

Annual Report

State Energy Management Program

ACT 58 Sec. E.112 (d) On or before October 1 of each year commencing in 2016 and ending in 2019, the Department and EVT shall provide a joint report on the implementation of this section.

July 1, 2016 – June 30, 2017

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Executive Summary

In accordance with ACT 58 Sec. E.112 of 2015, the Vermont Department of Buildings and General Services (the Department) and Efficiency Vermont collaboratively developed and launched the State Energy Management Program (the Program) to accelerate, for State buildings and facilities, energy management measures, implementation of energy efficiency and conservation, and the use of renewable energy resources.

In the first year of the Program, the Department and Efficiency Vermont executed a Memorandum of Understanding, defining the relationship, roles, and responsibilities of each organization as it pertains to the Program. The Department, with support from Efficiency Vermont, recruited, hired, and trained its Program team effectively creating the Department's Energy Office.

In the second year of the program, the Department and Efficiency Vermont identified, developed, and implemented energy saving projects resulting in over \$150,000 of initial year savings for the State of Vermont, and over \$1.2 million in savings over the life of these measures.

In FY2018, project identification, development, and completion will accelerate as targeted efforts to address the worst performing buildings continue to be successful. The Program team is systematically executing energy evaluations on prioritized state-owned buildings in accordance with Section 24 Title 29: 157 VSA (a) (3). Completed evaluations have developed into successful energy savings projects while new evaluations are identifying opportunities for future energy savings projects. The Energy Office's project development process has become an integral part of the Department's standard operating procedures when evaluating overall building portfolio management needs resulting in a cohesive roadmap for continued Program success.

FY2017: Targets, Actions, Results

Targets:

In accordance with ACT 58 Sec. E.112 (b) (1) (B), the Department and Efficiency Vermont aimed to reduce the State's total energy usage and related costs by an amount not less than \$150,000 through measures implemented as part of the Program.

Actions:

- The Department and Efficiency Vermont are implementing the Program Process, including:
 - Project identification, development, management and completion procedures
 - Hand-off points during the execution of projects
 - Documentation, tracking and reporting schedule and protocols
- Program representatives from each organization continue to meet bi-weekly for collaborative project identification, development, and management. A whole team meeting occurs quarterly to communicate specific program and project needs and to evaluate program success.
- The Energy Star Portfolio Manager® ("ESPM") is serving as a functioning building energy accounting system that includes baseline and annual energy data. The Program Team utilizes ESPM to analyze building energy consumption data and develop prioritized building lists based on building performance metrics. Through coordinated efforts with the Agency of Administration Office of Finance the ESPM is now being updated on a monthly basis, allowing the Program Team access to the most current building energy data available.
- The Department, with support from Efficiency Vermont, secured the services of two consistent and professional energy auditing firms to perform ASHRAE Level 2 energy audits for state owned and operated buildings. The Department is mandated to audit 10% of its building square footage annually. In FY2017 the Program Team successfully audited over 475,000 square feet of building space equal to 13% of the Department's total space. The prioritized lists of buildings that have received energy audits and those buildings that are scheduled to receive energy audits are included in the Appendices.
- The Department and Efficiency Vermont, with support from Burlington Electric Department, identified, developed, and completed energy saving projects; as shown in the tables below.

FY2017 Results:

Site	Project Focus	KWH	MMBTU	First-year \$ Savings	Lifetime \$ Savings
Numerous locations	Efficiency VT Prescriptive Projects	122,000		\$42,636	\$343,719
Numerous locations	Solar Net Metering	5,381,942		\$54,167	
Randolph Information Center	LED Lighting Upgrades	11,691		\$2,395	\$35,919
133 State Street	DDC Controls	166,946	699	\$21,306	\$319,586
Radio Shop	Lighting Upgrade	2,220		\$573	\$11,460
109 State Street Pavilion	Advanced lighting, controls	17,301		\$2,249	\$56,228
Lyndon Rest Area	LED Lighting Upgrade	15,622		\$2,309	\$34,635
Springfield State Office Building	Hand Dryers			\$1,088	\$108,800
Northwest State Correctional Facility	Ozone Laundry Retrofit		683	\$6,634	\$99,505
Caledonia County Work Camp	Ozone Laundry Retrofit		561	\$5,653	\$84,800
Northeast Regional Correctional Facility	Ozone Laundry Retrofit		7,666	\$9,193	\$137,897
Northwest State Correctional Facility Wastewater Treatment Plant	Dissolved Oxygen aeration control system	29,804		\$2,980	\$44,703
		5,747,526	9,609	\$151,184	\$1,277,252

FY2018: Projected Savings, Strategies

Targets:

In accordance with ACT 58 Sec. E.112 (b) (1) (B), the Department and Efficiency Vermont aim to reduce the State's total energy usage and related costs in FY2018 by an amount not less than \$150,000 through measures implemented as part of the Program.

With the Program now in the beginning of its third year, the Department and Efficiency Vermont anticipate accelerated performance resulting in increased energy savings through project implementation.

Projected Savings:

Energy type	KWH	MMBTU	\$ savings
Electricity	1,123,049		\$181,944
Thermal Fuels		3,130	\$47,891
Solar Photovoltaic Net-Metering	5,515,000		\$56,875
	6,774,088	3,130	\$286,710

A detailed list of planned FY2018 activities can be found in the Appendices.

Strategies:

Collaborative and systematic project identification, development, and management is vital to the success of the Program. To ensure this process continues to be efficient and effective, the Department and Efficiency Vermont will evaluate the success of the following strategies and modify as necessary.

Consistent, Collaborative Communication

- The Program team shall adhere to the project identification, development, and management procedures defined in the MOU.
- The Program team, with representatives from each organization, shall continue to participate in bi-weekly meetings for ongoing collaborative project identification, development, and management and coordinate full Program Team meetings on a quarterly basis.

Adequate Staffing

- Efficiency Vermont shall dedicate staff resources totaling a minimum of one (1) Full Time Employee (FTE) to support collaboration and project completion with the Department for the duration of the Program.
- The Department shall maintain a staff team, supported by Efficiency Vermont, dedicated to Program implementation for Project Management and Program Support. These positions shall be in addition to the Department's State Energy Program Manager.

Collaborative Project Identification, Development, Management, and Completion:

- The Program team shall continue conducting energy audits on state-owned buildings in accordance with Section 24 Title 29: 157 VSA (a) (3), following the procedures developed by the Department with the support of Efficiency Vermont.
- With Technical Assistance from Efficiency Vermont as needed, the Department's Energy Project Managers finalize each project's scope of work and procure resources for implementation.
- Upon request, Efficiency Vermont assists the Department in assessing the need for commissioning or tuning of newly installed equipment.

Energy Tracking:

In accordance with ACT 58 Sec. E.112 (d) (3) the Department will continue to make improvements toward systems of measurement to achieve the goals of 2011 Acts and Resolves No. 40.

- Through the use of the Energy Star Portfolio Manager®, the Department will maintain an energy accounting system that includes baseline and annual data on energy consumption at properties owned or managed by the Department. The Department has requested that all state agencies who own and operate buildings utilize the ESPM for these purposes.
- With respect to transportation, Administrative Bulletin 2.3 Appendix B: Fuel Card Use – State Owned Vehicles, effective February 2, 2016, established the requirements of the statewide universal fuel card program to provide State agencies and departments with a vehicle and/or equipment fuel card that allows State employees to purchase fuel and other vehicle related supplies and services for State vehicles and/or State-owned fuel-powered equipment in order to conduct governmental business. The Department is now able to capture state employee fuel purchases through the WEX Fleet Purchase Card reporting system.

FY2019: Projected Savings, Strategies

Targets:

In accordance with ACT 58 Sec. E.112 (b) (1) (B), the Department and Efficiency Vermont aim to reduce the State's total energy usage and related costs of the Program by an amount not less than \$150,000 annually.

Projected Savings (annually):

Energy type	KWH	MMBTU	Dollar savings
Additional Projects resulting from Energy Audits	935,019	3,760	\$200,977
Renewable Generation	TBD		TBD
	935,019	3,760	\$200,977

Strategies:

Ongoing, collaborative, and systematic project identification, development, and management will remain critical to the long-term success of the Program. The Department and Efficiency Vermont will continue to execute the strategies as noted in the Memorandum of Understanding, making modifications and improvements as needed.

In accordance with ACT 58 Sec. E.112 (d) (3) the Department will continue to make improvements toward systems of measurement to achieve the goals of 2011 Acts and Resolves No. 40.

Observations & Recommendations

The Department and Efficiency Vermont, through the development, launch, and implementation of the State Energy Management Program, have successfully achieved \$150,000 of annual energy savings and \$1,277,252 of lifetime savings for projects implemented in FY2017. With a full staff onboard, our organizations are confident that the Program will continue to produce the required annual savings, and significant lifetime savings, for the State of Vermont.

At the end of the four year preliminary period, we will undoubtedly ask that the Vermont State Legislature institutionalize this Program. Until then, it is our job to demonstrate that the State Energy Management Program can continue to successfully save taxpayer dollars through energy efficiency and renewable energy investments.

We ask for your continued support as we move the Program forward and fully realize its potential, demonstrating that state government leads by example.

Efficiency Vermont

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Appendices

FY2018 Detailed Project List:

Existing Buildings

Site	Project Focus	kWh	MMBTU	Dollars savings
ANR Vermont Fish Culture, various locations		226,500	62	\$36,080.95
Sharon Information Center				
Vietnam Memorial	Lighting Upgrades	38,888		\$5,712.00
ANR Essex Forest Parks & Recreation	Solar PV	42,780		\$8,000.00
AOT Park & Rides, 9 locations	LED Upgrades to Light Poles	20,794		\$3,119.10
Williston Info Center SB	Smart pump replacement, insulation/air-sealing	35,149	443	\$11,699.52
10 & 12 Baldwin	Insulation & Air-sealing	1,022	207	\$3,624.96
Hebard SOB Parking Lot	Parking Lot Lighting Retrofit	8,936		\$1,340.40
Middlesex Central Services		7,852	2,036	\$33,449.36
Burlington Zampieri Office Building	Lighting & Controls Upgrade	372,845		\$57,753.69
Springfield State Office Building	HVAC/Lighting	285,021		\$50,847.75
Derby Public Safety Building	Energy Retrofit	83,262	381	\$18,207.92
		1,123,049	3,130	\$229,835.64

FY2019 Projects Under Development from Completed Energy Audits:

Existing Buildings

Site	Project Focus	kWh	MMBTU	Dollars savings
Rutland Courthouse	Efficiency improvements developed by Energy Audits	187,920	399	\$34,501.00
Brattleboro District Courthouse	Efficiency improvements developed by Energy Audits	14,430	268	\$25,979.00
Burlington 50 Cherry St.	Efficiency improvements developed by Energy Audits	83,033	1006	\$18,378.00
St. Johnsbury Caledonia Courthouse	Efficiency improvements developed by Energy Audits	95,990	1118	\$44,908.00
Hebard State Office Building	Efficiency improvements developed by Energy Audits	497,325	706	\$66,422.00
Bennington Office Building	Efficiency improvements developed by Energy Audits	26,080	211	\$5,820.00
Bennington Welcome Center	Efficiency improvements developed by Energy Audits	30,241	52	\$4,969.00
	Totals	935,019	3,760	\$200,977

Future Projects in Development with Scheduled Energy Audits:

Site	Current Energy Cost Intensity (\$/ft ²)	Site EUI (kBtu/ft ²)	GFA (ft ²)	Potential Dollar savings with improved EUI
Barre District Court/Office	2.14	40.47	42,863	\$9,869.70
Bennington Office Building	1.57	47.37	22,625	\$5,521.25
Bennington District Court/Office	1.17	24.23	67,729	\$9,242.93
Bennington Welcome Center	139.55	4,617.37	6,861	\$7,475.42
Brattleboro State Office Building	1.41	86.67	21,036	\$9,660.76
Fair Haven Welcome Center	4.25	149.47	2,345	\$9,974.07
Guilford Maintenance Barn (9735)	102.15	2,798.63	99	\$10,112.52
Guilford Southeast Welcome Center	5.40	158.20	7,130	\$8,478.23
Lyndon Welcome Center	7.93	272.40	1,300	\$10,313.33
Middlebury Mahady Courthouse	1.87	128.30	40,130	\$7,909.33
New Haven Public Safety - CAMPUS	2.73	74.13	12,443	\$6,017.96
Pittsford Admin Building	1.24	41.27	7,536	\$9,344.64
Pittsford Firehouse	3.82	125.40	6,160	\$3,510.67
Pittsford Warehouse	1.26	82.97	1,431	\$1,807.83
Rockingham Troop HQ - CAMPUS	2.02	89.37	7,690	\$10,559.43
Royalton Troop HQ - CAMPUS	2.19	62.80	12,250	\$5,775.84
Rutland Asa Bloomer Building	0.00	18.53	124,268	\$0.00
Rutland McKinley Ave - COMPLEX	2.43	58.90	14,094	\$10,524.56
Rutland Motor Vehicles	3.25	117.50	3,030	\$9,837.40
St. Albans District Courthouse	1.60	67.07	35,435	\$6,814.12
St. Johnsbury State Office Building	2.45	113.23	9,122	\$3,723.72
Williston Information Center North	6.10	214.77	4,600	\$8,060.00

The Department, with support from Efficiency Vermont, developed this prioritized-buildings list using two primary criteria; Energy Cost Intensity (ECI, measured in \$/ft²) and Site Energy Use Intensity (EUI, measured in kBtu/ft²). ECI shows how much the Department spends in electricity and fuel per building per ft². Site EUI measures how much electricity and fuel a building consumes per ft².

For each Fiscal Year, 2014, 2015, 2016 and 2017, the Program team ranked buildings by each primary criteria independently, from best to worst performing building. The team then averaged the two criteria-based lists for each year. The final step in creating the prioritized list above was to average the years together to determine the best and worst performing buildings over the past four years.

The final column shows the potential dollar savings should the building's performance, as measured by Site EUI, improve to the 75th percentile of energy performance for buildings of that type (office building, courthouse, etc.), according to Energy Star Portfolio Manager.