lifetime savings adjustment factors (LSAFs). Columbia Gas and National Grid will use their individual pooled LSAFs. Eversource will use the Statewide (EV) LSAF value and Berkshire Gas, Liberty, and Unitil will use the Statewide (BLU) pooled LSAF value.

Recommendation 3: Improve the data collection and controls procedures for projects greater than 100,00 therms (large). Pre-project errors (inputs or calculations) had a negative impact of

17% in the PY2018 savings. PAs should continue to improve project-specific pre-installation data collection and enhance the quality control process for large projects to catch errors that affect the program results.

Recommendation 4: Research to gather data on steam trap repair frequencies at participating and non-participating facilities that might result in an update of the steam traps calculator.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The results from this study will be applied to the PY2020 savings in the 2020 term year report filed in 2021. The team will continue to roll the three most recent annual program evaluation results together to determine a realization rate that meets the precision targets.

Overview of Study Method:

The evaluation team's approach was consistent with the procedures and protocols developed during the previous rounds of custom gas impact evaluation conducted for PY2016 and PY2017. The impact evaluation consisted of desk reviews, on-site visits, and metering of a randomly selected sample of projects at participating facilities.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-17.

Study 20-18: Franchise Controls Deemed Savings Study (MA20C07-E-DUN)

Type of Study: Impact Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 1/22/2021

Study Objective and Summary of Results:

The purpose of this study was to develop measure-level deemed savings estimates for a building automation system (BAS) measure offered for small franchise coffee and donut shops, which are often installed with multiple other efficiency measures such as lighting retrofits and refrigeration controls. The measure applies time switch-based scheduling of small individual food service appliances (e.g., toasters and coffee makers), and often HVAC setback and exterior lighting controls. The study leveraged three different recent evaluation studies, where results from those studies were used as a basis to determine the optimal deemed savings estimate for the BAS measure. The recent studies include billing analysis in study P71, and impact evaluation work for PY2017 small business (MA19C03-E-SBIMPCT) and PY2017/2018 custom electric (MA19C07-E-CUSTELEC). To narrow focus on the BAS measure, we isolated five sites that only installed BAS systems that controlled appliances and overlapped in both the M&V and billing analysis samples.

The study provides the following key findings:

- The five sites common to the three studies have similar average impacts, at 9,651 kWh and 9,135 kWh and of the same magnitude when viewed as a percent of consumption.
- Given the DNV team's confidence in the representativeness of the small sample, the methods to develop the measurement and verification (M&V) baseline, and that the billing analysis does not present evidence the M&V savings are incorrect, the team deemed the M&V results reasonable.
- The similarity of savings as a percent consumption between the pre-post billing analysis and M&V savings results among the overlapping subset indicates the two analyses are in agreement regarding individual site-level effects. The full billing analysis, incorporating far more sites and a comparison group, produces a result that is grounded in both more participant data and a consideration of non-program, exogenous trends. Given the parallels between the two analyses, but the ultimate overall strength of the billing analysis result, we recommend using the overall billing analysis study results to inform the deemed savings estimate.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- Existing Building Retrofit
- Food Service
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: Given the similarity of savings as a percent of consumption between pre-post billing analysis and M&V savings results among this subset and the larger billing analysis study, use the overall billing analysis study results to inform the deemed savings estimate.

Recommendation 2: Ensure the appliances planned to be packaged into the BAS are appropriate for the control measure, rather than applying the controls to the eight greatest loads. Appliances such as ice machines, which do not benefit from controls, and appliances that were previously controlled in a similar fashion before the BAS installation should not be included in the BAS package.

Recommendation 3: The overall recommendation for the deemed savings estimate per BAS installed in a franchise site is 5,344 kWh, or 4.0% of site consumption.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The recommended deemed savings estimate for the BAS measure of 5,344 kWh is significantly lower than the current estimate of 18,700 kWh. This decrease is mostly due to less than predicted operational changes impacting hours of use, which are mostly influenced by users overriding the BAS controls to use equipment during periods of lower demand. The change in savings may need to be analyzed through means of cost-effectiveness to determine if the measure should be considered for future energy efficiency implementation.

Overview of Study Method:

To narrow focus on the BAS measure, the DNV team isolated five sites that had only installed BAS and which were in both the M&V and billing analysis samples. In isolating the M&V sites within the billing analysis dataset, the team could then compare the small sample of M&V and billing results and examine the influence of a comparison group on the billing results. Though the selection of these five sites was not representative, they provided a basis to compare the M&V and

billing analysis methods, which provided more confidence that the billing analysis with the control group, which is representative, was the correct value to use.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-18.

Study 20-19: Ground Source Heat Pump eTRM Measure Review (MA20C15-B-GSHP)

Type of Study: Technology Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 1/29/2021

Study Objective and Summary of Results:

The purpose of this study was to determine the accuracy of the values in the Massachusetts Technical Reference Manual (eTRM) for estimating savings for ground source heat pumps (GSHP). The main objectives were to provide guidance to the PAs on possible adjustments to the eTRM savings calculations as they are presented for this measure; the need for estimating whole system savings, as opposed to savings from the heat pump unit only; and measure life estimates, including unit lifetimes vs. whole system lifetime.

The study provides the following key findings:

- The current GSHP offering is sufficient for the limited event type offering. However, it does not accurately reflect the benefits of GSHP installation for wider event types.
- GSHPs are high-performing, supplying 3.1 to 4.1 units of energy to the building as heat for every 1 unit of energy used to power the system.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- HVAC & Hot Water
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: To more accurately reflect savings from this measure, GSHPs should be broken out from air source heat pumps (ASHPs) into their own category offering. This will allow the program to attribute savings, baselines, and lifetimes in a more defensible way.

Recommendation 2: Baseline considerations: The measure should allow baselines to reflect pre-existing and similar code efficiencies to maximize savings for two different event types (new equipment and early replacement/retrofit).

Recommendation 3: Algorithmic considerations: Further algorithms should be considered to include fossil fuel impacts when replacing fossil fuel-fired heating systems. When a

desuperheater is included in the system, domestic hot water impacts should be included for either electric or gas dependent on the hot water heating system on-site.

Recommendation 4: Lifetime considerations: The lifetime of the measure should be updated from 12 years to match the U.S. Department of Energy's expected lifetime of 25 years for the indoor portion of the GSHP.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

Currently, the GSHP measure is lumped into a package with ASHPs. The current methodology, algorithms, and baseline for the new equipment event type are sufficient, though limited in scope, as other event types are not considered. The research suggests that, in reality, most GSHPs replace existing equipment such as boilers, chillers, furnaces, and ASHPs. In such cases, the efficiency of the existing unit or a comparable code efficiency is the better reference savings, though it is recommended that PAs seek secondary research to determine an appropriate baseline for GSHP retrofit event types that fit within the MA C&I baseline framework. Current GSHP methodology only considers electric impacts for cooling and heating supplied by the GSHP. When considering pre-existing conditions, a project may develop gas heating impacts when replacing pre-existing fossil fuel-fired equipment. Domestic hot water benefits are also potentially missed.

Overview of Study Method:

For this study, DNV gathered relevant documents and performed an initial literature review to provide a basis from which we assessed potential modifications to the eTRM measure. Information was collected from industry papers as well as TRMs from other states and jurisdictions that incentivize GSHPs. Interviews were also conducted to collect first-hand information from industry experts and independent engineers on GSHP unit performance and savings. We sought to address issues such as nameplate vs. actual performance, the appropriate baseline for these systems, and whole system savings vs. unit savings alone – which is understanding the impact of the ground source loop system on the ground source heat pump itself.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-19.

Study 20-20: C&I ISP Research and Repository: Food Services Equipment Pre-Research Memo (MA20C02-B-ISPREPOS)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 9/22/2020

Study Objective and Summary of Results:

The goal of this research was to assess whether we see enough evidence of used food service equipment being purchased and installed to warrant further ISP investigation. The evaluation team conducted pre-ISP study research, including web research and interviews, to determine whether a blended baseline is worth pursuing for food service measures.

The overall outcome of this study was that additional primary research with respect to industry standard practice surrounding kitchen equipment will be valuable to the PAs and the evaluation team.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study. Based on the online research, referring to the TRMs, Food Service Technology Center (FSTC) engineer input, and phone calls with two suppliers, the team found that there is a significant market for used and refurbished food service equipment. The team believes that further research to determine a new baseline for used kitchen equipment will be valuable. The following topics are recommended for inclusion in a full ISP study:

- **Include research on used equipment market prevalence and practices in research.** This may be challenging due to the scattered nature of the used equipment market. Including some interviews with end users may be necessary.

- **Limit ISP research to non-refrigeration equipment.** The interviews and research we conducted suggests that cooking equipment, particularly ovens, griddles, fryers, and ranges, are more likely to last long enough to become part of the used equipment market, and this equipment is not subject to federal efficiency standards in the same way that refrigeration equipment is.

- **Consider differentiating practices by restaurant type.** Fast food, franchised, and chain restaurants may have different standard practices, especially when considering used equipment.

- **Include both gas and electric equipment.** Typical operating efficiencies for cooking equipment differ substantially depending on the fuel used.
- **Note that ongoing impacts due to the coronavirus may drive a change in behavior.** An upswing in the used equipment market may change industry standard practice in the short and long term.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The results from this study do not have a direct impact on retrospective or prospective savings. If additional research is conducted, and the baseline for kitchen equipment is determined to be different from what the program commonly uses this could have savings implications in the future but is not defined at this time.

Overview of Study Method:

Evaluators used a mix of secondary research and a small amount of primary research to arrive at the recommendations. This included web research, online supplier research, a comparison of technical reference manuals and some informal interviews with industry experts.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-20.

Study 20-21: Code Promulgation Attribution Study (MA19X07-B-CDPROMATT)

Type of Study: Impact Evaluation

Evaluation Conducted by: NMR Group

Date Evaluation Completed: 9/15/2020

Study Objective and Summary of Results:

The purpose of this study was to determine an attribution factor to apply to the savings generated from the PAs' efforts to promulgate energy-efficient amendments into the 2018 Massachusetts State Building Code. The study also developed a framework for estimating the gross-technical-potential (GTP) savings resulting from those amendments.

The study provides the following key findings:

- The PAs developed three commercial and two residential amendments that were ultimately adopted into the State's base building energy code. It is unlikely similar proposals would have been adopted without the PAs' efforts.
- The PAs are 90% responsible for the savings resulting from the energy-efficient amendments. This factor was determined by a consensus group of stakeholders, based on a document review and in-depth interviews with participants in the code adoption process.
- The study estimated combined electric and gas GTP savings of 138,153 MMBTU from the amendments through 2026. This includes 29,103 MWh of electric GTP savings, which represent between 3% and 13% of the 2018 new construction electric savings annually. One amendment that reduces interior lighting power density allowances accounts for 95% of the electric GTP savings. The study estimates gas GTP savings at 388,574 therms, representing between -1% and 5% of 2018 new construction gas savings annually (accounting for interactive effects between lighting and gas savings). Commercial and industrial savings comprise 65% of the combined savings and residential savings comprise 35%.
- Using the framework developed in this study, the PAs can calculate more accurate estimations of GTP in the years 2022 through 2026 by replacing assumed values with actual data.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential & Commercial & Industrial
- New Homes & Renovations
- Envelope & HVAC
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: The PAs should use an attribution factor of 90% for the savings generated from their efforts to promulgate the five Massachusetts-approved amendments to the 2018 International Energy Conservation Code (IECC).

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

This study determined that an attribution factor of 90% should be applied to gross savings estimates resulting from the PAs' efforts to promulgate amendments to the 2018 IECC. This will apply to gross savings generated in 2022 through 2026.

Overview of Study Method:

The study included a document review of all documentation of PAs' efforts and all publicly available BBRS proceeding documents. Additionally, NMR conducted in-depth interviews with two PA representatives and five key participants in the code adoption process. The attribution factor was determined using a consensus group, including experts from evaluation, implementation, PAs, and the Department of Energy Resources.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-21.

Study 20-22: 2013-2017 Residential Customer Profile Study: Stakeholder Summary and Comprehensive Report (MA19X08 2017 RESCUSTPRO)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 9/16/2020

Study Objective and Summary of Results:

The principal research objectives of the RCPS comprehensive report is to analyze 2013-2017 customer usage, savings, incentive, and program participation data using charts, tables, and geographic outputs. In addition this report included a location-level analysis (within year, and over time) with aggregated savings and participation rates, by PA, fuel, and geography.

The study provides the following key findings:

- Despite a 4.2% increase in the number of physical locations served by the electric PAs from 2013 to 2017, the residential population's kWh consumption has declined by 1.7%.
- From 2013-2017, approximately 35% of locations participated in a program. This excludes upstream and behavioral programs.
- Housing authorities had a population savings achieved nearly double most other building types.
- The 5-year electric participant location rate is likely much larger than 35%. This is because that figure does not include any locations that purchased lights and other products through the upstream channel. The upstream channel represents 48% of electric program savings annually from 2013-2017.
- The geographic distribution of incentives per kWh at the block group level is relatively uniform, though larger projects can skew this.
- The block group scatterplots show that there are linear trends in savings and participation relative to demographic variables, and that the existence of outlier groups may offer "lessons learned" opportunities for additional savings and participation.
- Since 2015, the Residential Products program, a retail delivery channel, has contributed a proportionally larger percentage of savings, while the Residential Whole House program, which includes home energy audits, has contributed a smaller percentage.
- The electric PAs' quintile population savings ratios have been relatively consistent since 2014, with the first and fifth quintiles averaging around 1.3 to 1.4% savings.
- The gas PAs' quintile population savings ratios are more variable within the ACS attributes.
- Block groups with lower electric participation from 2013 to 2017 appear to be associated with high proportions of delivered heating fuels.
- Rural areas tend not to have access to PA-delivered natural gas and rely on delivered fuels, including oil and propane. These areas may represent opportunities for targeted electrification. Urban areas tend to have choices beyond delivered fuel and are less likely

locations for targeted fuel switching than rural areas, which have a higher percentage of delivered fuel.

- The location data grain is preferable for time series analysis due to its consistency across PAs and fuels, as well as the presence of location in nearly all third-party data.
- Some of the demographic variables of interest in this report appear to be correlated with one another.
- ACS household data and PA location data are complementary, but different grains and should be leveraged with this in mind.
- K-Means clustering of block groups using the combination of factor scores and PAs' tracking data offers an alternative and more comprehensive way than the basic quintile analyses to assess geographic patterns in customer engagement and to aggregate similar block groups for summary statistics.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Income-Eligible
- All Initiatives
- All End Uses
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: *Use third-party information, partner data, and DHCD data to better identify low-income households.* The RCPS has traditionally leveraged PA rate codes to identify low income housing. This approach has the benefits of maintaining consistency across all PAs and leveraging data (the rate code) that is captured as a core element of the billing process. The drawback is that even with the assistance in place through the PAs and other stakeholder groups, not all low-income customers may realize they qualify to be on a low-income rate code. The 2017 RCPS was able to leverage data about housing authorities, but this still leaves a population of privately-owned subsidized housing potentially under-represented in the data. After a review of data available from MA DHCD, DNV believes that a focused effort to identify the most useful datasets and develop a pipeline process to link the to the PAs data – similar to what was done with the tax data – would be a transparent and efficient way to further identify and report on the program engagement of low income customers.

Recommendation 2: *In future iterations of the RCPS, break out multifamily and single-family housing as separate reporting classes and build on the location-level grain to reflect sub-unit participation and savings for all PAs.* The idea arose through working groups with the PAs and EEAC Consultants to add an additional reporting grain identifying single family statistics and multifamily statistics. This grain was not reflected in the 2017 RCPS due to ongoing refinement around identifying multifamily data as accurately as possible. The difficulty of identifying multifamily data is compounded by the fact that while some measures, such as

insulation, impact all accounts, sub-units, and customers within a multifamily building, they might nevertheless be tied to a single record (such as the building's common area meter) or only reflected in the data at the building level. One workaround for this data limitation is to use consumption-weighted participation as done in the MA Residential Non-participant Customer Profile Study; others may include identifying sub-units using tax data or a logic model looking at simultaneously active electric accounts within a location. We suspect that in future studies, the parallel application of different identification systems will allow us to distinguish multifamily from single family sub-reporting grains to better reflect how these customer groups are served.

Recommendation 3: *In the next RCPS, use exploratory factor analysis (EFA) and k-means analyses to determine whether geographic hot spots and/or outliers exist within the landscape.* The application of the EFA and k-means to the geographic data in the 2017 RCPS confirmed that the more detailed classification of block groups leveraging multiple ACS variables yields a more nuanced and interesting geographic landscape than prior methods have yielded. The next RCPS should build on this analysis to not only score the individual block groups, but also identify where geographic clusters of similar block groups exist and if/where there are outliers within these groups or across the greater landscape. This type of analysis addition will facilitate the use of geographic data by implementation and outreach teams through visually focusing on areas of interest, and could become a particularly powerful community outreach tool when integrated into an interactive spatial decision support environment.

Recommendation 4: *Leverage a similar interactive platform for the data presentation along the lines of what the C&I Customer Profile has been migrated to. The RCPS contains a substantial amount of data, and is of interest to a broad array of stakeholders.* Migrating many of the graphics, in particular the geographic analyses, to an interactive platform would support the PAs' focus on continuing to develop and modernize data coordination. The PAs have successfully migrated the C&I Customer Profile Study to an interactive web-based platform; this reduced the report length by over 400 pages, shortened the timeline for making data available to stakeholders by nearly half a year, and based on stakeholder feedback – including the EEAC – greatly increased the data's usefulness by facilitating custom analyses and data summaries.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The 2017 RCPS analyzes and reports on the Massachusetts Program Administrators' (PAs') energy efficiency program tracking and residential customer consumption data to offer diverse views of participation, savings, and geographic dynamics within the PAs' residential customer population. The RCPS assesses the energy efficiency program tracking and billed usage data for

residential gas and electric customers, and identifies and summarizes trends in participation and savings.

Overview of Study Method:

The RCPS dashboard, stakeholder summary and data insights report use PAs' 2017 billing and tracking. This data undergoes a standard extract, transform, and load (ETL) process. Data is prepared for analysis by linking the 2017 tracking and billing data to the historical data along with third-party tax assessor data.

- **Report on unique locations:** DNV reported on the unique locations represented in the PAs' data, replacing the previously reported on account-level analysis grain.
- **Report on unique locations over time:** The 2013-2017 data was used to report on activity at unique locations over time, creating a new analysis lens through which to better understand participation rates and coverage.
- **Report on incentives by geography:** DNV reported on savings, usage, and incentives for customers at the block group level.
- **Add ACS variable groups:** DNV coordinated with the PAs to integrate new ACS block group variables.
- **Link scatterplots, tables and maps:** DNV significantly modified the ACS block group analyses by including newly designed consumption-normalized scatterplots; providing greater transparency and insight into block groups of interest while still protecting customer privacy.
- **Re-cluster ACS block groups:** DNV assessed three clustering options – natural breaks, k-means and principal components analysis (PCA) – as alternatives to the quintile breaks used in prior reports.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-22.

Study 20-23: 2018 Commercial and Industrial Customer Profile Study: Stakeholder Summary and Comprehensive (MA20X01-B-2018CICUSTPRO)

Type of Study: Market Characterization or Assessment Evaluation

Evaluation Conducted by: DNV

Date Evaluation Completed: 2/3/2021

Study Objective and Summary of Results:

The overall goals of the 2018 Commercial & Industrial Customer Profile Study (CCPS) are to analyze, summarize, and report on the energy efficiency program tracking data and billed usage data for all C&I gas and electric customers served by the PAs.

The study provides the following key findings:

- The MA PAs' 2018 energy efficiency programs continued to deliver consistent participation and savings statewide and across a diverse business demographic for Massachusetts C&I customers.
- Gas programs continued to meet statewide savings targets with participation rates consistent with prior years; natural gas prices remain particularly important in customer investment decisions.
- Accounts and locations provide two complementary, but different, views of participation—especially for time series metrics. For several PAs, participation rates nearly double when assessed through the lens of location rather than account.
- In 2018, the share of statewide savings from electric micro and small business accounts was nearly proportional to their share of statewide consumption. Small business gas accounts showed more participant savings achieved, on average, than medium and large accounts.
- Educational Services showed a high degree of measure diversity and high time-series lifetime savings at the location level compared to other segments, suggesting that measure diversity supported this segment's aggregate successes.
- HVAC is an important source of electric and gas savings. Continuing to engage customers in this ubiquitous end use and continuing to support HVAC measures via multiple delivery channels will likely be key to future savings goals.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Commercial & Industrial
- All Initiatives
- All End Uses
- Electric & Gas

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: incorporate broader analytics related to the program planning tools beyond traditional energy efficiency to create a more complete picture for planners and stakeholders, including assessing the performance of the C&I Active Demand Reduction (ADR) Initiative and any other key program or metrics or key performance indicators identified through stated goals in the Three-Year Plan.

Recommendation 2: expand location-level analysis to inform strategic targeting and equity efforts. This would potentially include adding more crosstabs with location comparisons, beyond PA and fuel, to look at location participation and savings across different customer sizes, towns, industry segments, end uses, etc.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The analysis and reporting of the CCPS along with the easily accessible electronic dashboard (https://www.masssavedata.com/Public/CICustomerProfileDashboard) accurately quantify and report on time series trends on the Massachusetts C&I energy efficiency programs. The CCPS dashboard and paper report provide detailed data while always maintaining PAs' customer and IT system confidentiality.

Overview of Study Method:

The CCPS dashboard, stakeholder summary and data insights report use PAs' 2018 billing and tracking. This data undergoes a standard extract, transform, and load (ETL) process. Data is prepared for analysis by linking the 2018 tracking and billing data to the historical data along with third-party tax assessor data.

Location-level analysis: New to the 2018 CCPS, DNV created a location analysis grain. This allows for key metrics to be analyzed based on location in addition to, or instead of, account, which has historically been the basis for report findings.

Lifetime savings analysis: the new location grain also allows for a fresh look at program impacts at the site level, where (with relatively rare exception) assets remain constant regardless of account turnover. DNV expanded on this to include time-series contribution ratios utilizing lifetime savings. This new analysis captures a location's contribution to program goals over measure lives and addresses the concern of considering only existing single-year views.

New construction methodology change: to better analyze new construction accounts without prior consumption history, DNV modified the calculation logic to take the current year's extrapolated consumption plus the gross annual energy savings attributed to the new building.

Weather-normalize extrapolated consumption for both gas and electric accounts: for accounts with partial year consumption DNV used time-series data to generate weather-normalized consumption for both gas and electric accounts.

Consumption bin data retention: As part of the CCPS analysis, DNV compared results across customer sizes based on annual consumption. Accounts are broken into four customer size bins for this analysis: micro, small, medium, and large.

DNV updated the results from the 2017 CCPS using 2018 data provided by the PAs and tabulated year-over-year totals the broad groupings of:

1. Statewide by fuel
2. PA and fuel
3. Energy consumption range
4. Geographic region
5. Industry segment
6. End use

When possible, DNV also included breakdowns of these tables for each PA. Analysis of the tracking data by geography was conducted at the town level. The following metrics were used in the analyses:

- Participation
- Consumption-weighted participation
- Population savings achieved
- Participant savings achieved
- Market penetration
- Consumption-weighted penetration rate
- Contribution ratio
- Savings achieved over time

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-23.

Study 20-24: Consistent Methodology for Self-Reported Residential Net-to-Gross Measurement (MA19X03-B-RSRNTG)

Type of Study: Net-to-Gross Evaluation

Evaluation Conducted by: Tetra Tech
NMR Group

Date Evaluation Completed: 5/28/2020

Study Objective and Summary of Results:

The objective of this study is to develop a consistent methodology for determining self-reported (SR) residential downstream net-to-gross (NTG) for Massachusetts that can be adapted to reflect program offerings. This includes recommended survey questions and algorithms to be utilized for program offerings where a SR NTG is feasible.

The study provides the following key findings:

- The Illinois Technical Reference Manual, Evaluation Framework for Pennsylvania Act 129 Phase III Energy Efficiency and Conservation Programs, and the Energy Trust of Oregon Free-Ridership Methodology are similar in their NTG measurement approach for most residential programs (other than appliance recycling) in that they include a consistent set of core questions asking about influence of the program and customer intent had the program not existed. These frameworks have been in place for multiple program cycles, have been well-tested, and are commonly cited approaches.
- The study team built upon the NTG algorithms previously used in Massachusetts and incorporated commonalities from the Illinois, Pennsylvania, and Oregon frameworks above, including recommended residential batteries of questions and algorithms; questions about influence, timing, efficiency, and quantity; and questions designed to ensure consistency.
- The team created and provided PAs with tables aligned with the Benefit-cost Ratio model (BCR) that identify the residential programs/initiatives for which SR NTG is appropriate.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- All Initiatives
- All End Uses
- Electric & Gas
- Downstream initiatives for which self-reported NTG is appropriate

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: For residential NTG studies of programs for which self-reports from participating end-users or contractors are appropriate, PAs should use the batteries presented in this study, adapting them as appropriate for each evaluation.

Recommendation 2: Appliance recycling NTG evaluations should follow the protocols outlined in the Uniform Methods Project, not the batteries presented in this study.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs plan to adopt the recommendations.

How the Study Affects Program Results and Its Significance:

The study findings have brought consistency to the approaches used to measure NTG from downstream residential programs. This will help ensure that changes in measured NTG from such programs going forward will primarily reflect changes to the measures, programs, and markets in question, not to the NTG measurement methodology.

Overview of Study Method:

With input from an Advisory Group comprising NTG experts from the residential evaluation team, the PAs, and the Energy Efficiency Advisory Council, the study team conducted a literature review. This involved identifying the best ideas for downstream residential self-reported NTG measurement from other jurisdictions and providing a preliminary assessment of the categories or types of programs relevant for consistent SR NTG measurement. With this information, the team created tables aligned with the BCR identifying the residential programs/initiatives for which SR NTG is appropriate. Accounting for each of the categories or types of programs and the different groups that would be expected to self-report NTG, the team developed a SR NTG method, including high-level outlines of algorithms, using questions with enough flexibility to address differences in program types.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-24.

Study 20-25: Municipal Partnership Initiative Program Theory and Logic Model Development Memo (MA19X12-B-PTLMMuni)

Type of Study: Process Evaluation

Evaluation Conducted by: Opinion Dynamics

Date Evaluation Completed: 12/2/2020

Study Objective and Summary of Results:

The purpose of this study was answer to the following research questions:

- What is the core theory behind the Municipal Partnership Initiative?
- What are the anticipated activities that will be undertaken as part of the Initiative?
- What resources and tools are the PAs providing to the municipal leaders?
- What are the outputs of the activities?
- What the intended outcomes of the Initiative?
- What are the key metrics used to assess the Initiative's performance?
- Do the Initiative's activities and outputs vary by target community?

The study provides the following key findings:

- The COVID-19 pandemic is hindering municipalities' ability to reach their participation goals especially for programs that require in person assessments and installations.
- The delayed receipt of execution agreements and some outreach materials also impacted some municipalities.
- Municipalities believe there are opportunities for the PAs to provide increased support in helping them identify target customers groups by providing lists with customer information they can leverage for targeted outreach.
- Municipalities find value in the in opportunities the Initiative affords them to collaborate with not only their PAs and local community-based organizations, but also other municipalities.
- Municipalities are not accustomed to receiving performance-based incentives and would prefer to receive funds in grant form as some struggle with covering the upfront costs of marketing and outreach.
- As the Municipal Partnership Initiative outreach methods are effective for reaching income eligible populations and municipal leaders have expertise in engaging these customers, municipalities believe excluding this group as a target population is a missed opportunity.
- Municipal leaders identified ongoing barriers to engaging Limited English Proficiency customers. They share concerns that these customers are not able to complete the full enrollment and participation journey due to lack of in-language infrastructure and support, this challenge is especially prominent for virtual platforms.

Core Initiatives or End Uses to which the Results of the Study Apply:

- All Sectors
- Residenital Coordinated Delivery
- Envelope & HVAC
- Electric & Gas
- Focus on Small Business, Moderate Income, and Limited English Proficiency customers

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: As progress towards participation goals varies for each municipality within each Mass Save program, consider engaging in conversations with each municipality to assess what goals are feasible for 2020 given the impact of the pandemic and adjust goals accordingly.

Recommendation 2: As the COVID-19 pandemic is likely to continue to impact the ability to conduct in person events and interactions in the 2021 calendar year, consider adjusting the 2021 Initiative participation goals as well.

Recommendation 3: Consider re-aligning the performance period with receipt of execution agreements.

Recommendation 4: As data security and privacy constraints allow, consider providing the municipal leaders with access to contact lists pertaining to the target customer populations.

Recommendation 5: Consider hosting a workshop about best practices for reaching small businesses, seniors, and other populations that may be harder to reach due to COVID 19.

Recommendation 6: Continue to provide forums for the municipalities to connect, collaborate, and share experiences, challenges, and implementation ideas.

Recommendation 7: Consider revising the funding structure so less that a smaller percentage of the funds are contingent upon performance and municipalities receive funds earlier in the program year.

Recommendation 8: Consider including income eligible customers as a target customer population for the Initiative.

Recommendation 9: Ensure that customers have in language support through the entire customer journey.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

The PTLM and associated memo are designed to facilitate a common understanding of the Municipal Partnership Initiative design and implementation processes across Initiative stakeholders. These deliverables are also intended to support future evaluation efforts as they include descriptions of key activities, outputs, and outcomes expected from the Initiative and a list of potential performance metrics which the PAs can leverage to determine whether the Municipal Partnership Initiative is being delivered as planned and whether the intended theory of change is occurring.

Overview of Study Method:

The evaluation team approached the development of the PTLM as an iterative and interactive process. We started the process with a review of relevant program materials to develop initial PTLM inputs, which served as the base for in-depth interviews with PA staff. These activities gave us an initial understanding about the theory behind the Initiative and allowed us to develop a draft PTLM. Through interviews with each of the seven municipal leaders, we refined the PTLM and discussed Initiative implementation processes, any setbacks as a result of the COVID-19 pandemic, and identified successes and challenges related to participation. We also held follow-up group interviews with PA staff which allowed us to collect feedback on a draft PTLM and identify variations in program theory across municipalities, address gaps in knowledge, and determine any missing linkages to the PTLM.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-25.

Study 20-26: 2019 Electric Vehicle Supply Equipment Direct Load Control Demonstration - Process /evaluation

Type of Study: Process Evaluation

Evaluation Conducted by: Guidehouse Inc.

Date Evaluation Completed: 7/6/2020

Study Objective and Summary of Results:

This evaluation assessed participant experience with Eversource's Electric Vehicle Supply Equipment (EVSE) Direct Load Control (DLC) demonstration and solicited information on participants' electric vehicle (EV) type, and their driving and charging behavior to inform the scalability of the solution. Additionally, the evaluation summarized key features of managed charging programs offered by utilities in other jurisdictions.

The study provides the following key findings:

Participant Survey Findings

- Survey respondents were generally very pleased with their program experience in 2019, despite events starting late in the evening (7 or 8 p.m.) when home charging is more common (compared to earlier in the day). In terms of program improvements, participant suggestions focused on modifications to program communications (event notification and program information).
- Based on survey feedback, the most common period during which EVs are connected to EVSEs on summer weekdays is between 6 p.m. and 6 a.m. A DLC program that calls events in the afternoon (earlier than 6 p.m.) on summer weekdays may see limited impacts.

Literature Review Findings

- Utilities across the US are experimenting with a variety of managed charging solutions (including direct load control and pricing-based solutions) to achieve goals for peak load reduction or load shifting. No single program design or technology platform has been identified as the model that will ultimately become the industry favorite.
- Early EVSE Demand Response (DR) pilots have shown promising potential, but challenges related to equipment connectivity and asset availability will need to be addressed before these programs can achieve the scale and dispatchability that utilities may ultimately want.
- Many utilities are planning for or are deploying managed charging-capable infrastructure with the intent of offering future DR programs.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Residential Behavior

- Other
- Electric Only
- Electric Vehicle Supply Equipment Direct Load Control

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A

How the Study Affects Program Results and Its Significance:

The evaluation begins to inform which managed charging solutions will be offered by the PAs in the future.

Overview of Study Method:

This evaluation assessed participant experience with the solution and solicited information on participants' EV types and driving and charging behavior. Additionally, the evaluation summarized key features of managed charging programs offered by utilities in other jurisdictions. The key elements of the study method include the following:

Participant Survey: Guidehouse administered an online survey with 2019 EVSE DLC demonstration participants. The evaluation team designed the survey instrument and had it reviewed by Eversource and the Energy Efficiency Advisory Council (EEAC) EM&V consultant before fielding the survey. The survey was administered online via the Qualtrics platform from December 16 through December 23, 2019 to the 74 customers enrolled in the demonstration as of October 31, 2019. Ultimately, 53 participants completed the survey.

Literature Review: Guidehouse performed a literature review to collect and synthesize information about EV managed charging programs being offered by other utilities around the US. The evaluation team collected information about program design and delivery, technology trends, and the overall experience that other utilities have had when attempting to manage EV charging by means of customer programs. In total, Guidehouse reviewed 14 programs in 12 jurisdictions.

Application of Results: Prospectively

A copy of the complete study can be found in Appendix 4D, Study 20-26.

Study 20-27: 2019 National Grid Behavioral Demand Response Evaluation

Type of Study: Impact Evaluation

Evaluation Conducted by: Guidehouse

Date Evaluation Completed: 4/28/2020

Study Objective and Summary of Results:

The objective of this study was to estimate demand reductions from National Grid's 2019 behavioral demand response (BDR) program via a literature review and an analysis of a subset of National Grid Massachusetts customers with interval utility metering.

The estimated event savings were not statistically significant across a variety of models. It is possible that an evaluation with access to a larger group of participants, or with a randomized control trial (RCT), may detect statistically significant savings in the future. Likewise, should National Grid have access to AMI data for more customers, the program design could be improved with customer-specific, post-event communications. An improved program design could lead to increased savings in the future.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Existing Building Retrofit
- Active Demand Reductions & Other
- Electric Only

Evaluation Recommendations:

No formal recommendations were made in this evaluation.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

N/A (no formal recommendations were made in this evaluation)

How the Study Affects Program Results and Its Significance:

The estimated event savings were not statistically significant across a variety of models. It is possible that an evaluation with access to a larger group of participants, or with a randomized control trial (RCT), may detect statistically significant savings in the future. Likewise, should National Grid have access to AMI data for more customers, the program design could be improved with customer-specific, post-event communications. An improved program design could lead to increased savings in the future.

Overview of Study Method:

Guidehouse utilized AMI data from customers in the SES pilot to estimate impacts from the BDR program in 2019. Since the SES pilot ran from 2014 to 2018, with its own demand response events, it was not possible to estimate 2018 BDR savings with this dataset.[5]

Because there is no random control group for the BDR program, Guidehouse first utilized a within-subject analysis to estimate 2019 BDR savings. The within-subject analysis utilizes only BDR program participants and constructs counterfactual usage (i.e., usage in the absence of a BDR event) based on participant's usage during other hot days of the 2019 summer. The difference between the predicted baseline usage and actual usage during BDR events is the BDR program savings. We estimated the average treatment effect (ATE) which represents demand savings for all households called to participate in the BDR event.[6]

Guidehouse selected event-like non-event days to construct the counterfactual baseline usage for each event. The weekday event was matched to non-event, non-holiday weekdays and the weekend event was matched to non-event weekends or holidays. We chose non-event days that minimize the sum of the squared Euclidean distance in the temperature across the 14 hours of the day from 8 am to 10 pm, excluding days with unusual weather patterns (e.g. passage of cold fronts after thunderstorms).

Guidehouse then applied a linear regression framework using the event and selected non-event days to estimate the savings during each event. The regression model fits energy use as a function of a customer-specific fixed effect, events for participants, weather, and hour of the day. The model also captures up to 2 hours of (manual) precooling before the event starts and up to 3 hours of snapback after the event.

This model yields per participant average demand savings (or dissavings) during each hour of precooling, the event, and snapback. The values can be used to determine demand savings for the population during each hour of the event and energy savings for the day across precooling, the event, and snapback.

Guidehouse observed that the weather on event days was considerably hotter than the weather on the best matched control days. Therefore, in addition to the within-subject model, Guidehouse explored a regression specification that utilized the SES participants without email addresses as a quasi-control group for the BDR participants. The Level 1 Passive group from the SES pilot was the only group with enough non-BDR participants to serve as an adequate control group (3,646 quasi-controls compared to 4,896 treatment customers). Even for this group, there were not enough

[5] As the effect would be confounded with that from the SES pilot.
[6] We cannot estimate a treatment effect on the treated as we do not know who responds to the BDR emails by making changes to their usage and who does not.

non-BDR participants to conduct participant matching. Instead, Guidehouse used the entire non-BDR group as the quasi-control group.

Guidehouse applied a linear regression framework using the BDR and non-BDR participants on the event and selected non-event days to estimate the savings during each event. Like the within-subject model, the regression model fits energy use as a function of a customer-specific fixed effect, events for participants, weather, and hour of the day. The model also captures up to 2 hours of (manual) precooling before the event starts and up to 3 hours of snapback after the event.

Like the within-subject model, this model yields per participant average demand savings (or dissavings) during each hour of precooling, the event, and snapback. The values can be used to determine demand savings for the population during each hour of the event and energy savings for the day across precooling, the event, and snapback.

Application of Results: Retrospectively and Prospectively

A copy of the complete study can be found in Appendix D, Study 20-27.

Study 20-28: 2019/2020 Residential Energy Storage Demand Response Demonstration Evaluation - Winter Season

Type of Study: Pilot Evaluation and Demonstration Projects

Evaluation Conducted by: Guidehouse

Date Evaluation Completed: 9/21/2020

Study Objective and Summary of Results:

The purpose of this study was to assess the technical feasibility of using residential energy storage systems (battery) to reduce peak demand for National Grid and to flatten the solar output curve for Unitil as part of their broader active demand response initiatives. This study confirmed this feasibility; however, it has not looked at whether that control will be cost-effective for the electric system, program administrators, and/or customers. National Grid provided a performance incentive to customers in exchange for control of their existing battery as part of a "Bring Your Own Battery" demonstration, while Unitil provided each participant with a battery at no cost to them. National Grid called two events for participating customers[7] during the winter season: one on December 19, 2019 and the other on February 14, 2020. Between January 1 and February 29, 2020 Unitil called events every day from 5 p.m. to 7 p.m. for 4 participating customers.

The study provides the following key findings for National Grid:

- Events called by National Grid during the winter season saved 559 kW per 2-hour event on average, with an average of 80 successfully participating battery devices.
- Battery devices that successfully participated in 2-hour events saved an average of 6.9 kW per unit.
- On average, called events had 72% of the expected maximum impact given the maximum expected discharge of the batteries operational at the time of the event.
- 119 devices were available for analysis, out of 148 devices that were enrolled in the program prior to the final event of the season.
- 102 of 119 devices successfully performed in at least one event this season.
- Successfully participating devices dispatched at a constant rate for the length of the event.
- The conventions (e.g., sign, time zone) associated with the telemetry data varied across manufacturers. While data consistency was largely improved since the original summer 2019 analysis, Guidehouse made a couple informed corrections to further align the telemetry data for all devices into a single convention.

The study provides the following key findings for Unitil:

- The battery output could not maintain a high level of discharge for the whole event. The batteries were successful at exceeding battery output targets for 30 minutes for 68% of events; however, no battery achieved its target for longer than 1.5 hours on any event day.

[7] As of February 13, 2020, 148 customers enrolled in the program in Massachusetts.

- The average total output from the battery storage during the 2-hour events was 8.3 kW and 16.5 kWh.
- The average total battery discharge measured by PCS was 20.3 kWh, while the battery discharge calculated from power output averaged 16.5 kWh. The calculated battery discharge was approximately 82% of the battery's change in energy.

Core Initiatives or End Uses to which the Results of the Study Apply:

- Residential
- Existing Building Retrofits
- Active Demand Reductions
- Electric Only

Evaluation Recommendations:

The following recommendations were made by the evaluators conducting this study.

Recommendation 1: National Grid to encourage EnergyHub to work with manufacturers and/or integrators to align all details of the telemetry data so the data fields are consistent.

Explain Whether or Not the PAs Decided to Adopt the Recommendations from the Study:

The PAs are considering all recommendations for adoption at this time. The PAs have not formally adopted or rejected any recommendations that require changes to program design and operations.

How the Study Affects Program Results and Its Significance:

Regarding energy storage system performance, the study found that most batteries successfully performed in the majority of called events. This implies that daily dispatch is a viable option for consistent peak reduction or load shifting. National Grid should further explore the factors behind why the per-event average fleet performance was 72% of the maximum expected impact, which includes underperformance of selected devices. National Grid should also confirm that batteries are operational prior to joining program, in order to have accurate battery counts and impact estimations, and monitor batteries and potentially troubleshoot batteries that are consistently not performing. Depending on program objectives, Unitil should consider different approaches to increase event success—for example, reduce the duration of events from 2 hours to 1.5 hours or reduce the targeted output of the battery so batteries discharge through the entire period of winter events.

Overview of Study Method:

The study relied on several methods:

1. Impact analysis was performed using whole-home, solar PV, and energy storage system telemetry data along with event participation data. Interval data was collected for all

participating devices during the winter season. This was used to calculate the energy storage system dispatch during each called event and to assess the shape of the combined solar and battery output.

Application of Results: Retrospectively

A copy of the complete study can be found in Appendix 4D, Study 20-28.

APPENDIX 4

Statewide Evaluation Studies Summary

D. Evaluation Studies

Please see Statewide Appendix 4D: Evaluation Studies, filed under separate cover.

APPENDIX 5

Performance Incentives

Please see the attached Performance Incentive calculation tables for calculations of performance incentives based on 2019 and 2020 achievement.

Please note that on February 19, 2019, the Program Administrators petitioned the Department of Public Utilities ("Department") for clarification and reconsideration of certain limited findings in the Department's 2019-2021 Three-Year Plans Order, D.P.U. 18-110 through D.P.U. 18-115 and D.P.U. 18-117 through D.P.U. 18-119. Specifically, the Program Administrators sought: (1) clarification that the new cost-effectiveness standard for performance incentives requires that the Companies remove performance incentives based on actual performance associated with non-cost-effective core initiatives only if the respective program is not cost-effective over the full term; and (2) reconsideration of the application of the Department's new cost-effectiveness standard to the value component of the performance incentive model. To date, the Department has not ruled on the Program Administrators' Motions.

All of NSTAR Electric's core initiatives were cost-effective in 2020. Accordingly, the new cost-effectiveness standard for standard for performance incentives is not implicated.

Eversource Electric
2020 Energy Effiency Performance Incentives (PI)
($2019)

Line #	Performance Incentive Component	Total	Comment
	ENERGY EFFICIENCY SAVINGS COMPONENT		
1	Plan Energy Efficiency (EE) Benefits (excludes active demand)	$ 1,327,314,735	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
2	Threshold EE Benefits	$ 995,486,052	Line 1 * 75%
3	Evaluated EE Benefits	$ 1,226,498,147	Cost-Effectiveness (2019$): Total Evaluated Benefits
4	EE Savings Payout Rate 2019-2021	$ 0.0104207	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
5	Plan EE Savings Incentives	$ 13,831,526	Line 1 * Line 4
6	Cap on EE Savings Incentives	$ 17,289,408	Line 5 * 125%
7	Evaluated EE Savings Incentives	$ 12,780,948	Line 3 * Line 4 if Line 3 is greater than or equal to Line 2. Otherwise, $0.
8	Claimed EE Savings Incentives	**$ 12,780,948**	Minimum of lines 6 and 7.
	ACTIVE DEMAND REDUCTION SAVINGS COMPONENT		
9	Plan Active Demand Reduction (ADR) Benefits	$ 28,184,778	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
10	Threshold ADR Benefits	$ 21,138,584	Line 9 * 75%
11	Evaluated ADR Benefits	$ 27,119,774	Cost-Effectiveness (2019$): Total Evaluated Benefits
12	ADR Savings Payout Rate 2019-2021	$ 0.0277721	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
13	Plan ADR Savings Incentives	$ 782,749	Line 9 * Line 12
14	Cap on ADR Savings Incentives using ADR Savings Payout	$ 978,437	Line 13 * 125%
15	Evaluated ADR Savings Incentives	$ 753,172	Line 11 * Line 12 if Line 11 is greater than or equal to Line 10. Otherwise, $0.
16	Evaluated ADR Benefits In Excess of ADR Cap	$ -	Line 11 - (Line 9 * 125%)
17	EE Savings Payout Rate 2019-2021	$ 0.0104207	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
18	Percent of EE + ADR Savings Components Earned	93%	(Line 8 + Line 15) / (Line 5 + Line 13)
19	Incremental ADR Savings Incentives at EE Savings Payout	$ -	Line 18 * Line 17
20	Claimed ADR Savings Incentives	**$ 753,172**	Minimum of lines 14 and 15 plus line 19
	VALUE COMPONENT		
21	Plan Program Costs (2019$)	$ 311,076,908	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
22	Plan Net Benefits (Benefits - Program Costs) (2019$)	$ 1,044,422,606	(Line 1 + Line 9) - Line 21
23	Threshold Net Benefits (Benefits - Program Costs) (2019$)	$ 783,316,954	Line 22 * 75%
24	Actual Program Costs (2019$)	$ 273,561,244	Cost-Effectiveness (2019$): Total Program Costs
25	Evaluated Net Benefits (Benefits - Program Costs) (2019$)	$ 980,056,677	(Line 3 + Line 11) - Line 24
26	Value Payout Rate 2019-2021	$ 0.0087126	D.P.U. 18-110 through 18-119, Exh. Comm-1, App. R (updated February 19, 2019)
27	Plan Value Incentives	$ 9,099,611	Line 22 * Line 26
28	Cap on Value Incentives	$ 11,374,514	Line 27 * 125%
29	Evaluated Value Incentives	$ 8,538,818	Line 25 * Line 26 if Line 25 is greater than or equal to Line 23. Otherwise, $0.
30	Claimed Value Incentives	**$ 8,538,818**	Minimum of lines 28 and 29.
31	Total Planned Peformance Incentive	**$ 23,713,887**	Line 5 + Line 13 + Line 27
32	Total Claimed Peformance Incentive	**$ 22,072,939**	Line 8 + Line 20 + Line 30
33	Percent Earned	93%	Line 32 / Line 31
34	Total Planned Peformance Incentive (nominal$)	**$ 24,266,420**	Inflating to 2020$ using 2.33% discount rate --- Line 31 * (1+2.33%)
35	Total Claimed Peformance Incentive (nominal$)	**$ 22,587,238**	Inflating to 2020$ using 2.33% discount rate --- Line 32 * (1+2.33%)

APPENDIX 6

2020 Miscellaneous Implementation Update

A. Renter, Income, and Language data

Below are tables showing data related to renters and language for Eversource Electric.

Program Pathway	Renters Served			Notes
	2019	2020	2021	
Innovation - Tailored Energy Savings Packages		**37**		1
Residential Coordinated Delivery	**1,222**	**2,396**		2
Income Eligible Coordinated Delivery	**9,151**	**11,196**		
Total	**10,373**	**13,629**	**-**	
C&I, Residential End Use	**104**	**993**		3

1) Tailored Energy Savings Packages were made available to renters as an easy way for them to access program savings. This number represents the number of customers receiving kits.

2) This number includes renter units in SF and legacy MF buildings who received at least one measure; renters who only received an audit are not counted.

3) This number represents the total number of units served through this pathway, not just renters. For large multifamily buildings, it is typically not possible to individually verify which units are occupied by a renter. However, it is likely that these buildings are predominantly occupied by renters.

Income Level	Renters Served			Notes
	2019	2020	2021	
Non-Income-Verified (Standard Program Participation)	**1,222**	**2,433**	**-**	1
Moderate Income Qualified (Weatherization Offer)	-	-		2
Income Eligible	**9,151**	**11,196**	**-**	
Total	**10,373**	**13,629**	**-**	

1) The vast majority of customers who participate in the PAs' programs do not undergo any income screening. The PAs are therefore unaware of their income status. All income screenings are voluntary.
2) This number only includes moderate-income-qualified renters who participated in the special insulation offer. In April of 2020, in response to the COVID-19 pandemic, the PAs began offering 100% incentives for insulation to all customers. There was therefore no reason for moderate income customers to undertake the voluntary income-qualification process, and *tracked* moderate income participation appears low as a result. This is not a representation of the total number of moderate income customers served. The customer profile studies issued annually contain information about participation in census blocks with high levels of moderate income residents.

Language Data (Statewide)	Mass Save Hotline Selection			MassSave.com Page Views		
	2019	2020	2021	2019	2020	2021
English	137,156	128,383		5,154,923	4,874,548	
Mandarin	158	1,399		N/A	N/A	
Portuguese	313	368		9,603	18,304	
Russian	212	761		N/A	N/A	
Spanish	2,900	3,039		44,195	31,927	
Total	**140,739**	**133,950**	**-**	**5,208,721**	**4,924,779**	**-**

B. Electric Vehicle Load R&D Update

NSTAR Electric Company d/b/a Eversource Energy ("Company" or "Eversource") is pleased to provide a status update on the progress of its Electric Vehicle ("EV") load management research and development ("R&D") project. The EV load management effort is focused on shifting EV charging away from peak hours. The Company envisioned shifting EV charging away from peak hours with two control approaches: (1) "throttling," which involves lowering the charging capacity; or (2) "restricting/scheduling" charging during specific time periods specified by the program. During 2020, the Company utilized just the throttling approach. Starting in 2021, the Company will continue to offer the throttling approach but also begin testing customer acceptance of push scheduling, as discussed below.

Marketing/Enrollment

In 2019, the Company partnered with the vendor providing the software platform used to dispatch residential demand response assets to enroll wi-fi enabled level II EV chargers into a throttling program. In order to minimize administrative costs but fully test the proposed approaches, the Company focused on integrating the largest EV charger manufacturer into its dispatch platform for 2019. In 2020, the Company integrated an additional two EV manufacturers into the dispatch platform. The Company is also exploring other methods for bringing new chargers into the R&D project.

The Company was able to sign up 94 chargers through the end of 2019 with an additional 221 signed up through the end of 2020. As of June 2021, 515 chargers are signed up total including 200 chargers in 2021. All of these customers were subject to throttling control strategy. These chargers were recruited through marketing emails sent between the Company and the charger manufacturers. Because customers need to register their chargers with the manufacturers, the manufacturers have all the email addresses and physical addresses of customers with its chargers. The Company was able to utilize this information to provide a targeted email marketing campaign

to enroll customers. The Company also dedicated space on its website[1] to provide information on the R&D project and to recruit customers.

The Company was able to secure an agreement with a large commercial customer to control over a hundred charging stations in 2020. In 2021, the Company secured an agreement with a city government customer to control two fleet chargers and is in late stage discussions with another commercial customer to enroll additional fleet chargers. The C&I related work in 2020 was focused on recruiting customers and performing test dispatches with the enrolled C&I commercial customer. Additional dispatches will be performed in 2021.

Dispatches

The Company dispatched (i.e. temporarily reduced the charging rates) the residential EV chargers four times in 2019. Those dispatches occurred at the following times: August 19, 2019 4-7pm; October 8, 2019 3-6pm; October 17, 2019 3-6pm; and October 25, 2019 4-7pm.

In 2020, the Company dispatched the residential EV chargers six times during the Summer season. The dispatches occurred at the following times: July 9, 2020 5-7pm; July 20, 2020 4-7pm; July 27, 2020 4-7pm; August 2, 2020 5-7pm; August 3, 2020 5-7pm; and August 24, 2020 4-7pm.

The Company dispatched the residential EV chargers four times during the Winter season in 2021. The dispatches occurred at the following times: January 29, 2021 5-7pm; March 15, 2021 6-8pm; March 23, 2021 6-8pm; and March 30, 2021 6-8pm. From a technical perspective, these dispatches were initiated through the residential demand response software platform. In this type of configuration, the Company schedules an event in its residential demand response software platform, the event parameters are communicated via the cloud to the charger manufacturer, and the manufacturer is responsible for executing on those parameters at each individual device. These events were initiated to reduce load during peak conditions and to test the functionality of the system.

The Company dispatched the C&I chargers one time in 2020 and two times in 2021. The dispatches occurred at the following times: December 10, 2020 3-6pm; February 10, 2021 2-5pm; and March 9, 2021 2-5pm. The Company scheduled and executed those events directly through the charger manufacturer platform. These events were initiated to test the functionality of the system.

[1] https://www.eversource.com/content/ema-c/residential/save-money-energy/explore-alternatives/electric-vehicles/ev-charger-demand-response

Load Reductions

During events, average charging was limited to an instantaneous draw of only 1-2 kW, compared to approximately 7kW under non-demand response circumstances. Vendor reported data shows that the average load shed per device across the portfolio was 0.10-0.25 kW. This is not necessarily reflective of the reduction from each specific vehicle but rather the average reduction across the portfolio. This indicates that not every vehicle enrolled in the project was charging during an event or did not charge for the entire duration of the whole three-hour event, and thus could not be throttled down for some or all of the event. Customers not charging during the peak times when events would normally be called is ultimately the desired behavior and the Company will continue to gather data to better target those customers that would normally be charging during peak times.

2019-2020 Costs

	PPA	**Marketing**	**STAT**	**Incentives**	**Total**
Resi EV Load Management 2019	$407.53	$0.00	$92,292.99	$18,000.00	$110,700.52
C&I EV Load Management 2019	$407.53	$0.00	$32,292.32	$0.00	$32,699.85
Resi EV Load Management 2020	$0.00	$0.00	$69,257.38	$42,850.00	$112,107.38
C&I EV Load Management 2020	$0.00	$0.00	$36,354.59	$0.00	$36,354.59

The offering is a bring your own device model and the Company offers an incentive for participation in the offering. The Company does not provide any incentives for the EV charger hardware or electric vehicle supply equipment ("EVSE"). Instead, the Company enters into a multi-year agreement with customers that provides all the incentive upfront. For example, the Company has been offering $100 per year for participating in the R&D project but has been providing customers $300 when they sign a 3-year agreement. The Company is closely monitoring the level of customer participation after the initial incentive is paid and whether any program design revisions are needed in order to encourage continued participation. The Sales, Technical Assistance, and Training costs were vendor driven costs necessary to set up the software integrations to enable dispatch capabilities. No marketing costs were incurred as the only marketing done was through email campaigns that only required internal labor which is accounted for in Program Planning and Administration.

Evaluation

Due to the limited number of customers enrolled in the first year of the R&D project and the small number of dispatches that occurred in 2019, the Company did not undertake an impact evaluation of the project. However, it did initiate survey-based research to better understand participant driving and charging behavior, motivations for enrollment, and overall program and event experience for the 2019 season. The 2019 survey was fielded between December 16-December 23, 2019, with a response rate of 72% and a total of 53 completions. An additional survey was conducted in 2020 on charging and driving behavior. The 2020 survey was conducted from October 7-18, 2020 with a response rate of 60% and a total of 110 completions.

Some key survey findings include:

- Customers indicated they primarily enrolled in the program to receive incentives and to reduce their environmental impact
- In 2019, of the respondents with a new charger (21), 71% indicated that they purchased a new charger because of the program
- In 2020, of the respondents who became aware the program before purchasing a new charger (36), 80% of them were at least partially influenced by the program to buy a new charger.
- In 2019, 53% of respondents indicated that their top motivation for buying an EV was to help the environment
- In 2020, 45% of respondents indicated that their top motivation for buying an EV was to help the environment
- In 2019, 94% of survey respondents were satisfied with the process of enrolling in the program
- In 2020, 84% of survey respondents were satisfied with the process of enrolling in the program
- In 2019, 98% of respondents indicated that they are likely to continue participating in the program
- In 2020, 97% of respondents indicated that they are likely to continue participating in the program

Next Steps

Going forward, the Company looks forward to introducing new enhancements to increase enrollments and to more accurately capture what a full program would look like at scale. In order to increase enrollments, the Company expects to partner with additional EV charger manufacturers. Additionally, the Company is exploring cross-selling opportunities with other

programs and leveraging existing programs to possibly provide EV load management for fleets and at multi-family buildings.

The Company is also looking for new ways to bring customers into the R&D project besides enrolling customers that already have existing level II wi-fi enabled chargers. This may include working directly with car dealerships or big box stores where chargers are sold. The idea is to get a customer to enroll in the load management program at the time of charger purchase as opposed to getting a customer to sign up once they already have purchased the charger, and possibly developed less than ideal charging habits. The other objective is to influence a customer to buy a wi-fi enabled level II charger instead of a "dumb" level I charger with no control or communication abilities. In this way, the Company believes it can increase its enrolled base from existing installed chargers by increasing the number of manufacturers it is working with and increasing the total number of level II chargers in the field.

In addition to simply reducing a customer's rate of charge through the throttling control methodology, the Company expects to be able to push a predetermined charging schedule to chargers starting in 2021. In this load control methodology, a customer would plug in their vehicle when they returned home or to the office but the vehicle would not start charging until after system peak demand had subsided at a predetermined time pushed to the charger. The Company will work with the EV charger manufacturers and the residential demand response software provider to enable this load control strategy.

The Company expects to work with its third-party evaluation provider to complete an additional evaluation of the EV load management R&D project for the 2020/2021 Winter season. This will include continued efforts to evaluate the demand impacts of the EVSE Demand Response demonstration, using data from the 2020/2021 Winter season, and may also include additional process evaluation research such as continued participant surveys.