

STATE OF NEW HAMPSHIRE, DEPARTMENT OF
ADMINISTRATIVE SERVICES

2015 STATEWIDE ENERGY CONSERVATION PLAN

RSA 21-I:14-C



Statewide Energy Conservation Plan

RSA 21-I:14-C

JANUARY 15, 2016

In accordance with Revised Statutes Annotated (RSA) 21-I:14-c, Energy Consumption Reduction Goal; Reports, each state department must identify cost-effective measures to reduce fossil fuel consumption by 25 percent by 2025, in state buildings, on a square-foot basis, compared to a 2005 baseline. Each state department must submit an annual report to the Department of Administrative Services (DAS) which details any cost-effective measures it is utilizing and those potential measures, subject to budgetary approval, to comply with the energy consumption reduction goal established by RSA 21-I:14-c. This report is submitted by the DAS to fulfill the requirement to submit an annual report compiling the annual department reports, report on the State's progress toward reaching its energy reduction goal, and identify problems that may prevent the state from achieving its goal. The State of New Hampshire Energy Management 2015 Annual Report provides a summary of the State's progress over the last year, and is included as Appendix C to this report.

State Agency Energy Conservation Plans

Individual agency reports have been received from ten of the fifteen large property-owning agencies and institutions (see Appendix A for specific agency plans). The Department of Transportation submitted a plan, but did not include all of its districts. Property agencies that did not submit plans were: The Department of Corrections, Employment Security, The Department of Fish and Game, The Glenciff Home, and Juvenile Justice Services. The Department of Health and Human Services did not submit a plan, but the New Hampshire Hospital submitted one independently. Plans were reviewed by staff from DAS. There were 176 energy conservation measures identified through the plans that could be completed to save the State energy and money. The estimated cost of these measures totals over \$33 million¹.

Departments listed 50 energy conservation measures completed in FY15. Of these measures, agencies were able to provide calculated energy savings for 33 measures. The total cost of completing these 33 measures was approximately \$2.2 million resulting in nearly \$377,000 in annual energy savings. Agencies are doing well with energy saving projects, achieving less than a 6 year payback on average. Many of these measures will continue to provide savings for fifteen to twenty years, or more. Furthermore, with continued education on current energy efficiency developments; newer, more efficient technologies will be used to replace failed equipment in the future; adding to the energy savings for the State. Other projects were done that were not energy conservation projections per se, but were projects that had energy saving components. These were hard to include in the overall numbers because costs and savings attributed to just the energy saving portions of the projects were hard to specify. For example, the Liquor Commission completed construction or renovation of 6 facilities in FY15. Energy efficient technologies were used in these projects, but it is hard to calculate and document exactly what the agency is saving over its previous operations.

Non-property owning agencies were asked to complete a simplified plan consisting of a one-page summary of the efforts that they have made over the past year to reduce energy consumption along

¹ Measure costs provided by agencies include non-energy related components of some projects.

with some goals for the upcoming year. Thirteen plans were received from non-property owning departments, summarizing behavioral measures to reduce energy use. The DAS Energy Management Office would like to extend these behavioral-type measures to all state employees by providing some simple energy management training. By encouraging employees to make small shifts in their behavior, energy consumption could be reduced even more. Any ideas that were included in these non-property owners' plans will be passed along to the department that owns the building for review and possible implementation. See Appendix B for a list of departments that do not own property and submitted an energy conservation plan.

Past Energy Management Initiatives

The Energy Management Office was awarded \$500,000 in capital funds for energy conservation projects in fiscal years 2014 and 2015. The State Energy Manager and staff took an approach to distribute the funds across property owning departments so that each was able to complete some energy saving projects during the biennium. If departments did not identify projects to use their allotted funds before an October 2014 deadline, remaining funds were pooled and redistributed to projects on a waiting list. This approach proved to be successful as more departments were able to complete projects. It did however limit the amount of funding that was available for any one project. The funding helped to complete 17 projects, either fully or partially funded, resulting in over \$100,000 in annual energy savings. A table detailing these projects has been included as Table 2.

The Energy Management Office has started a new initiative in 2015 called the Small Buildings Energy Efficiency Program (SBEEP). This program focuses on state buildings that are 10,000 square feet or smaller. In the past, energy saving opportunities in these buildings have been largely ignored due to the State's focus on larger facilities. SBEEP provides high level evaluations of state buildings; instant energy savings through turnkey savings measures including LED lighting, spray foam insulation, faucet aerators, and appliance timers; and tips and recommendations for the agency to implement after the visit. Additionally if staff identifies any major energy projects, they will be added to the queue of projects to be done when funding becomes available.

In FY15, the State issued a third Request for Proposals (RFP) for an energy saving performance contract (ESPC) that would cover 28 facilities in Concord. Facilities are located in downtown Concord and on the State Office Park South. Twenty-five of these facilities are currently heated by district steam provided by Concord Steam. ESPCs are a way for departments to have energy saving measures installed in their buildings by using their utility budgets to pay for the projects over time. Departments see no difference in their total expenditures because the required payments are offset by reduced energy bills. Currently, the first ESPC, for buildings on Hazen Drive, is in the final stages of construction with the project scheduled to be completed in August of 2016. The second project, for facilities and operations at Cannon Mountain, is scheduled to enter the construction phase sometime in 2016. Energy Management staff will evaluate departments and facilities for a fourth ESPC and begin preparing the RFP in 2016 if a candidate is identified.

In preparation for performance contracting, a facility may elect to defer any energy related upgrades so that they can be included in the overall project. Longer payback items are offset by energy measures with quicker paybacks and the blending of these projects is what makes the initiative successful.

Future Energy Projects

The Energy Management team has prioritized the measures listed in the department-level plans (see Table 1). The team is already working with departments using the FY16/17 energy capital funding to complete projects. The \$500,000 capital appropriation was allocated based on the square-footage owned by each agency. Approximately one quarter of the \$500,000 budget has already been committed to projects. Projects that have been funded in the current biennium or had different funding sources listed in the plans were excluded from this prioritized list (Table 1). Additional work could be completed through energy performance contracts. Energy audits and other similar studies can provide agencies with a prioritized plan, often identifying measures that would not be completed otherwise and allowing agencies to see which measures will result in the largest benefit. Some of the criteria that were considered when deciding which measures to include were:

- The priority ranking given by the departments;
- The amount of detail in the project proposal, including costs and energy savings;
- The payback period for the project;
- A fair distribution of funding across departments; and
- Consideration to whether a performance contract or other major changes would be taking place within select buildings in the near future.

While this list serves as an indication of the amount and type of projects that need to be done across the State, situations and technologies change over time and a department's priorities may shift due to these circumstances. The Energy Management Office supports departments in getting critical projects done quickly and also focuses on high energy saving projects that will provide the most benefit to the State. Based on information provided by the departments in their plans, it is evident that many are able to find the funding for smaller (under \$50,000) projects, but often struggle to be able to complete projects in the \$100,000 to \$500,000 range. For example, a small lighting retrofit can easily be accomplished within the operating budget of a department, but a full facility lighting retrofit can often run several hundred thousands of dollars which makes it unattainable within their biennial budget. For a list of projects completed with FY14/15 energy capital funds, please see Table 2.

While the State has made significant progress toward its energy efficiency goals by reducing fossil-fuel use in state buildings by 20% between 2005 and 2015 (see Appendix C, Annual State Energy Report, for more information), a continued and sustained effort is needed to maintain these savings and to push further to ultimately reach, and hopefully exceed, the 2025 goal. Departments are in need of more resources to be able to achieve these goals, including access to professional studies and audits, training, funding, and staff that are able to assist in the implementation of energy saving measures. Furthermore, if departments have the resources to do more, the DAS Energy Management Office would benefit from more staff to work with departments on all phases of project implementation and tracking. Departments are clearly spending more on energy and maintenance than they need to. A combination of education, funding, and staff could improve the energy efficiency of state facilities and divert tax dollars away from departmental energy budgets and towards other areas that are in need.

Appendix A: Agency Conservation Plans, Property Owners

1. The New Hampshire Adjutant General's Department
2. Department of Administrative Services
3. New Hampshire Department of Environmental Services
4. New Hampshire Hospital
5. New Hampshire Liquor Commission
6. New Hampshire Police Standards and Training Council
7. New Hampshire Department of Resources and Economic Development
8. New Hampshire Department of Safety
9. New Hampshire Department of Transportation -partial
10. New Hampshire Veterans Home

Appendix B: Agency Conservation Plans, Non-Property Owners

1. New Hampshire Department of Agriculture, Markets, and Food
2. New Hampshire Banking Department
3. New Hampshire Office of Energy and Planning
4. Family Mediator Certification Board
5. New Hampshire Commission for Human Rights
6. New Hampshire Insurance Department
7. New Hampshire Joint Board of Licensure and Certification
8. New Hampshire Judicial Council
9. New Hampshire Department of Labor
10. New Hampshire Lottery Commission
11. New Hampshire Public Utilities Commission
12. New Hampshire Board of Tax and Land Appeals
13. New Hampshire Office of Veterans Services

Appendix C: Fiscal Year 2015, State of New Hampshire Energy Management Annual Report

Table 1: Prioritized Measures for Fiscal Year 2016/17 (As provided by departments in their agency-level plans)

Agency	Measure Description	Building(s) Impacted	Estimated Measure Cost	Expected Annual Energy Cost Savings	Simple Payback (years to recoup cost)
Administrative Services	New chiller	Rockingham County Courthouse	\$125,000	\$30,000	4.2
Administrative Services	Upgrade building management system and connect to server	Rockingham County Courthouse	\$60,000	\$8,004	7.5
Administrative Services	Replace building management system and connect to server	Coos County - Lancaster Courthouse	\$28,000	\$2,277	12.3
Environmental Services	Install solar PV array	Pierce Island Air Monitoring Station	\$4,700	\$324	14.5
Environmental Services	Install solar PV array	Lakeport Caretaker House	\$6,950	\$480	14.5
Environmental Services	Install high efficiency air-source heat pumps	Camp Dodge, Laconia and TSU Air Monitoring Stations	\$4,200	\$540	7.8
NH Hospital	LED lighting replacement	APS	\$216,724	\$88,214	2.5
DRED	LED lighting replacement	Seacoast Locations	\$3,000	\$360	8.3
Safety	Insulate buildings	Various	\$12,500	\$1,250	10.0
DOT	Alternate fuel heater	Patrol Shed 410	\$5,000	\$3,900	1.3
Veterans Home	LED lighting replacement	Tarr North	\$135,349	\$24,000	5.6
Veterans Home	LED lighting replacement	Tarr South	\$69,916	\$9,600	7.3
		TOTAL	\$671,339	\$168,949	4.0

Table 2: Capital Funded Project Summary FY14/15

AGENCY & BUREAU	LOCATION	DESCRIPTION	EXPLANATION	TOTAL PROJECT COST	CALC. SAVINGS (per year)	YRS. PAYBACK
Fish & Game	Headquarters	Rooftop air conditioning units, replacement at Fish & Game Headquarters	Replacement of 5 York rooftop units (cooling only) at Fish & Game Headquarters.	\$34,925	\$13,791	2.5
Employment Security	Tobey Building	Add window treatments for insulation and solar gain reduction	window treatments were not included in overall renovation cost, addition to project for Employment Security Tobey Building	\$34,652	\$5,000	6.9
Adj. General	Franklin Readiness Center	Replacing 1 boiler with 3 smaller boilers	Retrofitting boiler to more efficient boilers that will cover the full load without having one large boiler on all the time for the Adjutant General in Franklin	\$20,000	\$10,739	1.9
DAS - BFAM	Main Building	Lighting retrofit	Replacing 48 T-12 lamps with 20 new LED lamps at the North Pavilion, Main Bldg.	\$6,465	\$650	9.9
NH Hospital	APS	Retro-commissioning energy items listed from McFarland Johnson Study	Energy conservation study - implementation of measures for NH Hospital's APS building	\$42,950	\$14,800	2.9
Liquor	Keene Store	IMMI LED lighting retrofit	Replaced all interior fluorescent lighting with IMMI LED technology in the Keene liquor store	\$9,781	\$3,272	3.0
Dept. of Safety	Fire Standards	Implementation of measures from retro-commissioning study	Implementation of measures identified from the retro-commissioning study for Fire Standards Dorm Building.	\$50,000	\$6,121	8.2
DAS - Courts	Rockingham County Courthouse	Boiler replacement	Replacing (2) VFDs with more efficient models to enable the cooling tower to run more efficiently at the Rockingham County Courthouse	\$25,000	\$4,998	5.0
DAS - General Services	Morton Building	Cooling tower	Energy Efficiency achieved by Changing from 40hp to 15hp with Morton Building Cooling tower	\$41,000	\$3,324	12.3
Veterans Home	Laundry	Washing machine upgrade	Energy efficiency upgrade of laundry equipment (washers/dryers) at the Veterans Home	\$54,440	\$19,163	2.8
Corrections	Berlin Prison	Whole building lighting audit	Lighting retrofits identified in Eversource audit at the Berlin prison.	\$39,986	\$14,063	2.8
DES	Londonderry and Peterborough	Add solar PV to both air monitoring stations	Solar arrays for both Londonderry and Peterborough air monitoring stations	\$14,659	\$1,574	9.3
DRED	Flume	Faucet replacement	Replace water faucets at the Flume to eliminate loss of hot water from faucets being left on after use	\$1,724	\$1,837	0.9
DRED	Salem Rest Area	Install fireplace insert at Salem Rest Area to reduce heat loss	Reduce heat loss by installing a fireplace insert into the fireplace in the lobby. This will stop heat from being sucked out through the flue	\$5,602	\$2,158	2.6
DOT	Hooksett, Chester and Lempster Patrol Sheds	Improve heating efficiency, DOT sheds to heat with free wood.	2 new wood boilers for Hooksett and Chester, duel fuel boiler for Lempster	\$46,734	\$7,683	6.1
Liquor	Liquor Headquarters	Boiler replacement	Replace existing boiler with new energy efficient boiler at Liquor Commission HQ building	\$16,000	\$3,500	4.6
DAS - General Services	Materials and Research Building	Implementation of measures found in retro-commissioning study	Retro-commissioning study measure implementation at Materials and Research	\$50,456	\$5,538	9.1
Total				\$494,373	\$118,211	4.2