BURLINGTON ELECTRIC DEPARTMENT

2024 Energy Efficiency Utility Annual Report

(DPS Measurement & Verification results through 2022 are applied in this Annual Report)

(2023 & 2024 DPS Measurement & Verification results are not yet available)

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1 Introduction

The Burlington Electric Department (BED) is pleased to submit the following 2024 EEU Annual Report ("Report") to the Vermont Public Utility Commission (PUC), the Vermont Department of Public Service (DPS) and the Burlington Electric Commission (BEC) summarizing the implementation of energy efficiency programs in the City of Burlington for calendar year 2024. BED remains committed to offering its customers high quality and affordable energy services and a secure, environmentally sound supply of electricity into the future. Energy efficiency continues to play a significant role in achieving this goal.

Energy efficiency has been clearly shown to be Vermont's least expensive future energy supply resource over time and is every day a greater environmental imperative. BED is owned by all the citizens of Burlington, who have been supportive of BED's pursuit of additional cost-effective energy efficiency.

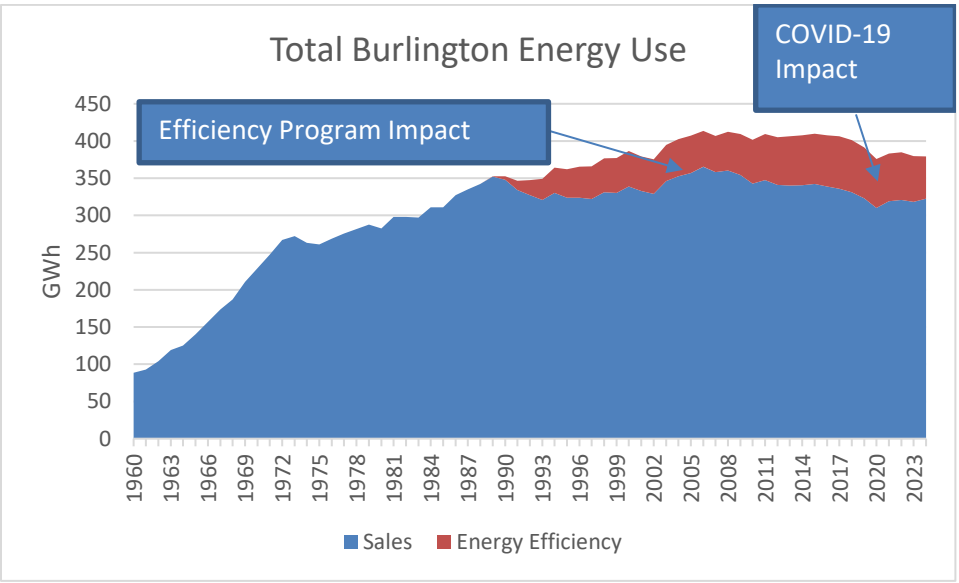
Burlington voters in 1990 approved an 11.3-million-dollar bond to fund energy efficiency programs that supported successful program activities through 2002. Since 2003, BED customers (like all other Vermont electric customers) pay a monthly charge that supports these "Energy Efficiency Utility" (EEU) programs. When these funding sources are considered along with customers' direct investment, approximately $91 million has been invested in energy efficiency efforts sponsored by BED over the last 35 years. This is comprised of approximately $47.8 million spent by BED on all its energy efficiency efforts during that period, combined with another $43.2 million in matching expenditures by its customers. The willingness to invest their private funds in these investments is a testament to the value that BED customers place on these services. Energy efficiency investments in Burlington are saving our customers approximately $10 million annually on electricity bills, including avoided energy and transmission and capacity costs.

As Figure 1 below indicates, the overall effect has been dramatic. Energy Efficiency has flattened BED's energy load requirement since the 1990's. As of year-end 2024,

electricity consumption in Burlington is approximately 8% lower today than in 1989. In other words, we are meeting the needs of a growing local economy with less electricity than the city used over a quarter century ago. The consistent delivery of affordable energy efficiency services has helped to meet the needs of a growing local economy over the last 35 years with less electricity than was used then.

Energy efficiency expenditures are made almost entirely locally, typically in the form of professional services, skilled trades employment, and equipment purchases. Not only is the value of the City's building and energy-using equipment improved, but locally retained dollars are "multiplied" many times over by subsequent consumer spending. Absent these energy efficiency expenditures, these funds would have gone toward the purchase of electricity and enhanced infrastructure to satisfy increased demands on the City's electrical system. Most of these dollars would have been exported out of state, and many out of the country. Energy efficiency is a win-win situation for the city of Burlington through increased local economic activity, and through the avoidance of increasingly costly electricity purchases.

Figure 1: Impact of DSM on Total City Electricity Sales



Program Annual Performance Trends- Annual fluctuations in any energy efficiency program's performance depend on a variety of human and business cycle dimensions that are hard to quantify and even harder to predict with precision. The decision to

move forward with an energy-efficiency project is ultimately the individual customers. Customers consider a wide variety of factors in their decision-making process, including their perceptions of local and national economic conditions and trends, their availability of funds and competing interests for the use of those funds, fluctuations in their business functions and volumes, and the opinion of off-site consultants and decision makers. Given the relatively small size of BED's system, the loss of only a few new commercial construction projects, for example, can have a dramatic impact on its annual budgets and savings estimates which we have experienced in recent years.

Year-to-year fluctuations in program results reflect the relative unpredictability of energy efficiency program timing and support the notion that *annual* projections are no more than carefully crafted estimates. In the long run, the performance of BED's energy efficiency programs continues to meet the expectations laid out in BED's Integrated Resource Plans (IRP) and prior planning documents dating back more than 35 years. Energy efficiency has flattened BED's energy load requirement since the 1990's and BED's consistent investment in energy efficiency will continue to have lasting benefits in the city. Burlington's Net Zero Energy City by 2030 efforts, in concert with Vermont's broad climate action goals, will change historic electric energy usage pattern in the coming years but it will not change BED's continuing commitment to incorporate cost-effective energy efficiency practices in all programs where possible.

Partnerships- This Report includes coverage of BED's program activities related to the twenty-fifth year of operation of the State's — and the nation's — first Energy Efficiency Utility (EEU). Except for Burlington, Vermont's electric energy efficiency programs are operated by the non-profit service provider "Efficiency Vermont" (EVT). Thanks to a long history of successful program implementation, BED serves as the City's own EEU and delivers these programs within the City of Burlington, continuing to build on its past success in helping Burlington's consumer-owners achieve energy efficient electric use.

BED recognizes that much of its success comes from effective working relationships not only with EVT, but also with its partners VGS (appointed by the PUC as an EEU for

their customers), Champlain Valley Weatherization Service (CVWS) and the Burlington 2030 District. A cooperative relationship with VGS helps both organizations promote EEU services. About 98% of Burlington's buildings use natural gas for space heating and about 90% use it for domestic hot water. VGS's willingness to work with BED to promote electrical energy efficiency programs to its natural gas customers has been a noteworthy strength of its joint energy efficiency program offerings. BED and VGS have also created a process to share the weatherization program and incentives costs for an emerging number of customers who are hybrid heaters i.e., partially natural gas heated, and partially electric heat pump heated.

BED also continues to perform substantial analysis of energy efficiency and demand response impacts on its system as part of the IRP and EEU Demand Resource Plan (DRP) processes. BED updates all its energy efficiency and demand response planning assumptions on a 3-year basis. BED will continue to test all program design assumptions and pursue all strategies to make programs as cost-effective, and as easy to participate in, as possible. BED remains responsible for reacting with appropriate program design modifications to the changing market conditions that impact customers' decisions about undertaking energy efficiency upgrades.

2025-2026 Outlook & Challenges -

Regarding the 2025-2026 EEU program outlook, as BED discussed with the PUC and DPS during February 18, 2025, EEU Triennial Plan Update workshop (Case No. 24-3335-INV), BED continues to closely monitor existing commercial customer activity as the business community continues to face several challenges. The commercial sector represents about 75% of BED's total savings goals with the Business Existing Facilities (BEF) program representing about 54% of the total three-year savings target and 45% of the total budget. BEF participation levels need to be robust for BED to meet savings and budget targets.

Over the past years we have had multiple commercial customer engagements to help better understand the sluggish level of program participation during the 2021-2023 period and continuing through 2024. BED believes that the decrease is driven by

continuing economic uncertainty for many customers coupled with increased material and labor costs, and increased interest rates. Also, a high percentage of office-based employees are still working from home (partially or fully) so decreased sales from less customer traffic is a compounding issue. When talking with commercial Real Estate entities, they point out the high percentage of vacant floor space and the number of businesses asking to reduce the amount of square footage that they are currently leasing. About 70% of BED's commercial customers lease their building spaces. BED also notes a slight increase, from permitting application data, in the number of former commercial office spaces being converted into residential units.

The lack of planned new construction projects is also concerning as the last six out of seven monthly, City Permitting Department Technical Review Committee (TRC) meetings have been canceled due to no new permitting applications for proposed development projects. The TRC meeting is typically the first step that a proposed development takes in the permitting approval process. Typically, it takes three to four years from the date of the initial TRC meeting for a major project to be completed. High construction costs and interest rates appear to be the primary reasons for the significant decrease in planned projects.

Additionally, like other communities, Burlington has been facing opioid addiction, homelessness and public safety challenges that directly impact our downtown businesses and have led to some business closings. Public safety issues, staff safety issues, increased retail theft and staff shortages can, understandably, distract business owners from making energy efficiency improvements.

With the above said, we are slowly starting to see some positive impacts from local intervention strategies that we hope will lead to greater participation levels in the months ahead. BED will continue to use our marketing and outreach services (described in the next section below) to inform customers and contractors that we are here to help with technical assistance, incentives, and on-bill financing services. We will also continue to develop relationships with our colleagues at CEDO, Burlington's Department of Business and Workforce Development and the Burlington Business Association. BED will also continue to seek guidance from Burlington 2030 District

members. We will also continue to work closely with VGS to encourage a comprehensive approach to energy savings. BED and VGS staff are committed to bringing appropriate projects to each other's attention and often conduct joint energy audits for greater customer convenience.

1.1 Outreach and Engagement with a Focus on BIPOC and Low- and Moderate-Income Customers (LMI)

BED will continue to use multiple communication channels to inform customers and contractors about all our EEU and Tier 3 program efforts including:

- Website
- Social media
- Press conferences
- Press releases
- E-Newsletter
- Podcast
- Videos (internal & external)
- Front Porch Forum
- North Avenue News articles
- Print ads
- Photos
- Yard signs
- Radio ads

The next section below highlights some of the outreach, engagement, and staff awareness activities, including an increased focus on our BIPOC and income-eligible customers. More information on these efforts is also included in some of the program descriptions below.

BED continues to recognize that these are both exciting and challenging times in the emerging energy transformation world for many customers and we remain committed to ensuring that all our customers have access to our EEU and Tier 3 programs and services. To reduce potential barriers to participation, BED is also committed to making sure that our utility billing and payment processes are clear, and easy to navigate for all customers, especially those struggling with household budgets. It is this type of work that led us to develop a video on How to Read and Pay My Bill that is translated into most languages spoken in Burlington.

As a city department and community member, BED continues to acknowledge the hardships that many of our customers have still been experiencing due to on-going local and global economic impacts. Working toward our EEU, Tier 3 and Net Zero Energy

City (NZE) goals, while also overcoming economic related challenges, continues to require support and engagement from the community over an extended period. BED also continues to recognize the focus on social and racial justice issues in our community and nation as an opportunity to ensure that our programs and services are available, accessible, and affordable to all our customers. As the bullet point examples below indicate, BED has embarked on some of this important work to ensure that our programs are consistently impactful. BED also recognizes that the efforts listed below (along with other efforts) will need to be regularly monitored and improved upon.

- Please visit our website for many examples of our growing energy education podcast series. This series helps to convey BED's broad reach into the Burlington community and the partnerships that we continue to cultivate with community members.

- BED-Trusted Community Voices (TCVs) Dialogue - Led by CEDO's Opportunity and Engagement Team, the TCV initiative seeks to enhance community engagement efforts and create open dialogue for Burlington residents, with a focus on immigrant and refugee communities. Known as TCV liaisons, trusted community members serve as a bridge between the City/CEDO and their communities to foster more effective, engaging, and supportive relationships. BED continues working with TCV on the following issues:
  - *How BED can do more to reach out to customers, with language translation or other services, so more of our customers can learn about and participate in our programs?*
  - *What are the most useful means for broader communications with our community – inserts in the monthly BED bill, emails, radio, Front Porch Forum, social media, other?*
  - *What types of energy rates, rebates or assistance programs would be most helpful?*

- BED's Project & Equity Analyst position started in January 2023 and is now fully trained on all BED programs and services- This position will continue to focus on

many activities including: advising and coordinating with other BED departments on equitable and accessible processes, program design and implementation; identifying opportunities to help advance energy efficiency and fossil fuel reduction among BIPOC and other under-represented community members; works collaboratively to improve BED's customer care processes, energy efficiency and strategic electrification program design and delivery, and is designing and developing BED's community ambassador program and other community engagement efforts, including regular listening, communication, and outreach with key community stakeholders. This position works across all areas of BED.

- In 2025, Equity and Project Analyst will continue outreach to stakeholder groups and community members, including the Fletcher Free Public Library, CVOEO, the Family Room at the Old North End Community Center, BHA's Bobbin Mill, Hillside and Franklin Square neighborhoods, Northgate Apartments, and will also continue the Monday afternoon energy clinic program at the King Street Laundry whereby BED is available to answer questions and address customer bill concerns. The King Street Laundry is in one of Burlington's most income challenged neighborhoods, and the owner has allowed it to become an "informal" community resource center.

- BED staff will continue to table at several regular community events in 2025 including: the downtown Farmers Market, the Old North End Farmers Market, Summervale at the Intervale Community Farm and Lake Monster's baseball games.

The remaining pages on this Report provide details on BED's delivery of the following EEU services in 2024:

- **Development & Support Services (DSS)**
- **Business New Construction**
- **Business Existing Facilities**

- **Residential New Construction**
- **Residential Existing Buildings**
- **Efficient Retail Products**
- **Thermal Energy and Process Fuels (Residential and Commercial)**
- **Act 44 2024-2026 pilot programs**

Table 1: All Business & Residential DSM History

		Costs						MWh		kW	
	Participants	Admin	Services	Incentive	Evaluation	Participant	Total	Annual	Lifetime	Winter	Summer
1991	391	$356,563	$0	$273,437	$6,015	$1,091,190	$1,727,205	3,703	52,103	1,224	0
1992	330	$334,066	$0	$264,615	$14,711	$1,104,050	$1,717,442	3,595	72,723	1,385	0
1993	1,343	$344,326	$0	$501,991	$107,646	$2,052,045	$3,006,008	9,198	133,079	2,634	0
1994	734	$367,600	$0	$197,054	$46,172	$927,802	$1,538,628	3,304	32,558	991	0
1995	827	$255,770	$0	$149,865	$16,666	$1,584,811	$2,007,112	6,764	31,402	1,650	0
1996	774	$215,329	$0	$118,006	$44,318	$500,363	$878,016	2,285	38,654	0	358
1997	735	$143,184	$0	$122,189	$6,011	$848,380	$1,119,764	2,665	39,091	0	714
1998	692	$204,588	$0	$107,140	$353	$731,707	$1,043,788	3,202	43,971	0	822
1999	675	$214,782	$0	$101,224	$1,529	$331,985	$649,520	1,300	14,174	0	358
2000	1,364	$334,762	$97,067	$148,162	$0	$761,673	$1,341,664	3,130	37,211	443	387
2001	1,410	$425,123	$129,955	$208,178	$59,637	$609,115	$1,432,008	3,094	41,258	398	341
2002	1,824	$469,263	$192,143	$407,057	$2,352	$1,178,695	$2,249,510	4,438	63,159	444	520
2003	1,897	$305,283	$365,691	$236,762	$19,006	$538,589	$1,465,331	3,346	56,332	346	361
2004	1,484	$253,037	$302,017	$271,856	$19,067	$638,819	$1,484,796	3,500	46,856	625	557
2005	1,977	$242,385	$351,009	$260,806	$5,904	$970,437	$1,830,541	4,948	69,570	630	630
2006	2,188	$221,862	$352,886	$381,706	$42,057	$702,575	$1,701,086	6,254	83,951	813	891
2007	2,045	$255,856	$375,480	$441,352	$52,025	$1,353,651	$2,478,364	9,679	128,022	1,206	1,158
2008	6,392	$447,867	$412,037	$578,245	$65,159	$1,187,671	$2,690,979	7,299	72,402	1,178	889
2009	1,181	$317,257	$371,233	$452,901	$67,667	$1,959,977	$3,169,035	5,679	64,416	765	811
2010	1,638	$378,153	$339,569	$1,102,597	$54,283	$781,528	$2,656,130	6,492	75,954	1,223	1,148
2011	1,027	$310,536	$381,043	$1,372,682	$69,742	$1,020,842	$3,154,845	7,191	68,153	1,333	1,000
2012	1,244	$296,104	$425,616	$1,035,051	$63,671	$1,968,113	$3,788,555	6,428	75,050	1,118	957
2013	1,229	$289,056	$472,270	$1,228,561	$77,562	$1,793,534	$3,860,982	7,007	82,273	1,267	910
2014	988	$380,161	$577,196	$1,246,484	$63,671	$3,277,600	$5,545,111	5,399	64,811	959	785
2015	1,021	$329,612	$570,899	$1,291,414	$67,289	$2,025,393	$4,284,606	6,025	80,842	849	628
2016	1,427	$383,409	$511,696	$1,367,951	$69,644	$2,292,047	$4,624,747	6,102	72,043	745	529
2017	1,559	$529,382	$561,806	$1,307,062	$69,646	$2,477,247	$4,945,143	7,022	88,436	899	709
2018	1,555	$566,467	$562,927	$1,373,375	$42,397	$1,527,526	$4,072,691	4,896	63,890	886	607
2019	1,489	$545,939	$544,825	$797,194	$54,414	$684,504	$2,626,876	3,551	41,163	589	446
2020	1,228	$611,080	$464,690	$1,738,158	$106,259	$1,062,838	$3,983,025	3,792	57,343	613	492
2021	1,305	$506,856	$374,545	$1,329,429	$61,980	$256,251	$2,529,061	1,806	26,949	278	289
2022	1,673	$619,995	$352,278	$1,220,793	$42,611	$2,289,941	$4,525,618	3,379	54,625	655	475
2023	1,234	$737,688	$331,353	$1,143,829	$18,672	$2,423,526	$4,655,068	3,306	50,576	455	518
2024	646	$637,215	$321,489	$1,134,706	$31,048	$314,208	$2,438,666	1,249	21,496	200	148
Total	**47,526**	**$12,830,554**	**$9,741,719**	**$23,911,831**	**$1,469,185**	**$43,268,633**	**$91,221,922**	**161,028**	**2,044,536**	**26,801**	**18,439**

**All history tables in this report reflect adjustments in MWh savings claims from the DPS savings verification process.*

Table 2: All Business DSM History

		Costs						MWh		kW	
	Participants	Admin	Services	Incentive	Evaluation	Participant	Total	Annual	Lifetime	Winter	Summer
1991	3	$130,784	$0	$1,849	$0	$2,157	$134,790	31	93	30	0
1992	16	$149,138	$0	$119,535	$4,063	$454,104	$726,840	246	24,388	227	0
1993	164	$162,366	$0	$305,473	$35,559	$1,308,524	$1,811,922	5,587	72,218	1,421	0
1994	104	$238,153	$0	$163,733	$21,690	$630,639	$1,054,215	2,242	14,970	626	0
1995	163	$199,835	$0	$142,342	$9,480	$1,368,954	$1,720,611	6,137	21,386	1,615	0
1996	151	$151,409	$0	$50,423	$28,498	$355,217	$585,547	1,233	16,150	0	334
1997	160	$78,321	$0	$96,959	$5,612	$757,774	$938,666	2,300	33,565	0	669
1998	164	$141,258	$0	$65,048	$50	$615,144	$821,500	2,767	37,930	0	734
1999	162	$150,772	$0	$71,501	$0	$270,056	$492,329	1,051	10,895	0	338
2000	145	$176,552	$56,070	$80,108	$0	$613,597	$926,327	2,438	28,712	309	334
2001	127	$255,082	$99,310	$84,729	$43,248	$384,763	$867,132	2,064	26,581	240	240
2002	113	$284,826	$112,447	$238,866	$252	$912,280	$1,548,671	2,888	43,183	224	392
2003	144	$154,937	$243,386	$148,306	$9,503	$254,905	$811,037	2,193	32,975	122	162
2004	142	$115,796	$192,327	$140,234	$3,928	$507,253	$959,538	2,505	35,419	335	394
2005	133	$133,542	$208,860	$202,143	$0	$814,001	$1,358,546	3,751	57,787	342	397
2006	150	$112,917	$240,425	$261,310	$24,533	$575,467	$1,214,652	5,094	73,084	503	652
2007	151	$125,761	$244,030	$280,213	$33,320	$977,132	$1,660,456	6,530	104,174	482	763
2008	115	$113,641	$250,666	$304,252	$43,576	$904,640	$1,616,775	3,264	48,407	386	386
2009	105	$173,789	$224,900	$305,352	$44,608	$1,743,182	$2,491,831	3,781	51,336	336	555
2010	228	$168,765	$249,094	$849,801	$35,630	$458,549	$1,761,839	3,489	52,358	511	673
2011	220	$162,357	$277,034	$972,032	$47,704	$335,095	$1,794,222	2,787	37,950	421	521
2012	323	$153,822	$307,898	$721,047	$49,516	$1,667,503	$2,899,786	4,215	54,786	494	680
2013	355	$166,097	$384,773	$952,314	$64,371	$1,320,521	$2,888,076	4,440	55,668	533	537
2014	365	$193,375	$434,315	$846,835	$47,753	$3,006,372	$4,528,650	3,559	43,676	526	524
2015	382	$159,179	$430,188	$746,424	$50,467	$1,709,721	$3,095,979	3,691	50,912	332	382
2016	512	$166,511	$406,350	$893,142	$51,990	$1,659,634	$3,177,627	4,074	39,361	361	397
2017	508	$232,740	$463,676	$907,098	$50,198	$2,183,380	$3,837,092	4,645	53,336	420	544
2018	436	$263,751	$478,835	$951,062	$31,671	$1,021,748	$2,747,066	2,716	30,459	433	464
2019	468	$292,555	$382,503	$575,846	$40,121	$445,251	$1,736,276	2,192	23,130	270	307
2020	448	$361,598	$317,005	$1,044,544	$74,576	$937,736	$2,735,459	2,642	39,210	383	411
2021	383	$282,828	$260,931	$872,954	$46,485	$124,042	$1,587,239	1,405	21,048	193	217
2022	439	$358,306	$240,626	$967,844	$31,958	$1,727,644	$3,326,378	2,909	47,905	536	381
2023	327	$413,412	$247,753	$778,928	$14,004	$2,022,431	$3,476,529	2,664	43,235	320	429
2024	76	$352,067	$242,086	$531,415	$25,420	$429,516	$1,580,504	738	12,767	116	60
Total	**7,882**	**$6,776,242**	**$6,995,487**	**$15,673,661**	**$969,784**	**$32,498,932**	**$62,914,107**	**102,268**	**1,339,054**	**13,047**	**12,877**

Table 3: All Residential DSM History

		Costs						MWh		kW	
	Participants	Admin	Services	Incentive	Evaluation	Participant	Total	Annual	Lifetime	Winter	Summer
1991	388	$225,779	$0	$271,588	$6,015	$1,089,033	$1,592,415	3,672	52,010	1,194	0
1992	314	$184,928	$0	$145,080	$10,648	$649,946	$990,602	3,349	48,335	1,158	0
1993	1,179	$181,960	$0	$196,518	$72,087	$743,521	$1,194,086	3,611	60,861	1,213	0
1994	630	$129,447	$0	$33,321	$24,482	$297,163	$484,413	1,062	17,588	365	0
1995	664	$55,935	$0	$7,523	$7,186	$215,857	$286,501	627	10,016	35	0
1996	623	$63,920	$0	$67,583	$15,820	$145,146	$292,469	1,052	22,504	0	24
1997	575	$64,863	$0	$25,230	$399	$90,606	$181,098	365	5,526	0	45
1998	528	$63,330	$0	$42,092	$303	$116,563	$222,288	435	6,041	0	88
1999	513	$64,010	$0	$29,723	$1,529	$61,929	$157,191	249	3,279	0	20
2000	1,219	$158,210	$40,997	$68,054	$0	$148,076	$415,337	692	8,499	134	53
2001	1,283	$170,041	$30,645	$123,449	$16,389	$224,352	$564,876	1,030	14,677	158	101
2002	1,711	$184,437	$79,696	$168,191	$2,100	$266,415	$700,839	1,550	19,976	220	128
2003	1,753	$150,346	$122,305	$88,456	$9,503	$283,684	$654,294	1,153	23,357	224	199
2004	1,342	$137,241	$109,690	$131,622	$15,139	$131,566	$525,258	995	11,437	290	163
2005	1,844	$108,843	$142,149	$58,663	$5,904	$156,436	$471,995	1,197	11,783	288	233
2006	2,038	$108,945	$112,461	$120,396	$17,524	$127,108	$486,434	1,160	10,867	310	239
2007	1,894	$130,095	$131,450	$161,139	$18,705	$376,519	$817,908	3,149	23,848	724	395
2008	6,277	$334,226	$161,371	$273,993	$21,583	$283,031	$1,074,204	4,035	23,995	792	503
2009	1,076	$143,468	$146,333	$147,549	$23,059	$216,795	$677,204	1,898	13,080	429	256
2010	1,410	$209,388	$90,475	$252,796	$18,653	$322,979	$894,291	3,003	23,596	712	475
2011	807	$148,179	$104,009	$400,650	$22,038	$685,747	$1,360,623	4,404	30,203	912	479
2012	921	$142,282	$117,718	$314,004	$14,155	$300,610	$888,769	2,213	20,264	624	277
2013	874	$122,959	$87,496	$276,247	$13,191	$473,013	$972,906	2,567	26,605	734	373
2014	623	$186,786	$142,880	$399,649	$15,918	$271,228	$1,016,461	1,840	21,135	433	261
2015	639	$170,433	$140,711	$544,989	$16,822	$315,672	$1,188,627	2,334	29,930	517	246
2016	915	$216,898	$105,346	$474,809	$17,654	$632,413	$1,447,121	2,028	32,682	384	132
2017	1,051	$296,642	$98,130	$399,964	$19,448	$293,867	$1,108,051	2,377	35,100	479	165
2018	1,119	$302,715	$84,092	$422,314	$10,726	$505,778	$1,325,625	2,180	33,431	453	143
2019	1,021	$253,384	$162,322	$221,349	$14,293	$239,253	$890,601	1,359	18,033	319	139
2020	780	$249,481	$147,685	$693,614	$31,683	$125,102	$1,247,566	1,150	18,133	230	81
2021	922	$224,028	$113,614	$456,475	$15,495	$132,209	$941,822	401	5,901	85	72
2022	1,234	$261,689	$111,652	$252,949	$10,653	$562,296	$1,199,240	470	6,720	119	94
2023	907	$324,276	$83,600	$364,900	$4,668	$401,095	$1,178,538	642	7,341	135	89
2024	570	$285,148	$79,403	$603,291	$5,628	-$115,308	$858,162	511	8,729	84	88
Total	**39,644**	**$6,054,312**	**$2,746,231**	**$8,238,170**	**$499,400**	**$10,769,701**	**$28,307,815**	**58,760**	**705,482**	**13,754**	**5,562**

2 Overview of EEU Services Results for 2024

As described in more detail in each program below, 2024 proved to be a challenging year for achieving savings goals in most programs. Overall, BED achieved 30% of the total annual MWh goal, 24% of the summer coincident–peak KW goal and 32% of the winter coincident–peak KW goal.

BED projected 4,100 annualized MWh savings and achieved 1,250 annualized MWh which will result in 21,500 MWh of savings over the useful life of the installed measures (2024 measures have a weighted average lifetime of about 15 years). BED projected 620 coincident-peak summer KW savings and achieved 148 KW. BED projected 620 coincident-peak winter KW savings and achieved 200 KW.

BED's electric resource acquisition budget for 2024 was $2,245,220 and $2,090,257 was expended, about 7% below the approved budget. BED's cost for, first year, saved energy was higher than projections. BED estimated it would spend about $548 per annualized MWh saved and instead spent $1,672 per annualized MWh. This was driven by much lower than projected savings in the commercial sector, which historically delivers low first year energy yield rates. In 2024, the residential programs saw relatively good customer activity but the electric savings from residential measures are relatively low so, alone, they do not contribute enough towards replacing lost commercial sector savings and reducing the overall portfolio yield rate. Additionally, as explained in the following section, the DPSs 2021 Measurement and Verification results for heat pumps was also a contributing factor to the 2024 yield rate increase.

BED's general administrative costs as a percentage of total BED program costs came in at 11%. Other non-program incentive costs were about 19% of the 2023 budget, and 70% of the budget was spent on direct technical assistance and cash incentives to customers.

Continuing Impacts from DPS's 2021 M&V Results on Heat Pump Savings -

As BED noted in previous EEU reporting, the results of the DPS's 2021 M&V process (provided to BED in late May of 2023) found a significant variance with heat pump electric savings between the Electric Technical Reference Manual (TRM) and actual BED participating customer electric usage data. BED used the perspective heat pump savings values from the statewide TRM, but the DPS M&V process utilized actual pre and post customer electric usage data (weather normalized) that produced significantly reduced electric savings results, about a 60% reduction in annual electrical savings.

BED and the DPS believe that these results are driven by customer economics. Most of the heat pumps (about 98%) were installed in Burlington homes that heat with natural gas where the energy cost savings are not as compelling as in oil or propane gas heated homes with their higher associated costs.

The DPS is currently conducting a statewide heat pump impact evaluation to explore all savings issues further, but it will not be completed in time to inform the current TRM prescriptive savings assumptions until later in 2025 or2026. After discussions with the DPS, it was recommended that BED not only adjust its 2021 savings claim accordingly but also prospectively apply the 2021 M&V heat pump results to 2022, 2023 and 2024 heat pump measures to avoid a reoccurrence of this issue. This 2024 EEU Annual Report prospectively applies the 2021 M&V heat pump results to 2022, 2023 and 2024 heat pump measures.

Table 4: EEU Business & Residential - Total Resource Benefits

Avoided Costs of Electricity	$1,710,876
Fossil Fuel Savings	$0
Water Savings	$110,345
TRB Total	$1,821,221

	Annual	**Lifetime**
Meter MWh	1,428	24,111
Generation MWh	1,250	21,497
Meter Demand kW	710	10,834
Generation Peak Summer kW	148	2,461
Generation Peak Winter kW	200	3,494
Water Savings	$654	$9,153
Fuel Savings	$562	$11,545
O+M Savings	($298)	($5,529)

Table 5: EEU Business & Residential - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 1,100,239	$ 1,167,419	$ 6,178,362
Incentives to Trade Allies (RA)	$ -	$ -	$ -
Technical Assistance	$ -	$ -	$ -
Services to Participants (RA)	$ 434,676	$ 387,323	$ 2,286,834
Services to Trade Allies (RA)	$ 1,493	$ 1,512	$ 12,040
Energy Code and Standards Support (DSS)	$ 2,092	$ 2,548	$ 7,184
Building Energy Labeling and Benchmarking (DSS)	$ -	$ -	$ -
Better Buildings by Design (DSS)	$ 3,304	$ 3,711	$ 18,177
***Incentive & Tech Asst Sub-Total* (1)**	$ 1,541,805	$ 1,562,512	$ 8,502,597
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 270,138	$ 295,529	$ 1,139,101
Strategy and Planning (RA)	$ 56,435	$ 40,279	$ 293,736
Marketing Program (RA)	$ (5)	$ -	$ 10,163
Customer Support (DSS)	$ -	$ -	$ -
General Marketing & Public Education (DSS)	$ 10,457	$ 14,227	$ 81,998
Energy Literacy (DSS)	$ 9,148	$ 15,326	$ 58,042
Applied R&D (DSS)	$ 3,065	$ 2,711	$ 10,802
Support Services (RA)	$ 63,107	$ 43,985	$ 295,998
Quality Assurance	$ 36,628	$ 25,845	$ 171,614
***Non-Incentive Program Sub-Total* (2)**	$ 448,972	$ 437,902	$ 2,061,454
Total Program Costs	$ 1,990,777	$ 2,000,415	$ 10,564,052
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 30,508	$ 64,257	$ 388,680
Policy & Public Affairs (DSS	$ 14,690	$ 2,388	$ 34,534
Planning & Reporting (DSS)	$ 157,827	$ 100,856	$ 491,673
Administration & Regulatory (DSS)	$ -	$ -	$ -
IT (DSS)	$ 784	$ 12,743	$ 83,972
Evaluation (DSS)	$ 10,989	$ 31,744	$ 97,249
Direct and Indirect Overhead	$ 46,505	$ 31,199	$ 201,327
***Administrative Sub-Total* (3)**	$ 261,304	$ 243,186	$ 1,297,433
Earned Compensation			
Base Compensation	$ -	$ -	
Performance Compensation	$ -	$ -	
***Earned Compensation Sub-Total* (4)**	$ -	$ -	
Total Program and Administrative	$ 2,252,081	$ 2,243,601	$ 11,861,485
Overall Total	**$ 2,252,081**	**$ 2,243,601**	**$ 11,861,485**

--- Benefits ---			
Annual MWh	3,306	1,249	165,904
Lifetime MWh	50,576	21,496	2,123,936
Winter Peak kW	455	200	27,609
Summer Peak kW	518	148	19,766
MWh / Participant	3	2	4
Weighted Lifetime	15	17	13

`Table 6: EEU Business & Residential - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Air Conditioning Efficiency	94	21.77	20.18	231.57	0.32	4.88	0.00	0.00
Cooking and Laundry	69	67.93	60.59	767.08	8.21	6.14	-0.85	653.80
Electronics	1	0.04	0.04	0.19	0.00	0.00	0.00	0.00
Hot Water Efficiency	55	27.72	33.63	405.45	5.26	2.65	0.00	0.00
Lighting	13	2.32	2.45	5.30	0.74	0.20	0.00	0.00
Lighting Efficiency/Controls	1	0.26	0.28	4.20	0.03	0.06	-0.17	0.00
Lighting Hardwired Fixture	5	37.65	40.00	599.95	4.38	3.14	-7.50	0.00
Motors	52	9.94	10.39	196.92	1.55	1.53	0.00	0.00
Other	7	364.44	386.56	8,116.43	68.70	45.00	519.20	0.00
Refrigeration	61	77.91	75.02	1,077.96	11.27	9.00	0.00	0.00
Space Heat Efficiency	309	564.59	351.62	6,024.92	70.28	45.95	51.40	0.00
Thermal Shell	8	2.47	2.15	53.67	0.31	0.08	0.00	0.00
Ventilation	20	250.76	267.17	4,013.30	29.09	29.01	0.00	0.00
Total		1,427.79	1,250.07	21,496.94	200.16	147.65	562.08	653.80

2.1 Development and Support Services

The following section highlights BED's Development and Support Services (DSS) activities for 2024. DSS activities are those that do not directly achieve immediate energy savings but are essential to the operation and administration of BED's EEU services and to the long-term success of future efficiency savings and innovation. The DSS categories were developed collaboratively with the DPS as part of the EEU Demand Resource Plan Process and approved by the PUC.

BED's DSS activities include education, applied research, and development, planning and reporting, evaluation, information technology and general administration & regulatory affairs.

Education, Training & Engagement- This category captures BED's work throughout the year on general energy efficiency education that is geared toward building awareness that leads customers to take action to reduce energy use through efficiency or conservation. BED provides education to – builders and contractors, real estate professionals, K-12 students and teachers, college and universities and the public.

Applied Research and Development- This work includes BED's collaboration with EVT, VGS and other stakeholders on applied research and development activities designed to optimize the creation of cost-effective solutions to meeting BED's long-term resource acquisition goals.

Planning and Reporting- To help keep the Vermont PUC, the DPS, and other stakeholders, informed about BED's EEU activities, BED submits quarterly and annual reports, and an annual plan to the PUC and DPS.

Evaluation- Determining the accuracy of BED's savings claims, evaluation is a critical aspect of BED's responsibilities as an EEU to Burlington rate payers. There are several evaluation activities that BED participates in to help BED continually improve savings quantification methods.

BED notes relatively high spending in this category in 2024 which was driven by activity related to the DPS's 2022 and 2023 M&V work. DPS 2022 M&V was delayed in starting so 2024 included two years of evaluation activity.

Information Technology (IT) - BED's IT initiative consists of continuing the support of and improvement to the EEU database system for the collection and processing of project data and program information critical to tracking, reporting, and planning functions. There is a regular need to alter measure savings characterization, existing tools or add new tools and functionality to the system which helps us to better understand and respond to changes in the Burlington marketplace.

General Administration & Regulatory Affairs- This DSS category captures BED's annual activities and costs for the overall management of EEU programs not specific to the individual programs and includes general staff meetings, coordination of program implementation across all program functions and managing and monitoring overall performance and spending. This activity also captures BED's participation in discussions about energy efficiency and EEU related issues that typically occur throughout the year with regulators and other stakeholders.

Table 7: Electric Development and Support Services Activity

Electric DSS Activity	2024 Spending (YTD)	2024-2026 Budget	% 2024-2026 Budget (YTD)
Education, Training & Engagement	$ 32,324	**$ 110,500**	29%
Applied Research &Development	$ 2,711	**$ 20,700**	13%
Planning & Reporting	$ 22,024	**$ 143,130**	15%
Evaluation	$ 31,048	**$ 58,000**	54%
Information Technology	$ 11,800	**$ 51,900**	23%
Administration & Regulatory Affairs	$ 45,396	**$ 161,770**	28%
Total	**$ 145,303**	**$ 546,000**	27%

2.2 Business Services Overview

This section of the report contains information on BED's Business EEU Services: Business New Construction (BNC) and Business Existing Facilities (BEF) (Market Opportunities & Retrofit).

Overall, 2024 savings result in business services were challenged as program activity in both BNC and BEF were not as strong as projected. BED projected 3,356 megawatt-hour (MWh) overall savings while achieving actual annual energy savings of 738 MWh, about 22% of the goal. BED's cost to deliver EEU business services in 2024 was $1,127,139 below the budgeted amount of $1,563,871 by about 30%.

As mentioned in the Introduction, it is often difficult to forecast savings and expenses in the Business sector in Burlington. This is due to the potential for completion of a few large, unexpected projects by one or two customers, dramatically exceeding projections, and budgets. On the other hand, savings goals may just unpredictably be missed due to delays or cancellations of significant planned projects which we have seen more of in recent years.

Also, BED continues to closely monitor existing commercial customer activity as the business community continues to face several challenges. We continue to hear of staffing shortages, staff safety, customer safety and retail theft issues that can, understandably, distract business owners from making energy efficiency improvements. Also, a high percentage of office-based employees are still working from home, full or part-time, so decreased sales are a compounding issue.

The commercial sector represents about 75% of BED's total savings goals with the Business Existing Facilities (BEF) program representing about 55% of the total three-year savings target and 45% of the total budget. BEF participation levels need to be robust for BED to meet savings and budget targets.

BED will continue to use our marketing and outreach services to inform customers and contractors that we are here to help with technical assistance, incentives, and on-bill financing services. We will also continue to leverage relationships with our colleagues at CEDO and Burlington's Department of Business and Workforce Development. BED will also continue to work closely with VGS (the natural gas utility serving about 98% of Burlington's commercial customers) to encourage a comprehensive approach to energy savings. BED and VGS staff are committed to bringing appropriate projects to each other's attention and often conduct joint energy audits for greater customer convenience.

Table 8: EEU Business - Total Resource Benefits

Avoided Costs of Electricity	$890,356
Fossil Fuel Savings	$0
Water Savings	$0
TRB Total	$890,356

	Annual	**Lifetime**
Meter MWh	707	12,204
Generation MWh	739	12,768
Meter Demand kW	178	2,998
Generation Peak Summer kW	60	992
Generation Peak Winter kW	116	2,064
Water Savings	$0	$0
Fuel Savings	$392	$7,888
O+M Savings	$0	$0

Table 9: EEU Business - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 729,889	$ 570,877	$ 3,919,948
Incentives to Trade Allies (RA)	$ -	$ -	$ -
Technical Assistance	$ -	$ -	$ -
Services to Participants (RA)	$ 298,934	$ 274,256	$ 1,539,135
Services to Trade Allies (RA)	$ -	$ -	$ -
Energy Code and Standards Support (DSS)	$ -	$ -	$ -
Building Energy Labeling and Benchmarking (DSS)	$ -	$ -	$ -
Better Buildings by Design (DSS)	$ -	$ -	$ -
***Incentive & Tech Asst Sub-Total* (1)**	$ 1,028,823	$ 845,133	$ 5,459,083
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 151,496	$ 156,033	$ 631,615
Strategy and Planning (RA)	$ 31,464	$ 22,882	$ 153,145
Marketing Program (RA)	$ (5)	$ -	$ 4,971
Customer Support (DSS)	$ -	$ -	$ -
General Marketing & Public Education (DSS)	$ -	$ -	$ -
Energy Literacy (DSS)	$ -	$ -	$ -
Applied R&D (DSS)	$ -	$ -	$ -
Support Services (RA)	$ 39,629	$ 28,100	$ 189,948
Quality Assurance	$ 20,976	$ 15,255	$ 100,915
***Non-Incentive Program Sub-Total* (2)**	$ 243,560	$ 222,269	$ 1,080,593
Total Program Costs	$ 1,272,384	$ 1,067,402	$ 6,539,676
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 16,201	$ 11,441	$ 76,155
Policy & Public Affairs (DSS	$ -	$ -	$ -
Planning & Reporting (DSS)	$ 43,526	$ 29,990	$ 99,318
Administration & Regulatory (DSS)	$ -	$ -	$ -
IT (DSS)	$ -	$ -	$ -
Evaluation (DSS)	$ -	$ -	$ -
Direct and Indirect Overhead	$ 26,479	$ 18,306	$ 123,213
***Administrative Sub-Total* (3)**	$ 86,206	$ 59,737	$ 298,686
Earned Compensation			
Base Compensation	$ -	$ -	$ -
Performance Compensation	$ -	$ -	$ -
***Earned Compensation Sub-Total* (4)**	$ -	$ -	$ -
Total Program and Administrative	$ 1,358,589	$ 1,127,139	$ 6,838,362
Overall Total	**$ 1,358,589**	**$ 1,127,139**	**$ 6,838,362**
--- Benefits ---			
Annual MWh	2,664	738	106,700
Lifetime MWh	43,235	12,767	1,410,610
Winter Peak kW	320	116	13,803
Summer Peak kW	429	60	14,067
MWh / Participant	8	10	17
Weighted Lifetime	16	17	13

Table 10: EEU Business - End-Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Cooking and Laundry	1	0.59	0.62	7.47	0.08	0.06	-0.06	0.00
Hot Water Efficiency	2	3.18	3.71	44.49	0.58	0.29	0.00	0.00
Lighting Efficiency/Controls	1	0.26	0.28	4.20	0.03	0.06	-0.17	0.00
Lighting Hardwired Fixture	5	37.65	40.00	599.95	4.38	3.14	-7.50	0.00
Motors	1	2.15	2.16	32.35	0.00	1.53	0.00	0.00
Other	5	144.60	153.25	3,450.39	35.80	9.31	400.20	0.00
Refrigeration	25	60.06	63.41	880.44	10.19	7.65	0.00	0.00
Space Heat Efficiency	42	209.49	209.36	3,762.20	35.60	9.41	0.00	0.00
Ventilation	2	249.31	265.75	3,986.18	28.93	28.84	0.00	0.00
Total		707.29	738.53	12,767.68	115.60	60.29	392.47	0.00

2.2.1 Business New Construction

Program Description

This service helps commercial builders and developers incorporate the most energy efficient products and systems possible when building or renovating. It is designed to help customers exceed Vermont's Commercial Building Energy Code (CBES). By working directly and early in the process with designers and owners, BED assists in the choice of energy efficient systems and construction practices that meet business and energy needs.

The program offers financial incentives for the installation of cost-effective efficiency measures. Eligible participants gain technical assistance and financial incentives to help with efficient building design and equipment costs. BED's Business New Construction service (BNC) addresses all energy consuming equipment, components, or practices, including thermal envelope, motors, lighting, heating, ventilation, air-conditioning (HVAC) and building energy control packages.

BED maximizes the adoption of energy efficient systems and techniques through proactive outreach and recruitment. As both an electric distribution utility and a municipal department with a role in the City's design review process, BED is in a unique position to identify new construction and major renovation before significant design efforts begin. BED coordinates this effort with other city agencies including the city's Planning & Zoning Department and its Department of Permitting & Inspections.

After several years of offering a prescriptive based program, BED, starting in 2014, began to offer an "energy model/tiered incentive" based option for larger projects. The primary motivation was to gain deeper savings per project across more end uses. Historically, BED had been successful with lighting but not as strong with thermal envelope, integrated design approaches and HVAC controls. With baselines increasing due to CBES energy code revisions, and with electric heat pump heating and cooling technology options increasing (coupled with BED's net–zero city strategic direction), BED embarked on a new approach.

BED's tiered incentive approach pays 50% of the incentive at project completion and then the remaining incentive after about one year of comparing actual energy usage data to the building energy model. To best estimate the energy efficiency potential of larger buildings, robust energy modeling software is used to compare the energy performance of an energy code compliant design to a model of the final "more efficient" building design. The original energy model assumptions are fine-tuned, as needed, with actual operating hours, set points and plug loads.

It often takes about a year for larger commercial buildings to be fully occupied, equipped, and debugged of any performance issues. This approach allows for deeper BED involvement, more accurate savings claims and ensures that building operators are encouraged to optimize the energy performance of buildings. BED starts to monitor the energy usage data shortly after occupancy and provides feedback to the project team. This approach continues to be well received by customers and the design and building community.

Project Highlights

The annualized megawatt-hour (MWh) savings for 2024 were 153, about 87% lower than the 1,175 MWh goal. Total BED program costs were $337,926, about 40% lower than the budgeted amount of $547.355.

Variance Discussion

Customers make business decisions independent of BED's program budgeting efforts, and we fully anticipate that year to year results will be "lumpy" and show dramatic swings in performance. Also, timing plays a role in annual results as some projects are not completed precisely in the planned year. BED's tiered-incentive approach also impacts year-to-year results as partial incentives can be paid in one year, but the savings are not claimed until the following year. Long-term average results are a better indicator of what can be expected on an annual basis than any given year's data.

As part of the 2024-2026 DRP, BED identified large BNC projects that are likely to be completed within the three-year performance period as the delay or postponement of

these projects can have dramatic budget and savings impacts. For example, to date, one of the projects identified has been postponed due to the high costs of construction and financing. Another project was scheduled to be completed in 2025 but now is scheduled for completion in the summer of 2026.

Program Outlook

2025-2026 will continue to see further coordination between BED's EEU and Tier 3 programs. Heat pump technology is continuing to emerge as an alternative for building space conditioning, even when natural gas services are available. Accordingly, BED will continue to evaluate the costs and benefits of various HVAC systems such as air source and ground source heat pumps.

Combining BED's Tier 3 and EEU funds together can help to further the City's transition away from fossil fuels to renewable electricity. Tier 3 funds can be used to influence heat pump adoption and EEU funds can be applied toward the highest efficiency water source heat pumps, thermal shell measures, energy recovery ventilation systems, building controls and lighting.

BED will also continue to offer financial assistance for commercial building envelope commissioning. With a growing number of heat pump heated and cooled buildings (ductless mini splits, variable refrigerant flow (VRF) and ground source heat pump systems) coming online, high performance building shells, and HVAC controls, are an increased focus. With the help of Vermont based thermal envelope specialists, BED continues working with Architects, owners, and contractors to encourage building envelopes that are being designed and constructed utilizing higher performance thermal envelope techniques.

Table 11: EEU Business New Construction - Total Resource Benefits

Avoided Costs of Electricity	$220,258
Fossil Fuel Savings	$0
Water Savings	$0
TRB Total	$220,258

	Annual	**Lifetime**
Meter MWh	145	3,256
Generation MWh	153	3,450
Meter Demand kW	34	766
Generation Peak Summer kW	9	197
Generation Peak Winter kW	36	806
Water Savings	$0	$0
Fuel Savings	$400	$8,004
O+M Savings	$0	$0

Table 12: EEU Business New Construction – Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 41,185	$ 182,537	$ 1,122,633
Incentives to Trade Allies (RA)			$ -
Technical Assistance			$ -
Services to Participants (RA)	$ 76,896	$ 100,745	$ 505,602
Services to Trade Allies (RA)			$ -
Energy Code and Standards Support (DSS)			$ -
Building Energy Labeling and Benchmarking (DSS)			$ -
Better Buildings by Design (DSS)			$ -
***Incentive & Tech Asst Sub-Total* (1)**	$ 118,081	$ 283,282	$ 1,628,235
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 15,824	$ 16,205	$ 65,815
Strategy and Planning (RA)	$ 6,968	$ 7,228	$ 35,643
Marketing Program (RA)	$ -		$ 1,440
Customer Support (DSS)			
General Marketing & Public Education (DSS)			
Energy Literacy (DSS)			
Applied R&D (DSS)			
Support Services (RA)	$ 6,968	$ 7,228	$ 35,643
Quality Assurance	$ 4,645	$ 4,819	$ 23,762
***Non-Incentive Program Sub-Total* (2)**	$ 34,406	$ 35,480	$ 162,304
Total Program Costs	$ 152,487	$ 318,762	$ 1,790,539
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 3,484	$ 3,614	$ 17,822
Policy & Public Affairs (DSS			
Planning & Reporting (DSS)	$ 24,348	$ 9,767	$ 45,261
Administration & Regulatory (DSS)			
IT (DSS)			
Evaluation (DSS)			
Direct and Indirect Overhead	$ 5,196	$ 5,783	$ 25,520
***Administrative Sub-Total* (3)**	$ 33,027	$ 19,164	$ 88,603
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 185,514	$ 337,926	$ 1,879,142
Overall Total	**$ 185,514**	**$ 337,926**	**$ 1,879,142**
--- Benefits ---			
Annual MWh	863	153	26,860
Lifetime MWh	16,273	3,450	405,642
Winter Peak kW	114	36	3,241
Summer Peak kW	147	9	4,062
MWh / Participant	123	31	74
Weighted Lifetime	19	23	15

Table 13: EEU Business New Construction - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Other	5	144.60	153.25	3,450.39	35.80	9.31	400.20	0.00
Total		144.60	153.25	3,450.39	35.80	9.31	400.20	0.00

2.2.2 Business Existing Facilities
(Market Opportunities & Retrofit Services)

Program Description

Business Existing Facilities, Market Opportunity Service (MOP), targets naturally occurring equipment changeovers to secure energy savings in the equipment replacement market. Targeted equipment includes heating, ventilation, cooling, water heating, refrigeration, motors and drives, controls, industrial process applications and limited LED lighting and controls opportunities. This program offers prescriptive and custom tracks, with technical assistance, financial incentives (coupled with an on-bill financing option) that encourage the adoption of cost effective, high efficiency alternatives to standard efficiency equipment.

BED and EVT jointly offer statewide prescriptive incentives (fixed incentives for specific eligible measures) for building lighting, refrigeration, controls, motors, and unitary HVAC equipment.

Non-prescriptive cost-effective measures or combinations of measures are eligible for custom incentives. Custom incentives are designed to capture as many potential lost opportunity resources as possible, while maximizing program delivery resources. BED staff and trade allies serving Burlington (including equipment vendors, manufacturers, suppliers, contractors, architects, and engineers) market the program to potential participants.

As natural gas is the predominant heating fuel in Burlington, BED works closely with VGS to encourage a comprehensive approach to energy savings. BED and VGS staff are committed to bringing appropriate projects to each other's attention.

Business Existing Facilities, Retrofit Service offers energy efficiency services that have been provided by BED staff for over two decades. Building retrofit entails BED staff and/or trade allies examining customer buildings and systems to identify energy

efficiency opportunities for the customer. When promising projects are identified, BED staff prepare analyses for the customer showing the costs and benefits of potential energy efficiency measures. This service is offered to all business customers – from the smallest retail store to the largest commercial facility.

Program Highlights

The annualized megawatt-hour (MWh) savings for 2024 were 585, about 70% lower than the goal of 2,181 MWh. Total BED program costs were $789,213, about 23% lower than the budgeted amount of $1,016,516.

As BED's largest program in most years (the commercial customer sector consumes about 75% of BED's total annual kWh sales), BEF program managers are responsible for delivering services across a diverse population of institutions and businesses, from large hospitals and colleges to office buildings, retail stores and restaurants. BED's largest customers consume between 1,000 and 57,000 MWh per year and typically exceed peak demand of 100 kW. Many smaller customers, on the other hand, have the energy profile of large residential homes, consuming about 8,000 to 20,000 kWh annually. Such diversity requires a multi-prong implementation strategy.

Variance Discussion

As mentioned in other sections of this report, and in prior Annual Reports and Annual Plans, BED began to explore how to move beyond lighting as the dominant measure in this market several years ago. HVAC, and other measures like refrigeration, need to play a more prominent role going forward but with about 70% of BED's commercial customers leasing their spaces, HVAC improvements present strong challenges. Also, HVAC and refrigeration equipment typically have longer lifetimes than lighting measures so there are less frequent replacement opportunities, and they can be much more expensive measures to install relative to lighting upgrades.

Program Outlook

For 2024-2026, BEF represents 45% of the total 3-year budget and 53% of the total savings goal so strong customer participation is critical to achieving performance goals. There are no new planned initiatives to the program structure as described in BED's DRP, however, BED continues to monitor existing commercial customer activity closely, and the challenges that they are facing, as described in the Business Sector Overview section above.

BED, in partnership with VGS, will continue to leverage participation in the Burlington 2030 District effort. 2030 Districts are unique private/public partnerships in designated urban areas across North America committed to reducing energy use, water, and transport emissions. Overseen by Architecture 2030, 2030 Districts are in the vanguard of grassroots collaborative efforts to renovate existing buildings and construct high-performance infill development and redevelopment. More information is available at: http://www.2030districts.org/burlington. Also, the video featuring two property members describes the customer experience further, https://www.youtube.com/watch?v=8MryRIwTBaw

Table 14: EEU Business Existing Facilities - Total Resource Benefits

Avoided Costs of Electricity	$670,098
Fossil Fuel Savings	$0
Water Savings	$0
TRB Total	$670,098

	Annual	**Lifetime**
Meter MWh	563	8,948
Generation MWh	585	9,317
Meter Demand kW	144	2,232
Generation Peak Summer kW	51	795
Generation Peak Winter kW	80	1,258
Water Savings	$0	$0
Fuel Savings	($8)	($116)
O+M Savings	$0	$0

Table 15: EEU Business Existing Facilities - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 688,704	$ 388,340	$ 2,797,315
Incentives to Trade Allies (RA)			
Technical Assistance			
Services to Participants (RA)	$ 222,038	$ 173,511	$ 1,033,533
Services to Trade Allies (RA)			
Energy Code and Standards Support (DSS)			
Building Energy Labeling and Benchmarking (DSS)			
Better Buildings by Design (DSS)			
***Incentive & Tech Asst Sub-Total* (1)**	$ 910,742	$ 561,851	$ 3,830,848
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 135,673	$ 139,828	$ 565,799
Strategy and Planning (RA)	$ 24,496	$ 15,654	$ 117,502
Marketing Program (RA)	$ (5)	$ -	$ 3,531
Customer Support (DSS)			
General Marketing & Public Education (DSS)			
Energy Literacy (DSS)			
Applied R&D (DSS)			
Support Services (RA)	$ 32,661	$ 20,872	$ 154,305
Quality Assurance	$ 16,330	$ 10,436	$ 77,153
***Non-Incentive Program Sub-Total* (2)**	$ 209,155	$ 186,789	$ 918,289
Total Program Costs	$ 1,119,897	$ 748,640	$ 4,749,137
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 12,717	$ 7,827	$ 58,333
Policy & Public Affairs (DSS			
Planning & Reporting (DSS)	$ 19,178	$ 20,223	$ 54,057
Administration & Regulatory (DSS)			
IT (DSS)			
Evaluation (DSS)			
Direct and Indirect Overhead	$ 21,283	$ 12,523	$ 97,692
***Administrative Sub-Total* (3)**	$ 53,178	$ 40,573	$ 210,083
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 1,173,075	$ 789,213	$ 4,959,220
Overall Total	**$ 1,173,075**	**$ 789,213**	**$ 4,959,220**
--- Benefits ---			
Annual MWh	1,801	585	79,840
Lifetime MWh	26,962	9,317	1,004,968
Winter Peak kW	206	80	10,562
Summer Peak kW	282	51	10,005
MWh / Participant	6	8	14
Weighted Lifetime	15	16	13

Table 16: EEU Business Existing Facilities - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Cooking and Laundry	1	0.59	0.62	7.47	0.08	0.06	-0.06	0.00
Hot Water Efficiency	2	3.18	3.71	44.49	0.58	0.29	0.00	0.00
Lighting Efficiency/Controls	1	0.26	0.28	4.20	0.03	0.06	-0.17	0.00
Lighting Hardwired Fixture	5	37.65	40.00	599.95	4.38	3.14	-7.50	0.00
Motors	1	2.15	2.16	32.35	0.00	1.53	0.00	0.00
Refrigeration	25	60.06	63.41	880.44	10.19	7.65	0.00	0.00
Space Heat Efficiency	42	209.49	209.36	3,762.20	35.60	9.41	0.00	0.00
Ventilation	2	249.31	265.75	3,986.18	28.93	28.84	0.00	0.00
Total		562.69	585.27	9,317.29	79.79	50.99	-7.73	0.00

2.3 Residential Services Overview

This section of the report contains information on BED's Residential EEU Services: Residential New Construction, Residential Existing Buildings, Efficient Retail Products and Thermal Energy and Process Fuels (TEPF) services for non-VGS customers heating with oil, propane, or wood.

In 2024, BED projected 743 annualized MWh residential savings while achieving annual energy savings of 511 MWh; about 70% of the projected goal. BED's cost to deliver residential services in 2024 was $963,119, about 40% more than the projected spending of $681,350. Combining Tier 3, EEU and Act 151funds was a major contributing factor to overall program activity in 2024 with strong heat pump program participation. 2024 also included the completion of a 36-unit multi-family apartment building heated and cooled exclusively with heat pumps.

As BED has described in past EEU Annual Reports and Annual Plans, the residential class presents challenges as about 60% of BED's residential customers are renters and about 85% of these customers pay their electric and natural gas heating bill directly. BED's best information indicates that about 98% of residential buildings use natural gas for space heating and about 90% use natural gas for domestic hot water. Rental apartments are typically smaller with fewer energy efficiency opportunities. Changing out the HVAC systems, replacing major appliances or weatherizing are the responsibility of the building owners who, typically, are not motivated to make improvements as they do not pay the energy bills.

BED also turns over 30 to 35% of residential accounts each year due, mostly to the high percentage of college students. Also, BED's average annual usage per residential customer continues to remain flat with a monthly average of about 390 kWh. BED's residential consumption is about **24%** less than the average Vermont residential customer and about **34%** less than the average New England residential customer.

As residential sector EEU savings transitions away from LED lighting measures, starting in the 2024-2026 performance period, BED notes the increasing importance of our

marketing and outreach efforts to inform customers of other energy savings products and services to meet savings goals. Historically, LED lighting products have been a relatively accessible and inexpensive energy efficiency improvement for many customers where larger appliances, heat pump technologies and weatherization improvements can be more challenging and expensive to obtain, especially for renters.

BED will continue to test all program design assumptions and pursue all strategies to make programs as cost-effective as possible. BED will also continue to focus on energy education efforts and to continue to strengthen our close collaboration with VGS as we jointly serve most Burlington's customers.

BED does note a new partner in the low-income, larger multi-family, rental housing space. Starting in 2023, 3E Thermal is now working directly with BED and VGS on weatherization and energy efficiency upgrades on rental buildings five units and larger. 3E thermal is a statewide program of Capstone Community Action and focuses on improving the energy performance, health, and durability of apartment buildings. BED, VGS and 3E thermal are currently working on three projects. Champlain Vally Weatherization Service (CVWS) will continue to partner on single-family homes and smaller rental buildings Low-Income Weatherization program (WAP) projects.

As described in the Introduction section above, one of BED's key strategic objectives, outlined in BED's 2024-2025 Strategic Direction document, is to ensure all programs are equitable and accessible, with a priority given to low-to-moderate income, rental, Black, Indigenous, and people of color (BIPOC), immigrant, and refugee populations. BED will continue to proactively seek customer input and incorporate this input into program designs.

Table 17: EEU Residential - Total Resource Benefits

Avoided Costs of Electricity	$820,520
Fossil Fuel Savings	$0
Water Savings	$110,345
TRB Total	$930,865

	Annual	**Lifetime**
Meter MWh	720	11,906
Generation MWh	512	8,729
Meter Demand kW	532	7,836
Generation Peak Summer kW	87	1,469
Generation Peak Winter kW	85	1,430
Water Savings	$654	$9,153
Fuel Savings	$170	$3,657
O+M Savings	($298)	($5,529)

Table 18: EEU Residential - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 370,350	$ 596,542	$ 2,258,414
Incentives to Trade Allies (RA)	$ -	$ -	$ -
Technical Assistance	$ -	$ -	$ -
Services to Participants (RA)	$ 135,742	$ 113,067	$ 747,327
Services to Trade Allies (RA)	$ 1,493	$ 1,512	$ 11,297
Energy Code and Standards Support (DSS)	$ -	$ -	$ -
Building Energy Labeling and Benchmarking (DSS)	$ -	$ -	$ -
Better Buildings by Design (DSS)	$ -	$ -	$ -
***Incentive & Tech Asst Sub-Total* (1)**	$ 507,586	$ 711,120	$ 3,017,036
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 118,642	$ 139,496	$ 505,627
Strategy and Planning (RA)	$ 24,971	$ 17,397	$ 139,104
Marketing Program (RA)	$ -	$ -	$ 5,193
Customer Support (DSS)	$ -	$ -	$ -
General Marketing & Public Education (DSS)	$ -	$ -	$ -
Energy Literacy (DSS)	$ -	$ -	$ -
Applied R&D (DSS)	$ -	$ -	$ -
Support Services (RA)	$ 23,478	$ 15,885	$ 104,934
Quality Assurance	$ 15,652	$ 10,590	$ 69,956
***Non-Incentive Program Sub-Total* (2)**	$ 182,743	$ 183,369	$ 824,814
Total Program Costs	$ 690,328	$ 894,490	$ 3,841,851
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 11,739	$ 7,943	$ 52,467
Policy & Public Affairs (DSS	$ -	$ -	$ -
Planning & Reporting (DSS)	$ 53,203	$ 47,793	$ 172,929
Administration & Regulatory (DSS)	$ -	$ -	$ -
IT (DSS)	$ -	$ -	$ -
Evaluation (DSS)	$ -	$ -	$ -
Direct and Indirect Overhead	$ 20,026	$ 12,893	$ 77,222
***Administrative Sub-Total* (3)**	$ 84,968	$ 68,628	$ 302,617
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 775,297	$ 963,119	$ 4,144,469
Overall Total	**$ 775,297**	**$ 963,119**	**$ 4,144,469**
--- Benefits ---			
Annual MWh	642	511	59,204
Lifetime MWh	7,341	8,729	713,326
Winter Peak kW	135	84	13,806
Summer Peak kW	89	88	5,699
MWh / Participant	1	1	2
Weighted Lifetime	11	17	12

Table 19: EEU Residential - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Air Conditioning Efficiency	94	21.77	20.18	231.57	0.32	4.88	0.00	0.00
Cooking and Laundry	68	67.34	59.97	759.61	8.13	6.08	-0.79	653.80
Electronics	1	0.04	0.04	0.19	0.00	0.00	0.00	0.00
Hot Water Efficiency	53	24.54	29.92	360.96	4.68	2.36	0.00	0.00
Lighting	13	2.32	2.45	5.30	0.74	0.20	0.00	0.00
Motors	51	7.79	8.23	164.56	1.55	0.00	0.00	0.00
Other	2	219.84	233.30	4,666.04	32.90	35.69	119.00	0.00
Refrigeration	36	17.85	11.62	197.52	1.08	1.36	0.00	0.00
Space Heat Efficiency	267	355.09	142.26	2,262.72	34.68	36.55	51.40	0.00
Thermal Shell	8	2.47	2.15	53.67	0.31	0.08	0.00	0.00
Ventilation	18	1.45	1.43	27.13	0.17	0.17	0.00	0.00
Total		720.50	511.54	8,729.26	84.56	87.36	169.61	653.80

2.3.1 Residential New Construction

Program Description

This service aims to improve the efficiency of all new homes, and buildings undergoing substantial renovation. This includes single-family homes, multi-family homes and low-income multi-family projects. It addresses all major end uses such as thermal envelope, space heating, water heating, central cooling, ventilation, major appliances, and lighting. Residential New Construction (RNC) encourages builders and customers to build to the high efficiency program standards that are offered statewide from EVT, VGS and BED. RNC provides technical and financial assistance to home builders, developers, and architects to design and build new homes (or major renovations) that exceeds Vermont's Residential Building Energy Standard (RBES).

The standards are promoted to developers, architects, builders, building supply centers, equipment suppliers and consumers through a combination of marketing, technical assistance to builders and a package of incentives for better performing thermal shells, HVAC equipment/controls, efficient lighting fixtures, major appliances, and ventilation equipment.

BED uses several methods to encourage participation in this sometimes difficult to influence market. These include:

- BED staff attend monthly Technical Review Committee (TRC) meetings where all major new construction projects are introduced to City departments as part of the City's local zoning and permitting approval process.
- New and revised electrical service and line extension applications help staff track smaller renovation projects that may have bypassed the City's permit approval process. All "ability to serve" letters from BED include information about energy efficiency services.
- The Burlington Department of Permitting & Inspections (DPI) refers projects to BED.

Program Highlights

In 2024, the RNC service achieved 233 MWh in annualized electricity savings for the year which was about 110% above the projected 108 MWh goal. At $233,188 spending was substantially higher than the projected budget of $93,454. These program results were driven by two large multi-family projects where one of the projects was scheduled to complete in 2023 but was delayed until 2024.

Variance Discussion

As BED has reported in previous EEU Annual Reports and Annual Plans, RNC is a difficult market to predict year to year as it only takes a few projects in Burlington to impact savings projections and budgets dramatically. In recent (pre-pandemic) program history, RNC has worked successfully with several multi-family buildings that utilize cold climate heat pumps as the primary heating and cooling source. These "electrically" heated buildings provided strong thermal shell savings to the RNC program; however, current economic conditions are limiting new construction starts in 2025 and 2026.

Program Outlook

In 2025 and beyond, the RNC program will continue to assist the residential market with exceeding RBES and will also promote low-load and net-zero building practices. To help promote program objectives, BED will actively participate in regional events such as the Better Building by Design conference and work with relevant associations such as the Vermont Green Building Network, and the Vermont Passive House Association.

BED's RNC program is projected to be dominated by multi-family structures and that cold climate heat pumps (CCHP's) (aka ductless mini splits) will continue to be the most popular HVAC solution for market-rate multi-family new construction projects due to the low first installation cost, especially when air conditioning is desired. As part of BED's on-going beneficial electrification efforts, BED will continue to focus on high performance thermal envelopes, and controls, to help mitigate potential future regrets from strategic thermal electrification.

As we have discussed in previous Annual Plans, from a thermal decarbonization, and net zero energy city perspective, the use of CCHP's can be a positive solution. However, most heat pump buildings to date use electric resistance heat to back-up the CCHP's so potential winter peak and customer high bill issues need to be carefully considered. Fortunately, each of the CCHP buildings built to date have worked with BED to design and construct high performance thermal envelopes which have mitigated peaking, high bill, and comfort issues. Also, for most of the buildings, the electric baseboard heat is on a master control so that it cannot come on until the outside temperature is lower than 5 degrees F.

BED continues to review the 15-minute electric usage data for the CCHP buildings constructed over the past several years, and they are performing well from both a kWh and CP-kW perspective. Again, BED credits the strong attention to detail on the thermal envelopes with a particular focus on air leakage reduction work and blower door testing.

Table 20: EEU Residential New Construction - Total Resource Benefits

Avoided Costs of Electricity	$390,380
Fossil Fuel Savings	$0
Water Savings	$0
TRB Total	$390,380

	Annual	**Lifetime**
Meter MWh	220	4,412
Generation MWh	233	4,681
Meter Demand kW	45	908
Generation Peak Summer kW	36	713
Generation Peak Winter kW	33	659
Water Savings	$0	$0
Fuel Savings	$170	$3,665
O+M Savings	$0	$0

Table 21: EEU Residential New Construction - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 75,000	$ 163,113	$ 374,667
Incentives to Trade Allies (RA)			
Technical Assistance			
Services to Participants (RA)	$ 21,999	$ 38,525	$ 112,519
Services to Trade Allies (RA)			
Energy Code and Standards Support (DSS)			
Building Energy Labeling and Benchmarking (DSS)			
Better Buildings by Design (DSS)			
***Incentive & Tech Asst Sub-Total* (1)**	$ 96,999	$ 201,638	$ 487,186
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 13,898	$ 17,197	$ 65,937
Strategy and Planning (RA)	$ 1,829	$ 2,336	$ 11,033
Marketing Program (RA)	$ -	$ -	$ 920
Customer Support (DSS)			
General Marketing & Public Education (DSS)			
Energy Literacy (DSS)			
Applied R&D (DSS)			
Support Services (RA)	$ 1,829	$ 2,336	$ 11,033
Quality Assurance	$ 1,219	$ 1,557	$ 7,355
***Non-Incentive Program Sub-Total* (2)**	$ 18,775	$ 23,426	$ 96,278
Total Program Costs	$ 115,774	$ 225,064	$ 583,464
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 914	$ 1,168	$ 5,516
Policy & Public Affairs (DSS			
Planning & Reporting (DSS)	$ 1,576	$ 5,055	$ 10,101
Administration & Regulatory (DSS)			
IT (DSS)			
Evaluation (DSS)			
Direct and Indirect Overhead	$ 1,551	$ 1,901	$ 8,844
***Administrative Sub-Total* (3)**	$ 4,041	$ 8,124	$ 24,461
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 119,815	$ 233,188	$ 607,925
Overall Total	**$ 119,815**	**$ 233,188**	**$ 607,925**
--- Benefits ---			
Annual MWh	126	233	2,439
Lifetime MWh	645	4,681	42,833
Winter Peak kW	34	33	479
Summer Peak kW	5	36	355
MWh / Participant	42	47	5
Weighted Lifetime	5	20	18

Table 22: EEU Residential New Construction - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Hot Water Efficiency	2	-0.85	-0.81	-9.76	-0.13	-0.07	0.00	0.00
Other	2	219.84	233.30	4,666.04	32.90	35.69	119.00	0.00
Space Heat Efficiency	3	1.04	0.98	24.62	0.11	0.00	51.40	0.00
Total		220.02	233.47	4,680.90	32.89	35.62	170.40	0.00

2.3.2 Residential Existing Buildings

Program Description

This service aims to improve the energy efficiency of existing residential buildings (REB) including low-income single family, market-rate single-family and all multi-family projects (market-rate and low-income). BED also works closely with VGS, the Champlain Valley Weatherization Service (CVWS), and 3E Thermal on many projects.

The REB program targets both market-driven and discretionary, early replacement/retrofit opportunities. Additionally, the program serves as a point of contact for customers seeking advice about heat pump technology and electric vehicles; electric vehicle charging equipment and other transportation related measures.

Low-income buildings are addressed by a partnership with the state's Low-income Weatherization Assistance Program (WAP). This partnership provides electric efficiency measures to Burlington's low-income electricity consumers. Electrical efficiency measures are delivered to income-eligible electric customers at the time they receive thermal shell, space heating and water heating improvements from CVWS or 3E Thermal.

BED's best information is that a majority of WAP eligible customers live in multi-family rental buildings where over 98% use natural gas for space heating and domestic hot water. The average annual electric usage for WAP eligible customers is on par with average BED multi-family residential, historic, consumption patterns of about 320 kWh per month. When combining the high saturation of natural gas usage with low electric usage, electric energy savings opportunities are limited but BED is committed to working with our CVWS, 3E Thermal and VGS partners to provided efficiency services to our income eligible customers.

REB also works closely with high usage households for energy efficiency improvements that can reduce energy bills and solve comfort and moisture related issues. Virtual and on-site energy audits, customer energy education, appliance meter loans, technical assistance, project management and cash incentives are all part of this service.

BED and VGS work with the private (market-rate) rental housing market (customers not eligible for low-income energy services) to increase both participation and the depth of savings per participant. Traditionally, renters (60% of BED's residential customers) have not been strong participants and the same holds true for property-owners where the tenants pay the energy bills directly which is the case in about 85% of Burlington's dwellings, creating the "split-incentive" paradigm.

The "Rental Properties Owners" service offers free tank wraps (electric tanks only), pipe insulation, water saving devices, enhanced rebates for the early retirement of eligible refrigerators, and incentives for improving mechanical ventilation.

This service provides savings directly to the tenant but also water savings, and potential maintenance savings via controlled ventilation fans to the property owner. This service allows us the opportunity to develop long-lasting relationships with rental property owners to help identify further savings from refrigeration replacements, some common area lighting and laundry equipment improvements, weatherization, and ventilation.

Program Highlights

In 2024, REB achieved 192 MWh in annualized electricity savings for the year, about 40% of the projected goal of 492 MWh. At $392,713 spending was 15% lower than BED's projected spending of $452,170.

Variance Discussion

As BED stated in the Introduction section, year to year program savings, and spending, can fluctuate based on several factors. The Act 151/44 pilot program was a major contributing factor to overall program activity 2024. BED continued to see strong participation with residential cold climate heat pumps. The combination of BED's Tier 3, EEU and Act 151/44 rebates strongly impacted residential heat pump program participation, however, the electric savings for heat pumps were significantly reduced due to findings from the DPS's 2021 Measurement and Verification (M&V) of BED's savings claim as BED noted in the 2022 and 2023 EEU Annual Reports.

The results of the 2021 DPS M&V process (provided to BED in late May of 2023) found a significant variance with heat pump savings between the Electric Technical Reference Manual (TRM) and actual BED participating customer electric usage data. BED used the perspective heat pump savings values from the statewide TRM, but the M&V process utilized actual pre and post customer AMI data (weather normalized) that produced significantly reduced electric savings results, about a 60% reduction in annual electrical savings.

BED and the DPS believe that these results are driven by customer economics. Most of the heat pumps were installed in Burlington homes that heat with natural gas where the energy cost savings are not as compelling as in oil or propane gas heated homes with their higher associated costs.

The DPS is currently conducting a statewide heat pump impact evaluation to explore this issue further, but it will not be completed in time to inform the current TRM prescriptive savings assumptions until later in 2025 or 2026. After discussions with the DPS, it was recommended that BED not only adjust its 2021 savings claim accordingly but also prospectively apply the 2021 M&V heat pump results to 2022, 2023 and 2024 heat pump measures to avoid a reoccurrence of this issue.

Program Outlook

BED and VGS will continue program coordination and collaboration designed to encourage more residential customers to participate in available energy efficiency programs. This collaboration helps customers to take a more complete look at their total energy picture including the thermal shell, HVAC, thermostat controls, appliances, along with solutions for comfort or moisture related issues.

About 98% of BED's residential customers use natural gas as their primary space heating source, however, there are a number of dwellings that are mostly natural gas heated but electric usage data also reveals some electric heat usage and/or air conditioning usage. Customers scheduling energy audits are asked for their permission for the two EEU's to share usage data for analysis purposes. BED and VGS have established a methodology so that BED now offers an additional customer incentive to complete the recommended

weatherization work. VGS now includes this information in the customers' report with the goal of increasing the "energy audit" to "actual project" completion rate.

BED and VGS have also developed a similar weatherization cost sharing process where cold climate heat pumps are installed but they can only provide a portion of the space heating load. Customers and contractors are made aware that the full weatherization rebate amounts are available to "hybrid" heated buildings, and they will get a proportional rebate check from both EEU's.

BED will also continue to cultivate partnerships and pursue initiatives that allow for additional opportunities to engage with the ***low-and moderate-income*** customers and those organizations that serve these customers.

To effectively address the needs of the community, BED will continue to partner with the Champlain Valley Weatherization Service (CVWS), who combine their services with our incentives to deliver a comprehensive suite of energy services to lower income households. Other partners include the Burlington Housing Authority, Champlain Housing Trust, Cathedral Square Corporation and 3E Thermal. BED will strive to substantially increase cumulative spending in this area by nearly 2.5 times compared to prior performance periods. The spending increase of approximately $178,000 is a result of additional analyses of the proportion of Burlington's households earning 80% or less than the average median income in Chittenden County.

Table 23: EEU Residential Existing Homes - Total Resource Benefits

Avoided Costs of Electricity	$337,553
Fossil Fuel Savings	$0
Water Savings	$21,080
TRB Total	$358,633

	Annual	**Lifetime**
Meter MWh	400	6,122
Generation MWh	192	2,902
Meter Demand kW	278	4,227
Generation Peak Summer kW	41	618
Generation Peak Winter kW	42	643
Water Savings	$125	$1,749
Fuel Savings	$0	($2)
O+M Savings	($236)	($4,419)

Table 24: EEU Residential Existing Homes - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 271,925	$ 203,620	$ 1,119,493
Incentives to Trade Allies (RA)			
Technical Assistance			
Services to Participants (RA)	$ 108,517	$ 69,249	$ 594,184
Services to Trade Allies (RA)			
Energy Code and Standards Support (DSS)			
Building Energy Labeling and Benchmarking (DSS)			
Better Buildings by Design (DSS)			
***Incentive & Tech Asst Sub-Total* (1)**	$ 380,442	$ 272,868	$ 1,713,676
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 34,897	$ 41,832	$ 136,880
Strategy and Planning (RA)	$ 17,169	$ 9,012	$ 82,883
Marketing Program (RA)	$ -	$ -	$ 4,276
Customer Support (DSS)			
General Marketing & Public Education (DSS)			
Energy Literacy (DSS)			
Applied R&D (DSS)			
Support Services (RA)	$ 17,169	$ 9,012	$ 60,010
Quality Assurance	$ 11,446	$ 6,008	$ 40,006
***Non-Incentive Program Sub-Total* (2)**	$ 80,682	$ 65,865	$ 324,056
Total Program Costs	$ 461,123	$ 338,733	$ 2,037,732
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 8,585	$ 4,506	$ 30,005
Policy & Public Affairs (DSS			
Planning & Reporting (DSS)	$ 48,839	$ 42,112	$ 159,414
Administration & Regulatory (DSS)			
IT (DSS)			
Evaluation (DSS)			
Direct and Indirect Overhead	$ 14,891	$ 7,362	$ 41,311
***Administrative Sub-Total* (3)**	$ 72,315	$ 53,980	$ 230,729
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 533,439	$ 392,714	$ 2,268,462
Overall Total	**$ 533,439**	**$ 392,714**	**$ 2,268,462**
--- Benefits ---			
Annual MWh	114	192	22,880
Lifetime MWh	1,731	2,902	353,746
Winter Peak kW	22	42	6,188
Summer Peak kW	24	41	1,200
MWh / Participant	0	0	2
Weighted Lifetime	15	15	15

Table 25: EEU Residential Existing Homes - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Air Conditioning Efficiency	17	1.60	1.55	18.53	0.00	0.38	0.00	0.00
Cooking and Laundry	41	8.22	7.85	105.02	1.06	0.80	-0.19	124.90
Electronics	1	0.04	0.04	0.19	0.00	0.00	0.00	0.00
Hot Water Efficiency	51	25.39	30.73	370.72	4.81	2.43	0.00	0.00
Lighting	13	2.32	2.45	5.30	0.74	0.20	0.00	0.00
Motors	21	2.54	2.68	53.62	0.50	0.00	0.00	0.00
Refrigeration	35	1.67	1.61	27.32	0.15	0.19	0.00	0.00
Space Heat Efficiency	259	354.17	141.39	2,240.78	34.58	36.55	0.00	0.00
Thermal Shell	8	2.47	2.15	53.67	0.31	0.08	0.00	0.00
Ventilation	18	1.45	1.43	27.13	0.17	0.17	0.00	0.00
Total		399.87	191.88	2,902.28	42.32	40.78	-0.19	124.90

2.3.3 Retail Efficient Products

Program Description

The Retail Efficient Products Program (EPP) service aims to increase sales of ENERGY STAR® qualified products such as clothes washers, refrigerators, freezers, room air conditioners, dehumidifiers, and several consumer electronics. EPP addresses market driven and replace-on-burnout opportunities by reducing the initial cost of Energy Star certified products.

Over the past few years, EPP savings have begun to transition away from LED lighting and consumer electronics to other Energy Star labeled home products. With this transition, BED remains committed to motivating customers to use their appliances, including heating and cooling equipment, in the most efficient manner.

Program Highlights

Savings of 86 annualized MWh were about 40% lower than the projection of 143 annualized MWh in 2024. Annual expenditures of $337,217 also exceeded the projected budget of $135,726. Window AC units, dehumidifiers and clothes washing/drying equipment dominated the program.

Variance Discussion

As residential sector savings transitions away from LED lighting measures, starting in the 2024-2026 performance period, BED notes the increasing importance of our marketing and outreach efforts to inform customers of other energy savings products and services to meet savings goals. LED lighting products have been relatively accessible and inexpensive energy efficiency improvement for many customers where larger home appliances can be more challenging and expensive to obtain.

Program Outlook

In 2025 and beyond, BED will continue to augment EVTs outreach with its own public education and product awareness campaigns using social media channels, websites, customer newsletters ads and articles in the North Avenue News monthly publication.

As most lighting rebates have ended, EPP will continue to focus on a variety of appliances such as refrigerators, freezers, clothes washers & dryers, window air conditioners, dehumidifiers, and room air cleaners. Energy Savings kits and appliance recycling will also be featured in 2025.

Table 26: EEU Efficient Products - Total Resource Benefits

Avoided Costs of Electricity	$92,587
Fossil Fuel Savings	$0
Water Savings	$89,265
TRB Total	$181,851

	Annual	**Lifetime**
Meter MWh	101	1,372
Generation MWh	86	1,146
Meter Demand kW	209	2,701
Generation Peak Summer kW	11	138
Generation Peak Winter kW	9	128
Water Savings	$529	$7,405
Fuel Savings	($1)	($6)
O+M Savings	($62)	($1,110)

Table 27: EEU Efficient Products - Summary

	Prior Year 2023	Current 2024	Program to Date
Program Costs			
Incentive and Technical Assistance			
Incentive			
Incentives to Participants (RA)	$ 23,426	$ 229,809	$ 764,254
Incentives to Trade Allies (RA)			
Technical Assistance			
Services to Participants (RA)	$ 5,227	$ 5,293	$ 40,624
Services to Trade Allies (RA)	$ 1,493	$ 1,512	$ 11,297
Energy Code and Standards Support (DSS)			
Building Energy Labeling and Benchmarking (DSS)			
Better Buildings by Design (DSS)			
***Incentive & Tech Asst Sub-Total* (1)**	$ 30,145	$ 236,614	$ 816,174
Non-Incentive Program Costs			
Programs and Implementation (RA)	$ 69,846	$ 80,467	$ 302,810
Strategy and Planning (RA)	$ 5,973	$ 6,049	$ 45,188
Marketing Program (RA)	$ -	$ -	$ (4)
Customer Support (DSS)			
General Marketing & Public Education (DSS)			
Energy Literacy (DSS)			
Applied R&D (DSS)			
Support Services (RA)	$ 4,480	$ 4,537	$ 33,891
Quality Assurance	$ 2,987	$ 3,025	$ 22,595
***Non-Incentive Program Sub-Total* (2)**	$ 83,286	$ 94,078	$ 404,480
Total Program Costs	$ 113,431	$ 330,693	$ 1,220,655
Administrative			
Sr. Management, Budget, Financial Oversight (RA)	$ 2,240	$ 2,269	$ 16,946
Policy & Public Affairs (DSS			
Planning & Reporting (DSS)	$ 2,788	$ 626	$ 3,414
Administration & Regulatory (DSS)			
IT (DSS)			
Evaluation (DSS)			
Direct and Indirect Overhead	$ 3,584	$ 3,630	$ 27,067
***Administrative Sub-Total* (3)**	$ 8,612	$ 6,524	$ 47,426
Earned Compensation			
Base Compensation			
Performance Compensation			
***Earned Compensation Sub-Total* (4)**			
Total Program and Administrative	$ 122,044	$ 337,217	$ 1,268,082
Overall Total	**$ 122,044**	**$ 337,217**	**$ 1,268,082**

--- Benefits ---			
Annual MWh	402	86	33,885
Lifetime MWh	4,965	1,146	316,747
Winter Peak kW	79	9	7,139
Summer Peak kW	60	11	4,144
MWh / Participant	1	1	2
Weighted Lifetime	12	13	9

Table 28: EEU Efficient Products - End Use Summary

		MWh			kW			
Description	**Participants**	**Gross**	**Net**	**Lifetime**	**Winter**	**Summer**	**MMBTU**	**CCF**
Air Conditioning Efficiency	77	20.17	18.63	213.04	0.32	4.50	0.00	0.00
Cooking and Laundry	27	59.12	52.12	654.58	7.06	5.28	-0.60	528.90
Motors	30	5.25	5.55	110.94	1.04	0.00	0.00	0.00
Refrigeration	1	16.18	10.01	170.20	0.93	1.17	0.00	0.00
Space Heat Efficiency	5	-0.11	-0.12	-2.69	-0.01	0.00	0.00	0.00
Total		100.61	86.19	1,146.08	9.35	10.95	-0.60	528.90

3 Thermal Energy and Process Fuels Activity (TEPF) (Residential and Commercial)

Program Description

Historically, TEPF services are designed to increase thermal energy and process fuel efficiency of homes and businesses heating with unregulated fuels, i.e., oil, LP-gas, kerosene, and wood. However, the scope of these services is limited in Burlington as about 98% of residential and commercial customers are served by VGS, who also implements thermal EEU programs with both comprehensive weatherization and equipment replacement services.

As described in BED's 2024-2026 EEU Triennial Plan, pursuant to Act 44, Section (f), BED is utilizing up to $600,000 in new regional greenhouse gas initiative ("RGGI") and forward capacity market ("FCM") revenues to support its traditional TEPF programs, the install of three advanced manufactured homes in the North Avenue Cooperative mobile home park for income eligible customers and also to implement two new pilot programs: Super Users and Commercial Custom Projects over the 2024-2026 period. If the budget allows, BED may also utilize any remaining TEPF funds, after funding the traditional and Zero Energy Modular home programs, to augment its existing Tier III and Act 44 programs by enhancing existing Tier III and Act 44 incentives to further program participation and improve the competitiveness of beneficial electrification.

Traditional Weatherization Programs

BED's traditional weatherization service continues to focus on providing non-VGS residential homeowners and businesses with energy audits to identify cost-effective weatherization opportunities and incentives to help offset the cost of eligible work. BED's residential customers gain access to our incentives and technical assistance through the Home Performance with EnergyStar program, co-managed with EVT and VGS. Commercial customers access the statewide Commercial Performance program. Both programs tap into Vermont's network of Building Performance Institute (BPI) certified contractors, who perform energy audits of

buildings, as well as install a range of thermal measures (i.e., air sealing and insulation) that can improve occupant comfort and reduce energy consumption.

BED reiterates that the traditional TEPF program market is very small in Burlington as over 98% of residential buildings use natural gas for space heating and closer to 99% of commercial buildings do as well. Currently, BED projects that the TEPF potential market consists of roughly 350 residential dwellings and 10 – 15 small businesses. The single-family market is made up of homes that are in the more affluent Burlington neighborhoods where the properties have been relatively well maintained and updated over the years.

BED's TEPF weatherization program will continue to mimic VGS's incentive levels to help avoid confusion among weatherization contractors and customers.

BED will continue promoting our TEPF service through a variety of channels including social media as well as through Vermont's contractor networks. For example, BED provides specific program information in EVT's quarterly newsletter that is sent out to the Efficiency Excellence Network (EEN) of contractors, installers, retailers, EV dealers, designers, builders, and architects.

Program Highlights

2024 program participation was very sluggish with no project completions. However, starting in 2024, we completed an energy savings analysis on a 24-unit unit condominium complex heating with propane gas. If the owners decide to pursue all the recommended work, then the projected savings will cover about 60% of BED's total 2024-2026 savings goal when combining the 825 MMBtu goal for residential, commercial and ZEM. This project will likely not be completed until later in 2025.

Variance Discussion

The pandemic brought weatherization project activity to a stop for most of 2021, 2022 and 2023, and activity remained slow in 2024. In addition, the limited unregulated fossil fuel market, as well as the housing characteristics (as described above of the potential unregulated fuels market, has presented challenges in attracting participants. There was also limited ZEM

activity in 2024 as potential customers continued to face both rising construction costs and rising mortgage interest rates.

Program Outlook 2025-2026

As part of the 2024-2026 Demand Resource Plan (DRP) process, in consultation with the DPS, BED has reduced traditional TEPF budgets and savings targets to better align with our understanding of the limited potential market in Burlington.

Zero Energy Modular Homes (ZEM)

Since 2017, BED has been actively promoting ultra-efficient ZEM homes with our partners: North Avenue Cooperative ("NAC"), Green Mountain Habitat for Humanity, Champlain Housing Trust's Homeownership Program ("CHT") and VEIC who promotes ZEM's throughout Vermont. ZEM homes can be net-zero energy, which eliminates fossil fuel usage, and can have a significant financial impact for customers when compared to existing high energy costs. ZEM owners can save money in the long run and shield themselves from fossil fuel price inflation and volatility.

The NAC is Burlington's only mobile home park and consists of about 110 homes heated by LP gas or kerosene. Many of the homes are very old and ready to be replaced, there are also about five empty lots in the park.

Thus far, only three ZEM homes have been installed in the NAC. Demand for these homes has been very low recently due to the challenging economic conditions that many of the NAC residents face, high construction costs coupled with high mortgage rates.

BED will continue to work with the NAC Board to encourage more ZEM homes in the park and will continue working with CHT's Homeownership Program and Green Mountain Habitat for Humanity to find eligible buyers.

BED is encouraged by some recent developments that we hope will lead to additional ZEM homes being installed in the NAC in 2025 and 2026. First, in partnership with VEIC staff, BED has learned that some of the largest mobile home manufacturers (that sell in Vermont) are now

building homes that meet or exceed the U.S. Department of Energy (DOE's) Zero Energy Ready Manufactured Homes (ZERH MH) specifications. These homes still come equipped with fossil fuel-based heating equipment, but partners are working with manufactures to offer a fully electric option using no fossil fuels These are still "mobile homes" but built to a much higher efficiency standard and the companies can produce them at much higher volumes, and at lower cost, when compared to previous locale factory-built home options.

The second development involves Vermont's Rapid Response Mobile Home Infill Program. This state program was established to address the urgent need for affordable housing around Vermont and to help address flood impacted counties. Grants are provided to income-eligible Vermonters to buy new mobile homes. BED arranged a meeting at the NAC, with the MHU-Task Team Co-Chair, members of the Board and BED staff to tour the property and to discuss the grant opportunity. The Board members are planning to enroll in the program, and they know that BED stands ready to assist with a ZEM option.

Super User Program EV Program for High Mileage Drivers –

Pursuant to Act 44, Section 1 (f) Thermal Energy and Process fuel efficiency funding ("TEPF"), BED introduced in 2024 a new "Super Users" program designed to further motivate customers with high transportation fuel use to transition to all-electric vehicles which BED will continue to offer in 2025. Super User customers are eligible for up to $250 incentive (on top of BED's Tier III incentive, enhanced income eligible incentives, if applicable, and/or any other State, Federal or manufacturer's incentive), provided customers can demonstrate that they consume 700 gallons (or more) of gasoline annually for transportation purposes. Potential customers who can demonstrate they consume over 1000 gallons annually can qualify for another $250 incentive (on top of other BED incentives, as noted above). Super User customers may also receive another $250 per eligible Level 2 EVSE, provided customers also agree to enroll in BED's off-peak EV rate tariff.

No customer activity in 2024 but BED will continue to promote the program through normal marketing and outreach channels and provide program updates in upcoming EEU quarterly reports.

Commercial Custom Program(s) –

Under this pilot program, BED plans to provide commercial customers with enhanced incentives for custom Tier 3 projects, as needed, to ensure major renovation or new construction projects incorporate electrification where feasible and exceed existing building codes and local ordinances. The objective is to improve the capital cost competitiveness of super-efficient projects relative to merely comply with existing building codes and local ordinances. Targeted projects include those with long measure lives (i.e., 20+ years) and are expected to result in significant overall GHG emission reductions. Examples include but are not limited to advanced heat pump projects (i.e., ground source heat pumps, air to water heat pumps, variable refrigerant flow heat pumps and air source heat pumps – ducted or ductless), electric buses, EV charging equipment and building envelop projects.

BED is continuing to work through the program implementation details and will provide updates in upcoming quarterly reports.

Table 29: Thermal Energy and Process Fuels Activity

Period Costs for TEPF Savings	Residential (2024)	Commercial (2024)	Total
Year to Date Costs	$21,460	$1,235	$15,844
Annual Budget*	$103,000	$2,900	$105,900
% Of Annual Budget	21%	43%	21%
Energy Savings Results			
MMBTU Year to Date	0	0	0
MMBTU Annual Goal*	277	15	292
% Of MMBTU Annual Goal	0%	0%	0%
Progress Towards MMBTU 3-Year Goals			
MMBTU Cumulative to Date	0	0	0
3-Year MMBTU Goal	785	40	825
% Of 3-Year MMBTU Goal	0%	0%	0%

3.1 TEPF Development & Support Services (DSS)

As described below, DSS activities are essential support services that are not directly related to the acquisition of energy savings but are necessary to ensure that the RA program portfolio is well managed and forward thinking. In total, the DSS budget encompasses the following work areas: education & training, applied research, planning and reporting, evaluation, information technology, general administration and regulatory affairs.

Education and Training

This work includes BED's efforts to build overall awareness of energy efficiency, weatherization, building performance issues and availability of efficiency services from BED, VGS and the low-income weatherization program administrators. These activities are not tied to specific program goals. It includes presentations at public forums and workshops, and activities with Burlington's educational institutions. Media responses and the development of energy tips that are submitted to various publications and blogs are also included.

Applied Research and Development

This activity may support research on measures such as "smart" thermostatic controls installed in buildings where there are multiple heating systems present. For example, a heat pump, and some type of secondary fossil-based heating system, in hybrid heated buildings.

Planning and Reporting

This work includes BED's responsibility to provide the PUC and DPS with detailed EEU Annual Plans as described in the "Process and Administration of an Order of an Appointment" document. This work covers all required regulatory reports associated with BED's EEU activities. These reporting activities also help to keep the PUC, DPS, Burlington Electric Commission and customers informed about how BED is meeting its established budgets and savings targets. Such reports include:

- EEU Annual Report- submitted May 1 each year.
- EEU Quarterly Reports
- EEU Annual Plans
- Periodic Ad hoc reporting requests

Evaluation

This activity supports BED's TAG and TRM participation along with other general program evaluation activities such as conducting periodic savings verification studies.

Information Technology (IT)

BED's IT activities consist of continuing the support of, and improvement to, the DSM database system for the collection and processing of project data and program information that is critical to tracking, reporting and EEU planning functions. There is a fairly regular need to alter existing tools or add new tools and functionality to the system, which helps us to better understand and respond to changes in the Burlington marketplace.

General Administration & Regulatory Affairs

This category covers BED's costs for the overall management of TEPF programs including general staff meetings, coordination of program implementation across all program functions, coordination with other EEU's and managing and monitoring of overall performance and spending. This activity also supports BED's participation in broad energy efficiency public discussions and EEU related regulatory proceedings.

Table 30: Thermal Energy and Process Fuels DSS Activity

TEPF DSS Activity	2024 Actual Spending (YTD)	2024-2026 Budget	% 2024-2026 Budget (YTD)
Education & Training	$ 3,488	$ 6,900	51%
Applied R&D	$ -	$ 900	0%
Planning & Reporting	$ 1,049	$ 5,100	21%
Evaluation	$ 696	$ 1,200	58%
Information Tech	$ 943	$ 2,350	40%
General Administration & Regulatory Affairs	$ 1,866	$ 7,550	25%
Total	**$ 8,042**	**$ 24,000**	34%

4 Act 44 Pilot Programs

As described in greater detail in BED's 2024-2026 EEU Triennial Plan, consistent with Act 44 legislation, BED continues to pursue several activities that are additive to and complementary to our existing Tier III programs. These activities are directed at programs that are intended to reduce greenhouse gas emissions in the thermal energy and transportation sectors, have a nexus with electricity usage, do not compete with BED's (or any other DU's) Tier III programs, and may result in additional greenhouse gas ("GHG") emissions reductions in a cost-effective manner.

Act 44 activities include the following:

- Enhanced incentives for new and pre-owned all-electric vehicles and more efficient plug-in electric vehicles.
- Enhanced incentives for workplace/retail electric vehicle supply equipment ("EVSE) located in neighborhoods designated as disadvantaged communities.
- Enhanced incentives for EVSEs located at residential multifamily apartment buildings (market rate & low income), provided the units are available to the public.
- Enhanced incentives for EVSE's located at single family/home residences.
- Advanced heat pumps.
- DeltaClime program support
- Geo-thermal heat pump system well testing
- Preferred EV dealer network support.

The main objective for implementing the approved enhanced incentive programs is to accelerate Tier III measure adoption by providing customers with additional incentives, thus reducing their upfront capital costs even further and increasing the competitiveness of beneficial electrification technologies.

As the table below indicates, electric vehicles and heat pumps were the most active measures over the 2024 period.

Table 31: 2024-2026 Act 44 Activity (through Q4 2024)

	Advanced Heat Pumps	Ground Source Heat Pump Test Wells	Electric Vehicles (EV & PHEV)	EV Charging Station Support	Preferred Dealer Network Support	Delta Clime VT (energy related business accelerator)	Total Act 151 Programs
2024 Spending	$ 102,406	$ 46,204	$ 133,949	$ 33,532	$ -	$ 18,249	$ 334,341
2024-2026 Budget	$ 269,539	$ 135,000	$ 193,880	$ 97,572	$ 15,000	$ 48,000	$ 758,991
% of Budget	38%	34%	69%	34%	0%	38%	44%

5 Appendix

5.1 2024-2026 Quantifiable Performance Indicators (QPI) / Minimum Performance Requirements (MPR)

Table 30: BED's 2024-2026 Electric & TEPF QPI and MPR Results Thru Q4 2024

QPI#	Title	Performance Indicator	2024-2026 Target	Policy Goal Advanced	Progress towards 3 yr. Goal (thru Q4 2024)
1	Total Resource Benefits	Present worth of lifetime electric, fossil, and water benefits	$15,273,300	Encourage BED to design and implement efficiency initiatives that will maximize the lifetime electric, fossil fuel, and water benefits	12%
2	Electricity Savings	Annual incremental net MWh expected savings	12,170	Annual incremental MWh savings indicator intended to encourage BED to design and implement efficiency initiatives that will maximize annual incremental electrical energy savings	10%
3	Summer Peak Demand Savings (MW)	Cumulative net summer peak demand expected savings	1.94	Cumulative summer peak demand savings indicator intended to encourage BED to design and implement efficiency initiatives that will maximize the capacity reduction coincident with peak summer demand	8%
4	Winter Peak Demand Savings (MW)	Cumulative net winter peak demand expected savings	1.95	Cumulative winter peak demand savings indicator intended to encourage BED to design and implement efficiency initiatives that will maximize the capacity reduction coincident with peak winter demand	10%
5	Weighted Lifetime MWh Savings	Cumulative Lifetime MWh Savings	176,652	Encourage BED to design and implement efficiency initiatives that will maximize the lifetime electric benefits	12%
6	Administrative Efficiency	Total Administrative cost as a % of total budget	$43,739	5% savings based on total Admin costs in next DRP - TBD	TBD at end of 3-year period

TEPF QPI/ MPR	Title	Performance Indicator	2024-2026 Target	Policy Goal Advanced	Progress towards 3 yr. Goal (thru Q4 2024)
1	Thermal & Mechanical Energy Efficiency Savings (Residential and Commercial)	Incremental net MMBTU savings (3Yr total)	835	Intended to encourage BED to design and implement efficiency initiatives that will maximize unregulated thermal energy savings	0%
2	Residential single family comprehensiveness	1) Average air leakage reduction per project 2) Percent of projects with both shell and heating systems measures installed.	1) 30% reduction per project 2.) 16% of premises	Intended to ensure that energy efficiency initiatives are designed and implemented to acquire comprehensive savings	0%
3	Equity for residential customers	A minimum level of overall efficiency efforts, as reflected in "traditional" TEPF program spending, will be dedicated to residential customers or 95% of total budget	$ 148,600.00	Intended to encourage BED to design and implement efficiency initiatives that will maximize unregulated thermal energy savings	14%

MPR #	Title	Performance Indicator	2024-2026 Target	Policy Goal Advanced	Progress towards 3 Year Goal (thru Q4 2024)
1	Minimum Electric Benefits (Equity for all Electric Ratepayers)	Total electric benefits divided by total costs	Equal or greater than 1.0 benefit/cost ratio	Equity for all Vermont electric customers as a group by assuring that the overall electric benefits are greater than the costs incurred to implement and evaluate the *EEU* and the *EEC*	TBD at end of 3-year period
2	Equity for Residential Ratepayers	A minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to residential customers	A minimum of 85% of residential-sector share of total RA spending be in the residential sector ($1,484,338 over the 3 year period).	Equity for residential customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to residential customers	65%
3	Equity for Low-income Customers	A minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to Low-income customers	A minimum of 85% of the low-income sector share of total RA spending be on low-income services ($253,237 over the 3 year period)	Equity for low-income customers by assuring that a minimum level of overall efficiency efforts, as reflected in spending, will be dedicated to low-income households	65%
4	Equity for Small Business Customers	Number of total non-residential premises with annual electric use 40,000 kWh/yr. or less participating in energy efficiency programs.	205	Equity for small business customers by assuring that a minimum level of overall efficiency efforts, as reflected in participation, will be dedicated to small business accounts	39%

5.2 MPR #11 Electric Administrative Efficiency Results for CY2024

		Business Energy Services		Residential Energy Services					
		Business New Construction	Business Existing Facilities	Residential New Construction	Efficient Products	Existing Homes	Act 151	Development & Support Services	Total
	BED 2024								
	Incentive, Non-Incentive, and Administrative Cost Report								
Direct Costs	**Program Costs**								
	Incentive and Technical Assistance								
	Incentive								
	Incentives to Participants (RA)	$182,537	$388,340	$163,113	$229,809	$203,620	$309,480	$0	$1,476,898
	Incentives to Trade Allies (RA)	$0	$0	$0	$0	$0	$0	$0	$0
	Technical Assistance								
	Services to Participants (RA)	$100,745	$173,511	$38,525	$5,293	$69,249	$1,423	$0	$388,746
	Services to Trade Allies (RA)	$0	$0	$0	$1,512		$2,032	$0	$3,544
	Energy Code and Standards Support (DSS)	$0	$0	$0	$0	$0	$0	$2,548	$2,548
	Building Energy Labeling and Benchmarking (DSS)	$0	$0	$0	$0	$0	$0	$0	$0
	Better Buildings by Design (DSS)	$0	$0	$0	$0	$0	$0	$3,711	$3,711
	***Incentive & Tech Asst Sub-Total* (1)**	***$283,282***	***$561,851***	***$201,638***	***$236,614***	***$272,868***	***$312,935***	***$6,259***	$1,875,447
	Non-Incentive Program Costs								
	Programs and Implementation (RA)	$16,205	$139,828	$17,197	$80,467	$41,832	$5,080		$300,609
	Strategy and Planning (RA)	$7,228	$15,654	$2,336	$6,049	$9,012	$4,064		$44,344
	Marketing Program (RA)	$0	$0	$0	$0	$0	$0		$0
	Customer Support (DSS)								$0
	General Marketing & Public Education (DSS)							$14,227	$14,227
	Energy Literacy (DSS)							$15,326	$15,326
	Applied R&D (DSS)							$2,711	$2,711
	Support Services (RA)	$7,228	$20,872	$2,336	$4,537	$9,012	$3,048		$47,033
	Quality Assurance	$4,819	$10,436	$1,557	$3,025	$6,008	$2,032		$27,877
	***Non-Incentive Program Sub-Total* (2)**	***$35,480***	***$186,789***	***$23,426***	***$94,078***	***$65,865***	***$14,224***	***$32,264***	***$452,127***
	Total Program Costs	*$318,762*	*$748,640*	*$225,064*	*$330,693*	*$338,733*	*$327,159*	*$38,523*	*$2,327,574*
Indirect Costs	**Administrative**								
	Sr. Management, Budget, Financial Oversight (RA)	$3,614	$7,827	$1,168	$2,269	$4,506	$3,048	$44,873	$67,305
	Policy & Public Affairs (DSS							$2,388	$2,388
	Planning & Reporting (DSS)	$9,767	$20,223	$5,055	$626	$42,112	$0	$23,073	$100,857
	Administration & Regulatory (DSS)								$0
	IT (DSS)							$12,743	$12,743
	Evaluation (DSS)							$31,744	$31,744
	Direct and Indirect Overhead	**$5,783**	**$12,523**	**$1,901**	**$3,630**	**$7,362**	**$4,134**		$35,332
	***Administrative Sub-Total* (3)**	**$19,164**	**$40,573**	**$8,124**	**$6,524**	**$53,980**	**$7,182**	**$114,821**	**$250,368**
	Earned Compensation								
	Base Compensation								
	Performance Compensation								
	***Earned Compensation Sub-Total* (4)**								
	Total Program and Administrative	$337,926	$789,213	$233,188	$337,217	$392,714	$334,341	$153,343	$2,577,942
	Overall Total	**$337,926**	**$789,213**	**$233,188**	**$337,217**	**$392,714**	**$334,341**	**$153,343**	**$2,577,942**

Summary Metrics		Without Admin Metric			With proposed Admin Metric
Incentive Costs					
Incentive & Technical Assistance	$1,875,447				$1,875,447
Non-Incentive Costs	$452,127				$452,127
Admin	$250,368				$250,368
Earned Compensation	$0				$0
Overall Total	$2,577,942				$2,577,942
Incentive & Technical Assistance % of Total	73%				73%
Incentive to Non-incentive Cost Ratio	4.15				4.15
	Cost	% of Total		Cost	% of Total
Program	$2,327,574	90.3%		$2,327,574	91.0%
Administration	$250,368	9.7%		$231,027	9.0%
Admin Savings ($)				$19,341	
Overall Total	$2,577,942	100.0%		$2,558,601	100.0%

5.3 TEPF Administrative Efficiency Results for CY2024

		Business Energy Services		Residential Energy Services			Buses		Total
		Business Initiatives	Unregulated Fuels Commercial	Unregulated Fuels Residential	Residential TEPF				
	BED 2024 TEPF								
	Incentive, Non-Incentive, and Administrative Cost Report								
Direct Costs	**Program Costs**								
	Incentive and Technical Assistance								
	Incentive								
	Incentives to Participants (RA)				$226		$137,500		$137,726
	Incentives to Trade Allies (RA)								$0
	Technical Assistance								
	Services to Participants (RA)			$12,190					$12,190
	Services to Trade Allies (RA)								$0
	Energy Code and Standards Support (DSS)								$0
	Building Energy Labeling and Benchmarking (DSS)								$0
	Better Buildings by Design (DSS)								$0
	***Incentive & Tech Asst Sub-Total* (1)**	***$0***	***$0***	***$12,190***	***$226***		***$137,500***		$149,916
	Non-Incentive Program Costs								
	Programs and Implementation (RA)			$4,806					$4,806
	Strategy and Planning (RA)								$0
	Marketing Program (RA)								$0
	Customer Support (DSS)								$0
	General Marketing & Public Education (DSS)								$0
	Energy Literacy (DSS)								$0
	Applied R&D (DSS)								$0
	Support Services (RA)			$0					$0
	Quality Assurance			$0					$0
	***Non-Incentive Program Sub-Total* (2)**	***$0***	***$0***	***$4,806***	***$0***				***$4,806***
	Total Program Costs	*$0*	*$0*	*$16,995*	*$226*				*$154,721*
Indirect Costs	**Administrative**								
	Sr. Management, Budget, Financial Oversight (RA)	$0		$0					$0
	Policy & Public Affairs (DSS								$0
	Planning & Reporting (DSS)		$1,235	$4,464					$5,699
	Administration & Regulatory (DSS)								$0
	IT (DSS)								$0
	Evaluation (DSS)								$0
	Direct and Indirect Overhead	**$0**							$0
	***Administrative Sub-Total* (3)**	**$0**	**$1,235**	**$4,464**	**$0**				**$5,699**
	Earned Compensation								
	Base Compensation								
	Performance Compensation								
	***Earned Compensation Sub-Total* (4)**								
	Total Program and Administrative	$0	$1,235	$21,460	$226				$160,421
	Overall Total	**$0**	**$1,235**	**$21,460**	**$226**				**$160,421**

Summary Metrics	Without Admin Metric		With proposed Admin Metric	
Incentive Costs				
Incentive & Technical Assistance	$149,916			$149,916
Non-Incentive Costs	$4,806			$4,806
Admin	$5,699			$5,699
Earned Compensation	$0			$0
Overall Total	$160,421			$160,421
Incentive & Technical Assistance % of Total	93%			93%
Incentive to Non-incentive Cost Ratio	31.20			31.20
	Cost	% of Total	Cost	% of Total
Program	$154,721	96.4%	$154,721	96.6%
Administration	$5,699	3.6%	$5,414	3.4%
Admin Savings ($)			$285	
Overall Total	$160,421	100.0%	$160,136	100.0%

5.4 Further Process Improvement Updates from the Overall Performance Assessment (Case No. 21-1500-PET) through Q4 2024

#	Process Improvement	Update	Status
1	BED should consider separating the savings and budgets for large projects in its next demand resources plan (DRP)	BED will be able to track large new construction projects and separate savings & budgets in the next DRP	Completed. Filed via e-PUC on 3/09/23 in Case No. 22-2954-PET
2	BED should consider rationalizing its TEPF budget to the available market potential in its service territory in its next DRP	As part of the potential study process, BED will continue to analyze the potential TEPF market and rationalize budgets and savings goals in the next DRP factoring in the high saturation of natural gas space heating.	Completed. Filed via e-PUC on 3/09/23 in Case No. 22-2954-PET
3	BED should review its low-income programs, identify ways to maximize low-income customer participation, and reflect its determinations in its next DRP	As BED reported in the 2023 EEU Annual Report, BED's augmented outreach efforts have produced positive results as we exceeded the MPR target for the 2021-2023 performance period.	As shown in the QPI/MPR progress table above, BED is currently on-pace to meet the 2024-2026 low-income spending goal.
4	Before the start of the next DRP proceeding, BED should develop robust internal review processes for documents to be filed with the Commission, compliance checks to ensure timely response to Commission orders, and quality controls to verify that filings are made in the appropriate case(s) with all required materials	BED continues to review its regulatory compliance process and quality control procedures to ensure that EEU filings are timely, accurate, and complete.	In progress. This continues to be an on-going process improvement effort that staff remains keenly focused on.
5	BED should consider changes to its annual report and savings claims processes, report its determinations, and propose any necessary changes to its order of appointment (OOA)or to the Process and Administration (P&A) Document;	BED will consult with the DPS on changes to the annual report and savings claim process to make the results more transparent to the PUC and other stakeholders.	In progress. To be included in the next updates to the OOA or P&A documents. The timing of the DPS's annual M&V process will be an important factor in any changes to BED's annual report and savings claim process.
6	BED should begin using the ACR that was approved for use by the EEUs in Case No. EEU-2016-03, should separate electric efficiency from TEPF program costs in the ACR, and should incorporate these changes into its reporting, beginning with BED's 2021 Annual Report	BED has incorporated the ACR in its reporting structure and it was included in the 2021 EEU Annual Report	Completed. Filed via e-PUC on 4/28/22 in Case No. 19-3272-PET
7	BED should document its efforts to increase customer awareness of EEU programs in its triennial plans, annual updates, and quarterly reports	Please see the "Outreach & Engagement with a Focus on BIPOC and Low- and Moderate-Income Customers (LMI)" section above for more information on these continuing efforts.	This is now a regular part of all EEU reporting. It is also a continuous process improvement effort with the end of most LED lighting programs, the high percentage of renters, the high saturation of natural gas users and some post-pandemic changes to commercial building use, BED will need to find creative solutions going forward.
8	BED should file a revised SQRP that incorporates performance standards, monitoring, and reporting specific to its EEU services by March 31, 2022.	BED has revised the SQRP as directed and wishes to thank the DPS for their assistance.	Completed. Filed via e-PUC on 3/31/22 in Case No. 22-1063-PET