

**OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS
POLICIES AND PROCEDURES**



ENERGY MANAGEMENT OF EXISTING BUILDINGS

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SECTION I - INTRODUCTION

1. INTENT

This policy outlines the guidelines in the operation and maintenance of existing buildings. The benefit of an efficient operation and maintenance program can result in cost effective equipment repair and replacement. A facility audit program and an energy management program are important aspects of proper building management.

2. COORDINATION WITH APPROVED BUILDING CODES

The Office of the State Architect (OSA) is responsible for establishing minimum building codes for all construction by state agencies on state-owned or state lease-purchased properties or facilities. The OSA has adopted the 2006 International Energy Conservation Code. Code information can be accessed from this web site, [Building Codes](#).

3. STATUTORY RESPONSIBILITIES/EXECUTIVE ORDERS

(a) Colorado Revised State Statutes:

24-30-1301-1307	State Buildings, Department of Personnel
24-30-2001-2003	Utility Cost Savings Measures
24-82-601-602	State-Owned Facilities – Energy Conservation
24-82-901-902	Outdoor Lighting Fixtures

(b) Executive Orders

Energy Performance Contracting to Improve State Facilities, Executive Order D014 03 (July 16, 2003)

Directive: Each state agency responsible for state-owned facilities shall investigate the feasibility for an energy performance contract.

Greening of State Government, Executive Order D005 05 (July 15, 2005)

Directive: Directs the Executive Directors of all state agencies to evaluate their current business operations and develop and implement policies and procedures to promote environmentally sustainable and economically efficient practices.

Greening of State Government: Goals and Objectives, Executive Order D0011 07 (April 16, 2007)

Directive: Directs state agencies to reduce state energy consumption, increase state use of renewable energy sources, increase the energy efficiency and decrease the environmental impact on the state vehicle fleet, and implement an environmental purchasing standard.

Greening of State Government: Detailed Implementation, Executive Order D0012 07 (April 16, 2007)

Directive: Establish policies and procedures to achieve the goals and objectives articulated in Executive Order D0011 07. Sections: Reduction of State Energy Consumption; Materials Management and Environmental Preferable Purchasing; Greening the State Fleet; Renewable Energy Sources for State Energy Consumption.

SECTION II - EXISTING BUILDINGS

A. INTRODUCTION

Over the life span of a building, the annual cost to operate and maintain a building significantly exceeds the building's initial construction cost. A facility that is not managed appropriately can result in energy and maintenance problems. Maintenance problems could be resolved through the general operation and maintenance budget or could become a controlled maintenance request. Therefore, it is important that agencies and institutions develop, incorporate, and then utilize a maintenance program that is effective in tracking maintenance needs and prioritizing the necessary work. An energy management program is an important aspect of a building's operation and maintenance strategy.

B. FACILITY MANAGEMENT PRACTICES

The Office of the State Architect (OSA), Colorado Department of Higher Education (CDHE), and the Office of the State Planning and Budgeting (OSPB) require that all agencies establish a facility audit program. The primary goal of a facility audit program is to create a comprehensive document (operation and management tool) which identifies and quantifies areas requiring necessary action as well as costs to renovate, retrofit, restore, modernize or maintain the building and equipment in a "like new" condition. The audit will serve to acquaint administrators and maintenance personnel where deficiencies exist, with the overall condition of their buildings, and will provide concise information that will assist in long range planning and budgeting activities. The audit will provide facilities services management/maintenance personnel with data that will aid them in prioritizing building renewal and deferred maintenance projects. The facility audit program information can be accessed from this web site: [Facility Audit Program](#). In addition to the building audit, an analysis of the campus, facility, or agency infrastructure will identify where deficiencies exist because of the age of the equipment, the frequency of work orders, or where the infrastructure has reached or exceeded design capacity.

Each agency and institution should establish a preventative maintenance program. Preventative maintenance (PM) is defined as a program in which wear, tear, and change are anticipated and continuous corrective actions are taken to ensure peak efficiency and minimize deterioration. PM involves a planned and controlled program of systematic inspection, adjustment, lubrication, and replacement of components, as well as performance testing and analysis. The result of a successful PM program extends the life of facilities and equipment, and minimizes unscheduled downtime that causes major problems. It ensures that equipment is operating properly and unscheduled breakdowns are held to a minimum. The facility audit program in conjunction with a PM program will provide a agency or institution the necessary tools to properly maintain their owned facilities and prioritize major capital renovations or controlled maintenance requests.

C. ENERGY MANAGEMENT PRACTICES

Each agency or institution needs to develop an energy management program. The program needs to attempt to reduce energy costs, eliminate waste, and conserve energy resources by using energy-efficient and cost-effective technology. The program should incorporate energy efficiency into the decision-making process during the design and acquisition of buildings, the repair and replacement of existing systems, and should emphasize the use of renewable energy sources. Agencies and institutions should review the option of the direct purchase of natural gas. There are numerous federal and state resources to help agencies and institutions develop and implement an energy management program.

1. The OSA policy, High Performance Certification Program (HPCP) outlines the requirements for agencies in the construction of new building and the substantial renovation of existing buildings. Buildings fewer than 5,000 gross square feet or those that have no heating or cooling systems are exempt from the HPCP. USGBC LEED™ program is the standard the state is utilizing to direct agencies in designing and constructing high performance buildings.

2. Agencies and institutions should utilize the EPA ENERGY STAR program to benchmark their building's energy profile. An important aspect of any energy program is the evaluation of your agencies current energy usage against comparable buildings. The program can measure, track, and benchmark an agency's buildings energy performance and develop and implement a plan to improve building energy performance.
3. Agencies and institutions looking for a method to benchmark and verify the success of their operations and maintenance programs can use the US Green Building Council's LEED™ for Existing Buildings (LEED™-EB) program. The LEED™-EB program provides a recognized, performance-based benchmark for building owners and operators to measure operations, improvements and maintenance on a consistent scale.
4. The Greening of State Government executive orders will have an effect on the operations of buildings, the procurement of supplies, and departmental transportation issues. An energy management program is one of the requirements of the executive orders. The LEED™-EB program will support many of the non-building energy topics within the executive orders.

D. ENERGY EFFICIENCY PROJECTS FUNDING OPTIONS

1. Every general funded building is eligible for controlled maintenance funds appropriated by the state General Assembly. Controlled maintenance is defined as: corrective repairs or replacement used for existing state-owned, general-funded buildings and other physical facilities, including, but not limited to, utilities and site improvements, which are suitable for retention and use for at least five years, and replacement and repair of the fixed equipment necessary for the operation of such facilities, when such work is not funded in an agency's operating budget to be accomplished by the agency's physical plant staff. Controlled Maintenance projects are defined as those projects arising out of the deterioration of a facility's physical and functional condition, including site and infrastructure, and the inability to comply with current codes and energy conservation standards.
2. Energy performance contracts (EPC) provide an alternative funding source for a state agency to repair and/or upgrade its facilities. Energy performance contracts use avoided future energy costs from increased facility energy efficiency as the method to fund facility improvements over the life of the lease-purchase energy performance contract. An EPC could be the preferred funding option for some maintenance projects. If the project has the potential of substantial energy savings and cost avoidance, then each department is required by the executive order on Energy Performance Contracts to evaluate the request as a potential EPC project. Information on EPC can be obtained from the Governor's Energy Office, Commercial and Public buildings, Existing Building web site, [Governor's Energy Office](#).

E. WEB LINKS FOR ADDITIONAL INFORMATION

US DOE Energy Efficiency and Renewable Energy (EERE) program offers various links to energy management, high performance buildings, alternative fuels, and other energy issues;

[EERE Main Page](#)

[Energycodes](#)

[High Performance Buildings](#)

[Federal Energy Management Program](#)

Joint US DOE and EPA Energy Star Program; [Energystar](#)

American Society of Heating, Refrigerating and Air-Conditioning Engineers; [ASHRAE](#)

Governor's Energy Office; [GEO](#)