

9 State Agency Energy Plan

9.1 Introduction

The State of Vermont is committed to supporting Vermont's transition to a healthy and prosperous clean energy future, by reducing energy use and improving energy efficiency in its own facilities and operations, and by increasing the share of energy it gets from renewable sources.

State government is one of the largest institutional energy users in Vermont. It is the third-largest employer; state agencies occupy three million square feet of building space, and own and operate more than 2,353 vehicles. As one of Vermont's largest energy users, state government has an important role to play in demonstrating how public- and private-sector organizations from across the state can contribute to meeting Vermont's energy and climate goals, while also saving money and creating desirable workplaces well-positioned to recruit and retain top talent from Vermont and beyond.

This State Agency Energy Plan (SAEP), prepared by the Department of Buildings and General Services with support from state agency staff, lays out a road map for how state government can lead by example as we implement Vermont's Comprehensive Energy Plan and make progress toward ambitious energy goals for 2025, 2035, and 2050.

9.1.1 Purpose of the State Agency Energy Plan and Individual Agency Energy Implementation Plans

Authorized in legislation passed by the Vermont Legislature in 1992, the SAEP serves as a guiding document for Vermont state agencies when making decisions about energy in state government operations. The SAEP must be updated every sixth year subsequent to 2010. An update to the 2016 SAEP was incorporated into the 2016 Comprehensive Energy Plan. The 2022 SAEP will be published both as an integral chapter of the CEP and as a separate document.

The inclusion of the SAEP within the CEP clarifies state government's intent to demonstrate the institutional goals and actions that will contribute to a rapid transition to a clean energy future for Vermont and allows the SAEP to become a formal state agency leadership section within the larger plan.

The 2022 SAEP includes:

- Clear and measurable energy goals for state government in three areas: a) reductions in total energy consumption across all facilities and operations; b) expansion of the share of state energy that comes from renewable sources such as solar, wind, high-efficiency biomass, and

- hydroelectric power; and c) reductions in state government emissions of greenhouse gases that cause climate pollution.
- A profile of Vermont state government's current energy use, highlighting improvements made in recent years.
- A road map—including recommended strategies and action steps - that state government will use to make progress in different sectors, such as building energy use, distributed generation of renewable power, and reductions in fossil fuel use for transportation.
- A recommended process for implementing this road map and making progress toward the SAEP's energy goals across state agencies, including steps for tracking, documenting, and reporting progress.

The plan focuses on near-term, actionable items that can be implemented now to meet the state's goals.

Individual agency actions to manage energy use and invest in energy improvements will be coordinated with this SAEP. Each state agency is also required to prepare a biannual Agency Energy Implementation Plan (AEIP) that aligns with the SAEP and provides more detail on agency-specific goals and recommended actions. Current plans are scheduled to be updated during 2022.

The 2022 SAEP was produced by the Department of Buildings and General Services in coordination with inter-agency staff. It is the objective of BGS and agency staff to establish a coherent and consistent plan based on the array of obligations, responsibilities, legal mandates, and authorities that have been established relative to energy in state government operations.

Established under 10 V.S.A. § 591 by the legislature in 2020, the Climate Council is composed of State agency secretaries, commissioners, and senior officials representing a cross-section of organizations. The Council is charged with providing comprehensive leadership of the state's climate change initiatives, including initiatives to reduce greenhouse gas emissions and reliance on fossil fuels, and to improve the state's resilience to the current and future impacts of climate change. The Council's Climate Action Plan will have a key role in the achievement of emissions targets as the SAEP is implemented during the next six years.

Beginning in March of 2020, the State of Vermont was forced to cease non-essential in-person operations in facilities across the state in response to the onset of the COVID-19 global pandemic. This dramatic change in facility occupancy and operating procedures caused a departure from normal annual energy consumption trends for the 2020 fiscal year, leading BGS to consider fiscal year 2020 an outlier. Therefore, the State energy information provided within the SAEP is reported for the 2019 fiscal year to give readers the most accurate trend information.

9.1.2 Statutory Authorization for the Plan

The SAEP was established in Title 3 V.S.A. § 2291 - State Agency Energy Plan. Relevant language can be found in Appendix A. The statute outlines the following objectives to be accomplished by the plan:

- Conserve resources, save energy, and reduce pollution;
- Consider state policies and operations that affect energy use;
- Devise a strategy to implement or acquire all prudent opportunities and investments in as prompt and efficient a manner as possible;
- Include appropriate provisions for monitoring resource and energy use and evaluating the impact of measures undertaken;

- Identify education, management, and other relevant policy changes that are a part of the implementation strategy;
- Devise a strategy to reduce greenhouse gas emissions; and
- Provide, where feasible, for the installation of renewable energy systems.

9.2 State Government Energy Goals

The 2022 SAEP puts forth the following goals to establish state government's commitment to demonstrating leadership in Vermont's transition to clean energy and showing the diverse economic, environmental, and social benefits that this transition will yield for public and private institutions across the state. The SAEP's goals therefore challenge state government to reduce total energy consumption by a greater percentage by 2025 than sought in the corresponding CEP goal, expand the share of total energy the state gets from renewable sources by a greater percentage by 2025 than the corresponding CEP goal, and achieve greenhouse gas emissions reductions relative to these goals. The specific goals are:

- Reduce total energy consumption by 40% by 2025, and by 50% by 2035.
- Meet 35% of the remaining energy need from renewable sources by 2025, and 45% by 2035.
- 40% reduction of greenhouse gas emissions below 1990 levels by 2030.

9.2.1 Basils for the SAEP Goals

9.2.1.1 *Total Energy Reduction*

The Legislature asked in 2011's Act 40 that every agency, board, department, commission, committee, branch, or authority of the state reduce its energy consumption, including the amount of fuel used by its employees to travel to and from meetings during the workday, by 5% each year. The Legislature also asked that state government increase the amount of renewable energy used by the state.

The critical intent of Act 40 complements Title 3, summarized above, which requires that the energy needs of the state be met in a manner that reduces greenhouse gas emissions. Since the 2016 SAEP report the state has remained on track to achieve a 40% reduction by 2025, sustaining the requested 5% annual reduction in energy. Therefore, if state government were to continue to achieve a 5% reduction in energy consumption annually, total energy consumption would be reduced from fiscal year 2019 by over 50% in 2035. However, additional measures will need to be taken in order to achieve the desired, 80% reduction by 2050. It is difficult to determine if the annual reductions can be sustained through 2050 given current economic conditions, technologies, and funding.

With state government on track to achieve the stretch target reduction of 40% by 2025, this SAEP proposes a goal for reducing total energy use by 50% by 2035, including energy used to power and heat state buildings as well as energy associated with transportation by employees. This goal is at approximately the same scale as the all-economy goals put forth in the Comprehensive Energy Plan, while still challenging state government to lead by example by achieving a greater energy reduction.

9.2.1.2 *Using Renewable Energy*

The SAEP's renewable energy goal is also a good stretch goal, accounting for the progress made so far but also requiring considerably more investment in a transition to renewable sources of power. Vermont state government has already made good progress toward achieving the 2050 renewable energy goal adopted in the 2011 Comprehensive Energy Plan; in FY 2019, total energy consumption was 26.5% renewable. This progress has been achieved in large part through the successful implementation of the Renewable Energy Standard (which has resulted in Vermont's electric

utilities supply 69% renewable power in 2020), net-metered solar projects, and an increased use of woody biomass for heating.

Finally, the 7% ethanol component of gasohol, or gasoline with added ethanol, now delivered at fuel pumps has helped increase the state's use of renewable energy.

Without relying on renewable energy supplied by the grid, state government increased its usage of renewable energy by 11% over the last four years. In every year between FY 2015 and FY2019, the state used more wood products than oil for heating, as a result of the two largest heat plants in state government, at the Montpelier Capital Complex and the Waterbury State Office Complex, being primarily fueled by wood chips.

Due to this progress, state government is on track to meet 35% of its energy needs from renewable sources by 2025 and 40% by 2030.

9.2.1.3 Greenhouse Gas Emissions

Based on a simple analysis conducted with the Center for Corporate Climate Leadership's GHG emissions calculator tool, state government was responsible for over 56,000 metric tons of CO₂ equivalent emissions (MMtCO₂-e) in FY 2019. If state government achieves the total energy reduction and renewable energy goals set forth in this plan, it will reduce greenhouse gas emissions associated with state government operations by at least 40% by the year 2030.

9.2.2 Sector-Specific SAEP Targets

State government should plan to make changes in all areas of operations in order to achieve these overall goals for reductions in energy consumption, improvements in energy efficiency, and increases in the share of energy consumption using renewable sources. This section provides a sector-by-sector synopsis of what state agencies can do to help meet these goals. Additional guidance on the kinds of actions that can and will be pursued to meet these goals is in the Strategies and Recommendations section.

9.2.2.1 Improving Building Energy Conservation and Efficiency

To meet the SAEP's goals for reductions in total energy consumption, state agencies must improve electric and heating efficiency within state buildings (especially those that are state-owned, but also those that are leased), in addition to conserving more energy through changes in practices. In total, these gains in efficiency and conservation should reduce fuel usage by 15% by 2030, to support progress in meeting the state's overall energy use reduction goal. Funding is available for energy retrofits through the State Energy Management Program (SEMP). The Department of Buildings and General Services (BGS) energy team, in partnership with Efficiency Vermont, is available to provide technical assistance to agencies that wish to implement efficiency measures in their buildings. Visit bgs.vermont.gov/energy for more information.

9.2.2.2 Heating with Renewable Fuels

Meeting state government's renewable energy goals will require using more renewable fuels to heat buildings, along with continuing to increase the use of electricity generated from renewable sources. When building new state facilities, or when replacing heating equipment that has reached the end of its useful lifespan, state agencies switching to high-efficiency advanced wood heating systems that rely on woody biomass will support progress toward our energy goals.

Since the release of the 2016 SAEP the predicted adoption of liquid biofuels has not materialized and remains a potential source for additional emissions reductions in heating systems.

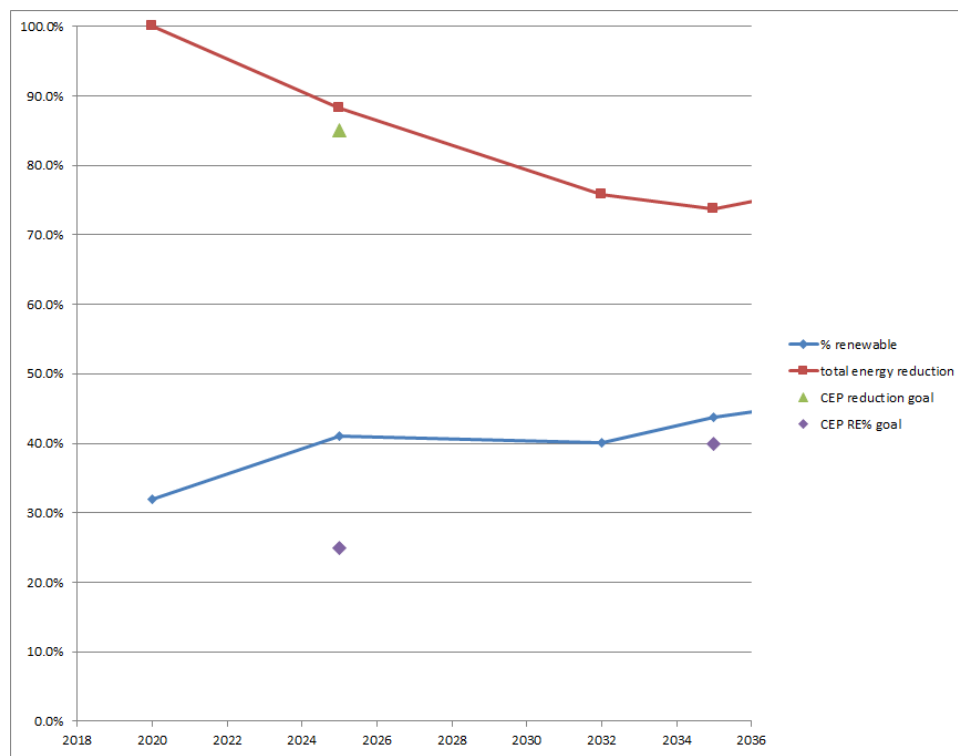
9.2.2.3 Using Alternative Fuels for Transportation

The energy that State agencies use for transportation must also continue to decarbonize if state government is to reach its near- and long-term energy goals. Specifically, the diesel fleet should increase the use of biodiesel from 0% in 2019 to 5% in 2025 and 25% by 2035. State agencies will also need to continue to meet more of their transportation needs with electric vehicles. Specifically, miles powered by electricity in plug-in hybrid vehicles and all-electric vehicles have already helped displace over 15 % of the state’s gasoline use since 2015 and should achieve a level sufficient to displace 25% of the state's current gasoline use 2025, and one-third by 2032. The Go Green Fleets Initiative activated by BGS in 2015(and described in the Recommendations section) is designed to achieve and surpass this goal.

In summary, state government must increase energy efficiency to reduce building energy usage by 15%; increase the use of biodiesel and bio-heating oil from 0% in 2019 to 5% by 2025, and 25% by 2035; and reduce state gasoline use by 25% in 2025 and one-third in 2032.

Exhibit 9-1 models a trajectory for energy reduction and renewables within state government if these changes occur. CEP goals are indicated for comparison, showing that the state is committing to lead by example.

Exhibit 9-1. SAEP Energy Reduction and Renewable Energy Trajectory



9.3 Recent Energy Improvements and Current Energy Use in State Government Operations

9.3.1 Summary of Accomplishments

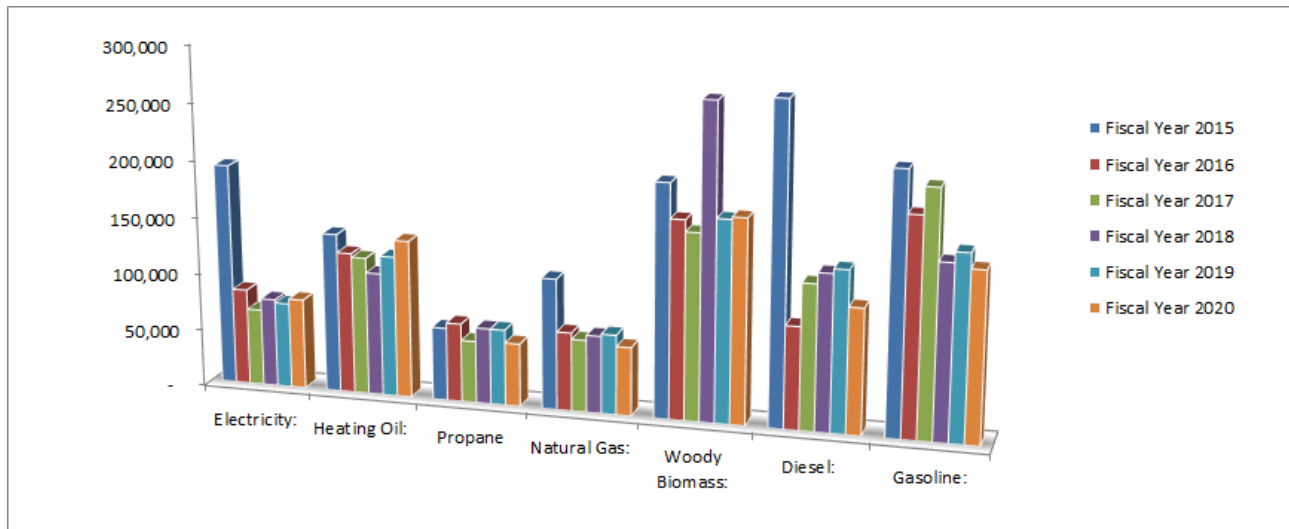
Since the last SAEP was published in 2016, state government has made great strides in the reduction of electricity consumption, increases in solar photovoltaic energy projects, investments in hybrid and electric vehicles and infrastructure, approved expansion of energy services for municipalities, and through the continued use of biomass to supplement traditional heating fuels. Examples follow; further detail is provided in the Strategies and Recommendations section.

- State agencies have improved their buildings through weatherization, lighting upgrades, fuel switching away from fossil fuels, and toward alternative fuels like woody biomass, heat pumps, building controls optimization, and other various energy efficiency and conservation measures.
- State government has secured new grant funding and has partnered with Department of Public Service, Vermont Low Income Trust for Electricity, Vermont League of Cities and Towns and Efficiency Vermont to provide dedicated staffing for an expansion of the State Energy Management Program to provide dedicated technical and program development assistance to municipalities. This program will achieve additional energy savings by funding investment grade energy audits and then helping participating municipalities utilize those audits to generate energy conservation projects.
- The Fleet Management Program continues to provide fleet vehicles to high-mileage state employees and has decreased fossil fuel consumption and the associated air emissions within the fleet motor pool by increasing the number of plug-in hybrid electric vehicles and all-electric vehicles and providing additional electric vehicle supply equipment at state facilities.
- Department of Buildings and General Services has secured funds for additional EVSE installations along key transportation corridors used by state employees.
- The State has launched pilot programming for flexible load management in partnership with Green Mountain Power and Efficiency Vermont to reduce energy consumption during peak hours of the day.
- Agencies continue to utilize the WEX Fuel purchasing system to aggregate transportation energy data, to better manage state government transportation.
- Agencies and departments throughout state government have increased renewable biomass and solar photovoltaic usage in state government operations.

9.4 Recent History of Energy Use in State Government Operations

In fiscal year 2019 state government consumed 839,222 million Btu of energy. While total energy consumption increased in fiscal year 2018, total energy consumption has overall seen a decrease by over 30% since FY 2015. Reductions in total electricity consumed and transportation energy account for this decrease. In fiscal year 2015, gasoline accounted for 27% of all energy consumed by state government, more than any other energy resource consumed over the same period. (Exhibit 9-1)

Exhibit 9-1. State Government Annual Energy Consumption by Energy Resource (MMBtu)



9.4.1 Transportation

The decrease in transportation energy is evidence of the success of recommended measures from the previous SAEP reporting period including adoption of electric vehicle technology, incorporated into the state’s motor pools and reductions in state employee mileage reimbursements. Following the adoption of teleworking during the State’s response to the global COVID-19 pandemic, the State expects additional opportunities for reductions in transportation sector energy use.

9.4.2 Buildings

In FY 2019, energy associated with state-owned buildings made up 52.5% of the total energy consumed through state government operations. The reduction compared to the previous SAEP reporting period comes from significant decreases in the amount of electrical consumption associated with our building stock and increases the amount of renewable energy consumed from FY 2015 to FY 2019, our oil and natural gas consumption also saw a drop in consumption as a result of displacement by wood biomass; however, both oil and gas have seen slight increases in recent years. Propane use has remained relatively steady during this period. Following the initial gains in biomass use, consumption has more or less leveled off over recent years. This demonstrates a need to continue the state's focus on improving electrical efficiency, while also increasing our focus on thermal energy efficiency initiatives.

9.4.2.1 Renewable Energy

In 2012, state government had no solar photovoltaic projects associated with its electric utility accounts. Starting in 2016 the State implemented over six megawatts of solar production capacity as a result of state government projects which have generated over 33 megawatt hours (MWh) of electricity to date and offset electricity consumption an average of 11% per year (Exhibit 13-2). Woody biomass consumption for state government building heating energy has continued to increase with overall growth of over 6% since 2015. Starting in FY 2015 the state has consistently used more wood products than oil for heating. (Exhibit 3-3)

Exhibit 9-2. State Government Annual Electricity Consumption (kWh)

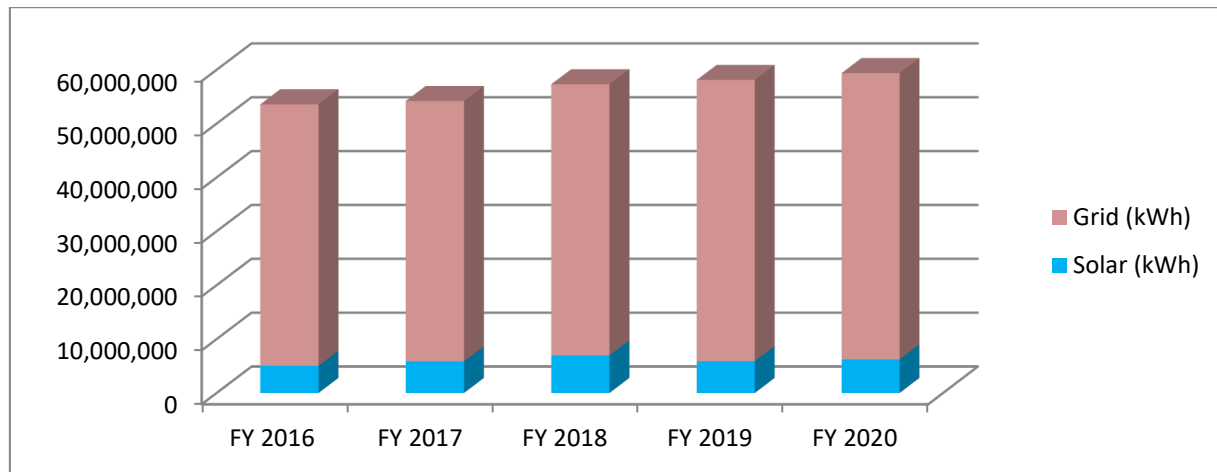
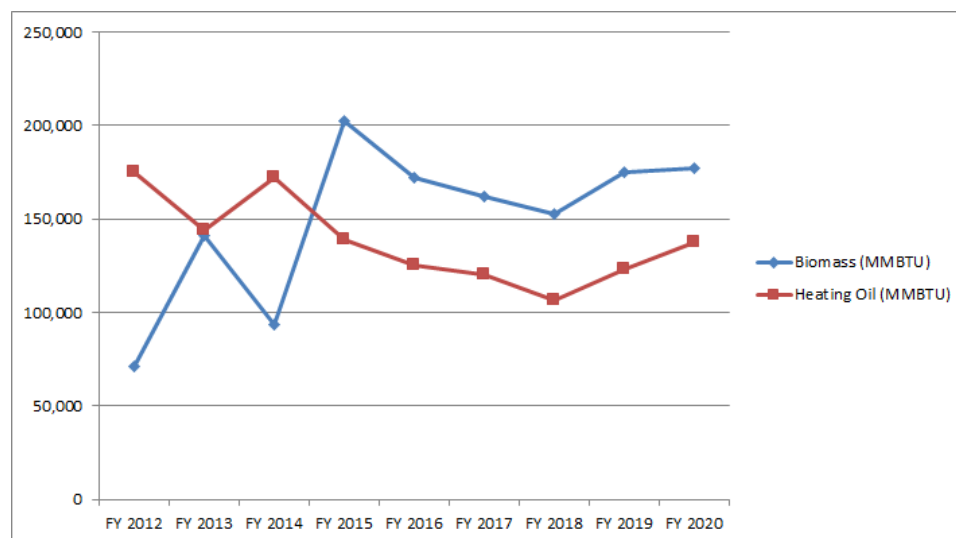


Exhibit 9-3. State Government Annual Heating Oil v. Biomass Energy Consumption (MMBTU)



9.4.2.2 Greenhouse Gas Emissions

Emissions of greenhouse gases (GHGs) associated with state government operations have decreased by an average of 11% annually since 2015 with the largest single year drop in emissions between FY15 and FY16. In the buildings sector, GHG emissions dropped significantly between FY15 and FY17 due to an increase in renewable energy consumption and a reduction in overall electricity usage, however, they have risen slightly since FY17 as a result of incremental increases in natural gas and oil use. Transportation-related GHG emissions have likewise seen an overall decrease of an average of 9% annually since 2015 as a result of decreases in gasoline and diesel consumption, mileage reimbursement, and efforts to electrify the vehicle miles travelled by fleet motor pool vehicles.

The energy data used in this plan was derived from aggregated government-wide energy expenditures, which have been converted to units of energy using average electricity costs, average gasoline prices at the pump and state fuel contract pricing. This data omits energy consumption associated with space leased to the state, because that information is not readily available. The data is meant to provide an indication of how much energy is consumed by state government in order to create a baseline against which we can measure progress toward our goals. In addition, while data from fiscal year 2020 was available, the State of Vermont was forced to cease non-essential in person operations in facilities across the State in response to the onset of the COVID-19 global pandemic. This dramatic change in facility occupancy and operating procedures caused a departure from normal annual energy consumption trends for the 2020 fiscal year, leading the State Operations Working Group to consider fiscal year 2020 an outlier. Therefore, the State energy information highlighted within the SAEP is reported for the 2019 fiscal year to give readers a more accurate set of trend information.

9.5 Strategies and Recommendations

While development and implementation of the SAEP is the responsibility by statute of the secretary of administration through the Department of Buildings and General Services, BGS has involved all agencies, in the development of the strategies and recommendations laid out below.

9.5.1 Strategies and Actions for State-Owned and Operated Buildings, Construction Practices, and Leased Space

9.5.1.1 Make Use of Available Funding and Technical Assistance to Improve Energy in State Buildings and Municipalities

In 2019, the Legislature passed Acts and Resolves No.72 amending section E.112 of 2015 Acts and Resolves No.58 to increase the State Energy Management Program (SEMP) from four to eight years, effectively extending the duration of the program to 2023. Sec. E.112, Energy Efficiency; State Building and Facilities, requires BGS (with support from Efficiency Vermont) to continue to scale up work performed by the SEMP to deliver energy and dollar savings to state government. Efficiency Vermont will provide adequate funding to support the creation and maintenance of BGS's SEMP team during the extended four-year period. Over the remaining fiscal years the program will continue to help agencies across state government identify, fund, and manage projects that will make state buildings more efficient and power them with renewable energy. The program will also continue to focus on achieving savings through enhanced operational practices, such as the deployment of integrated building controls, that can dramatically reduce the energy consumed in state buildings.

The SEMP oversees two revolving loan funds to provide low-cost financing for energy management measures in state buildings and facilities. All state agencies and departments may apply to fund energy projects using these funds. The State Resource Management Revolving Fund (SRMRF) and the State Energy Revolving Fund (SERF) are available for resource conservation measures, energy efficiency improvements, and the use of renewable resources. These funds were created to eliminate barriers to funding to up-front costs of efficiency improvements that yield significant cost savings once completed. They will make diverse projects in state buildings fundable, and in the process will help to make progress toward the state's energy goals while also saving Vermont taxpayer funds.

Since the creation of the SRMRF in 2004, over 182,000 MMBtu and over \$2.9 million have been saved. Additional projects have received funding and will soon be constructed. If no further investments are made, the fund is projected to save over \$4million through avoided energy expenditures by 2025. In addition, the SERF has saved an additional 18,800 MMBtu and \$916,000.

BGS and Efficiency Vermont have committed to collaboratively supporting and managing the SEMP and the SEMP Expansion to municipalities. By working in close partnership, BGS and Efficiency Vermont will leverage each organization's strengths, experience, and resources toward meeting the established goals. Significant work will take place in the period of this plan to identify and launch energy efficiency projects in state-owned buildings, as well as provide the necessary technical and staff assistance to develop municipal energy conservation projects utilizing investment grade energy audits. The partnership will also continue to find opportunities to address space that is leased by the state, through discussions with building owners about the improvements they could make for a major tenant of their buildings.

The SEMP will continue to work with agency partners to increase the number of state facility and operations managers that are actively measuring progress in reducing energy use against a measured baseline. The SEMP team and Efficiency Vermont are available to help state agencies use the U.S. Environmental Protection Agency's energy tracking tool, Energy Star Portfolio Manager, to analyze current energy consumption and establish a baseline for assessing progress.

Agency Energy Implementation Plans

All state entities are required to produce an implementation plan with actionable items specific to their operational energy consumption. These plans and the process to develop them can create an important opportunity for analyzing current trends in agency energy use, setting agency-specific goals, and

identifying good cost-effective projects that can be financed with these revolving loan funds and assisted by the SEMP team if desired. There is significant assistance available to agencies as they move forward with the highest-value energy efficiency and renewable energy improvements that can be made in state buildings.

Recommendations

1. *State agencies must work with the SEMP team to gather and analyze current energy use using EPA's Energy Star Portfolio Manager for buildings and utilize integrated asset management systems to enhance information sharing across departments.*
2. *All state agencies that occupy state-owned buildings should appoint energy liaisons to work with the SEMP staff to identify and prioritize further opportunities to improve their energy efficiency. Many projects have already been completed and are saving state taxpayer money. When needed, state agencies should utilize services provided by the SEMP to expand their capacity for planning cost effective projects, organizing financing, and managing the construction process. For more information, go to bgs.vermont.gov/energy.*
3. *State agencies should also evaluate opportunities to construct renewable energy facilities and participate in net metering on facility sites where possible. Sites should be carefully selected to ensure the protection of natural resources and to minimize visual impacts for site neighbors. SEMP staff and program partners should work with local municipal energy leadership teams to identify a list of priority buildings in need of energy improvements.*

9.5.1.2 Implement Energy-Saving Construction Practices

The [BGS Design Guidelines](#) are meant to help architectural and engineering firms better understand state government construction standards. The guidelines were last updated in 2018, BGS adheres to the commercial and residential building energy codes required by the state, and works with partners to achieve higher standards when practical.

When starting new construction or renovation projects, state agencies can contact Efficiency Vermont for technical support. When technical advisors from Efficiency Vermont provide guidance during the earliest phase of a project, they can often help to ensure that opportunities to improve building energy efficiency during design and construction are maximized, and that the necessary construction work for efficiency improvements proceeds efficiently, without obstacles and delays.

BGS currently considers meeting the energy standards necessary to secure the U.S. Green Building Council's LEED, or Leadership in Energy & Environmental Design certification, on all new construction projects. However, BGS does not *require* that projects meet these standards and become certified.

According to the U.S. Green Building Council, LEED is a green building certification program that recognizes best-in-class building strategies and practices. To receive LEED certification, building projects must satisfy certain prerequisites associated with each different levels of certification and earn the corresponding points. Prerequisites and credits differ for each rating system, and teams choose the best fit for their project. Projects can receive a LEED Certified, LEED Silver, LEED Gold, or LEED Platinum certification depending on the number of points achieved.

State government currently has one LEED Silver-certified building, the Pittsford Training Academy, and one LEED Gold-certified building, the Bennington District Court and Office Building. The Waterbury State Office Complex is on target to become state government's first LEED Gold-certified campus.

The LEED certification process focuses on many areas of sustainability, including downtown designation.

Locating state government operations in downtown areas helps build strong local economies, and reduces transportation energy by increasing walking, cycling, and transit opportunities. The commissioner of Buildings and General Services and all other state officials have been asked by the Legislature to locate state government functions such as new buildings in downtown areas when suitable. [Title 24 § 2794 \(12\)](#).

BGS is statutorily required to utilize life-cycle cost analysis when considering the use of renewable energy sources, energy efficiency, and thermal energy conservation in any new building construction or major renovation project in excess of \$250,000. In accordance with this procedure, the *life-cycle cost* of each new building construction or major renovation project shall mean the net total of the present-value purchase price of all items used, plus the replacement cost, plus or minus the salvage value, plus the present value of operation and maintenance costs, plus the costs or benefits of the energy and environmental externalities.

Recommendations

1. *All state agencies should utilize BGS Construction Guidelines when constructing or renovating state facilities, and should adopt higher standards wherever possible given project budgets.*
2. *All agencies should work closely with BGS and local municipalities to find a suitable downtown location for their operations when considering new construction, if appropriate.*
3. *State agencies are encouraged to assess the life cycle costs of potential energy improvements - including long-term cost savings - during design and construction planning. The National Institute of Standards and Technologies' Building Life Cycle Cost Programs offers free calculation tools to help analyze potential capital investments in buildings. The SEMP team can offer assistance on life-cycle cost evaluation as well.*

9.5.1.3 Reduce Energy Use and Improve Efficiency in Leased Space

In 2020, state government leased 888,222 square feet of space. This is a 15% decrease in leased space from 2015. While this represents a decline in energy opportunities for leased spaces, leased spaces still equal what would be an additional 30% of occupied space not currently utilizing SEMP energy reduction opportunities. Therefore we need still need to advocate with building owner/operators for energy efficiency and renewable investments in buildings that the state does not own.

Many agencies occupy leased space and do not have the ability to directly implement energy conservation measures associated with their space. There is a need to develop guidelines for state employees to follow when occupying leased space, in order to reduce the overall energy impact of state government. In response to this need, BGS developed an Agency Energy Implementation Plan template for those agencies occupying leased space. This template consists of eight primary elements including a statement of commitment, assessment of performance, goal setting for infrastructure, purchasing, and transportation, creation of an action oriented implementation plan, implementation of the plan, evaluation of progress, recognized achievements, and final adoption by the agency

Recommendations

1. *BGS should continue to assist state agencies in the creation of updated Agency Energy Implementation Plans (AEIP) based on the template for all state agencies whose operations are housed in leased space.*
2. *Agencies should continue to work closely with BGS to find leased space in downtown areas when considering new or additional leases.*

9.5.2 Strategies and Recommended Actions for Transportation

State government is committed to demonstrating fleet management and investment practices that reduce

energy use and emissions from transportation. In FY 2019, state government consumed over 1.6 million gallons of gasoline, including gasoline consumption associated with state-employee mileage reimbursement, and over 1 million gallons of diesel. This represents nearly a 60% decrease in gasoline and diesel consumption since 2015, gains owed to increases in fleet utilization of hybrid and electric vehicles, as well as reductions in mileage reimbursements.

A key initiative during the last several years has been to add full electric plug-in hybrid electric vehicles to the state motor pool. Electrifying the state fleet addresses a key priority in Vermont's Zero Emission Vehicle Action Plan and a Multistate Zero Emissions Vehicle Plan that Vermont has committed to help implement. These initiatives are fully described in the Comprehensive Energy Plan.

Since 2007, Fleet Management Services has been purchasing plug-in hybrid vehicles for the motor pool. As of 2019, 25% of the vehicles in the state's central motor pool are all electric or plug-in hybrid electric vehicles; 28 of the 142 vehicles are EVs. While the overall number of vehicles has increased, the total number of plug-in electric vehicles has more than doubled. The environmental and cost benefits of this transition are significant.

Additionally, as electrification of the fleet has progressed, the state has accelerated the installation of charging infrastructure needed to power these vehicles and maximize their electric miles. Five new dual-port and two single port level 2 charging stations have been installed at 134 state street in Montpelier, allowing for twelve new plug-in electric vehicles to charge and be ready for rental by state employees requiring travel between work stations. This allows fleet to continue providing efficient fleet vehicles to high-mileage state employees, rather than paying the higher cost of mileage reimbursement.

Gasoline consumption associated with mileage reimbursement has decreased by an additional 23% from FY 2015 to FY 2019, in addition, total gas and diesel consumption have also decreased by 40%

In the next five years, the Fleet Management Program and all state agencies must collaborate to make more progress on right-sizing fleets, continuing the transition to electric, and reducing employee travel. Following are the state's strategies and recommendations for achieving these energy improvements in state transportation.

9.5.2.1 *Expand the Go Green Fleets Initiative*

In 2016, the state launched a new *Go Green State Fleets Initiative* to formalize and demonstrate its commitment to low-carbon and clean-energy transportation. This initiative has helped agencies lead by example in the transition to greener fleets and fleet practices that save taxpayer funds and reduce energy use and greenhouse gas emissions.

While state government has increased the total number of electric vehicles in its fleet, currently only 4% of the total fleet of 750 light-duty vehicles (including those leased by individual agencies from BGS) are plug-in electrics, larger due to an overall increase of vehicles. This percentage rises to roughly 24% if both plug-in and conventional hybrids are counted. In order to meet the state's light-duty fleet target of 25% electric by 2025 and meet the goal in the Vermont ZEV action plan, all state agency fleets have to dramatically increase the incorporation of electric vehicles.

Converting a much larger percentage of state government's light-duty fleet to electric is an attainable goal: the technology is available, the vehicles are affordable, and the investment in vehicles and infrastructure is cost-beneficial to the state. The medium- and heavy-duty fleet engine technology is becoming more efficient, and there are some promising hybrid and all electric options for these larger vehicles and a serious effort should be made to consider pilot purchases of these vehicles where feasible, unfortunately the cost is often prohibitive.

Recommendations

1. *All state agencies must increase efforts to meet the goal adopted in the Vermont ZEV Action Plan - to make 25% of light-duty state fleet vehicles electric by 2025. The Fleet Management Program should continue purchases of plug-in electric vehicles, while also retiring ICE vehicles at a faster rate.. BGS should also work to familiarize agency leaders and employees with the new electric vehicles through Ride and Drive events, training videos, and other means as capacity allows.*
2. *BGS and state agency leaders and operations staff should encourage and support the use of electric vehicles by state employees, including the siting of EVSE at workstations where possible.*
3. *BGS should continue building charging infrastructure to service the state’s growing EV fleet, and promote charging access to the public after hours where possible. BGS should redouble efforts across state government to right-size fleets and make standard the replacement of ICE vehicles with plug-in electrics upon vehicle end of life.,*

9.5.2.2 Increase the Use of Biodiesel in Transportation

To reach the renewable energy goals and greenhouse gas emissions goals of the SAEP, state government will have to seriously consider the use of biodiesel blends when possible. At present, 52% of total state government transportation energy is attributable to the Vermont Transportation Agency (VTrans), including over 93% of diesel consumption. All original-equipment manufacturers warranty their engines for use with B5, a blend of 5% biodiesel and 95% petroleum diesel. Some manufacturer’s warranty their engines for use with B20, a blend of 20% biodiesel and 80% petroleum diesel. The National Biodiesel Board keeps a list of manufacturer warranties on its website, biodiesel.org/using-biodiesel.

Since the previous report in 2016 almost no progress has been made toward the adoption of Bio-fuels for transportation. With the continued problem of mid to large sized vehicles still largely priced out of large scale EV adoption, the conversion of larger diesel vehicles to bio-fuels could assist the state in achieving its transportation emissions reduction goals.

Recommendations

1. *VTrans should increase its purchase of biodiesel from state fuel-purchasing contracts for those facilities that have diesel storage tanks.*
2. *All agencies that purchase diesel fuel for transportation purposes should use the highest biodiesel blend available without compromising the manufacturer’s engine warranty. All manufacturers fully warranty their engines with the use of B5, a blend of 5% biodiesel and 95% diesel.*

9.5.2.3 Reduce On-the-Job Transportation and Solo Commuting by State Employees

Since the last report was issued six years ago, the technology that allows for fast and reliable teleconference and videoconference use has continued to improve, allowing for more state employees across agencies to access to video conferencing in ways that they previously could not. In addition to improved technology, the forced adoption of teleconferencing as a result of the response to the COVID-19 pandemic and the need to socially distance required many state agencies to implement regular teleconferencing practices that will continue after the pandemic has ended.

Although telecommuting will not directly affect the goals stated in this plan, a considerable amount of energy is consumed by state employees commuting to and from work. [Policy 11.9 - Telework](#), issued by

the Department of Human Resources and approved by the secretary of administration, establishes the basic principles and conditions regarding employee requests to work remotely from an alternative worksite. Following the large scale transition to telework from home in response to the COVID-19 pandemic beginning with the state lockdown executive order passed in March 2020, all non essential state employees began teleworking from home. While the full measure of this impact on transportation emissions is not yet known, it is likely to have caused a significant reduction in commuter emissions. As agencies begin to move towards the return to office work, they are encouraged to promote a hybrid telework schedule for their employees that will allow for sustained reductions in commuter emissions..

Another way to reduce state government-related transportation is to encourage and incentivize employees to use public transit services when available to commute to work. The state [Go Vermont](#) program, administered through VTrans, provides commuting alternatives for all employees in Vermont, among which state employees are a big part. Go Vermont connects rideshare participants, administers vanpool programs, and is a convenient portal to state transit programs.

Recommendations

- 1. State agencies should adopt the practices of the Go Green Fleets Initiative described above, and implement monitoring of light-duty vehicle use and reduce unnecessary state employee travel through teleconferencing where possible.*
- 2. State agencies should permanently institutionalize the use of Policy 11.9 on telework as part of a hybrid work model adopted during the COVID-19 pandemic response, and should share the lessons they learn as they implement it about how to support telework without causing any significant impacts to the productivity or quality of state employee work.*