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STATEWIDE POLICY	REVIEWED DATE April 17, 2024	Pages 1 of 12
DIVISION Enterprise Asset Management	REFERENCE Executive Order 06-02; 17-20; and 20-04 ORS 276.900; 468A; and 459A.010 Chapter 442, Oregon Laws 2023	
POLICY OWNER Operations and Maintenance		
SUBJECT Energy and Resource Conservation	APPROVED SIGNATURE Berri Leslie, DAS Director	

PURPOSE

Identify energy and resource conservation opportunities and cost saving measures in state agency operations. Establish requirements and guidelines to promote resource conservation for energy, water, recycling and waste prevention. Implement efficient building operations and behavior-based practices to demonstrate leadership, reduce costs, and ensure state agencies contribute to state government's goals for energy efficient buildings and reduced greenhouse gas emissions.

APPLICABILITY

State agencies that own, operate or lease buildings as defined in this policy, and their employees. Contractors that operate cafeterias, micro-markets and vending machines in state-owned or leased buildings.

DEFINITIONS

Agency:	Any state agency, board, commission, department or division; with the exception of select agencies and associated activities as indicated in EO 17-20[1].
Agency Administrator:	Agency director or manager with delegated authority over agency-wide policy and operational practices.
Ambient Lighting:	Overhead lighting in buildings, including work areas, hallways, bathrooms, break rooms, stairwells; does not include task lights in workstations.
ASHRAE 100-2024:	Energy and emissions building performance standard for existing buildings that provides processes and procedures for reducing energy consumption and greenhouse gas emissions through improved energy efficiency and performance of all types of existing buildings.

[1] EO 17-20 exempts the Oregon Secretary of State, Oregon State Treasury, Oregon Department of Justice, and Oregon Bureau of Labor and Industries from compliance with the order.

ASHRAE 90.4 2022	Establishes minimum energy efficiency requirements for data centers, including design and construction, creation of operations and maintenances plans and utilization of on-site or off-site renewable energy.
ASHRAE 90.1 2022:	Provides the minimum requirements for energy-efficient design of most sites and buildings, except low-rise residential buildings. ASHRAE 90.1 is referenced in the Oregon Energy Efficiency Specialty Code.
ASHRAE 55 Standard 2023:	Establishes the ranges of indoor environmental conditions to achieve acceptable thermal comfort for building occupants.
ASHRAE 12 Standard2020:	Establishes guidelines for reducing the risk of Legionellosis associated with building water systems.
Communal Appliance:	An appliance acquired by an agency, employee, or informal group of employees for communal use in break rooms or similarly suitable locations. Examples include refrigerators, microwaves and coffee makers.
Computer:	Central processing units (CPU) and monitors, laptops, notebooks and tablets that connect to the network or otherwise plug into a building's power grid. Other computer peripherals are considered "office equipment."
Energy Use Intensity (EUI):	Energy use per square foot per year, which is calculated by dividing the total annual energy consumed (in units of thousand Btus, or kBtus) by the gross floor area (in units of square feet) of a building.
Energy Trust of Oregon:	An independent nonprofit organization that helps Oregon utility customers benefit from efficient energy use and generating renewable energy.
ENERGY STAR Portfolio Manager:	An online tool hosted by the U.S. Environmental Protection Agency that can be used to measure and track energy and water consumption.
Extended Operations:	Exceptions to an agency's Normal Operations for HVAC and lighting.
Facility Manager:	Single point of contact for tenants in a state-owned or occupied building; a state government employee.
Foot Candle:	Unit of measure for quantifying the intensity of light falling on an object.
HVAC:	Heating, ventilating and air conditioning.
IES:	Illumination Engineering Society.
IT Computer Infrastructure:	Any computer hardware, software, services and networking equipment used to support agencies collection, flow, analysis and storage of data systems.
IT Manager:	Manager of an agency's information technology assets, including servers, computers, monitors and audiovisual equipment.
kBTU:	One thousand British thermal units, a measure of energy use intensity.
LED:	Light Emitting Diode, an efficient lighting technology.
Normal Operations:	An agency's schedule and setpoint for HVAC and lighting that is typical for business operations.
Operator:	Agency or contractor operating a vending, market or cafeteria operation in a state-owned building.
Personal Appliance:	Any privately-owned device that requires energy or produces heat, designed for residential use, brought into the workplace for an individual's use.

Plug Load:	Electrical load in a building due to the various devices that are plugged into receptacles.
Server:	A physical or virtual electronic device in a dedicated, secure space that requires supplemental cooling. Such servers provide shared resources, storage, application hosting and other centralized services for other servers, devices and computers on a network or via the Internet.

GENERAL INFORMATION

1. Energy reduction

a. Agencies will consult with Oregon Department of Energy (ODOE) to establish high performance energy use targets for all state-owned buildings over 5,000 square feet using more than 10 kBtu/square feet/year.

   A. For building types with ASHRAE Standard 100 targets, agencies will work to achieve targets. If building energy use exceeds a specified target, agencies must create plans and coordinate with ODOE on activities to reduce energy use.

   B. For building types without ASHRAE Standard 100 targets, agencies will develop custom targets, in consultation with ODOE, create plans and coordinate with ODOE on activities to reduce energy use.

   C. Agencies will conduct energy audits and assessments to identify cost-effective opportunities and retrofits to meet specified targets. Agencies are encouraged to use services offered by ODOE, Energy Trust of Oregon, and other third-party organizations.

   D. Maximize rebates, credits, grants and other incentives for energy-efficiency improvement projects, including programs offered by local utilities and agencies.

b. Energy consumption reporting

   A. Regularly review utility bills (electricity, natural gas and other fuels) and actively manage energy consumption.

   B. Report energy use for state-owned buildings for each calendar year to ODOE using the U.S. Environmental Protection Agency ENERGY STAR Portfolio Manager online tool. ODOE tracks building-specific energy use and compares it to the agency's targets.

   C. Where feasible and practical, coordinate with private landlords to analyze energy consumption in leased properties to identify energy and cost-saving opportunities.

c. Hours of operation

   A. Where agencies control building scheduling, all non-essential lighting, heating/cooling and other energy use must be minimized outside of Normal Operations. Agencies are expected to make a reasonable determination as to what functions must continue outside of these hours.

d. Heating and cooling

A. Agencies with control over existing HVAC equipment and systems will heat and cool buildings as efficiently as possible.
   i. Establish temperature set points for Normal Operations that minimize heating and cooling demands while maintaining occupant comfort. Allow building temperatures to fluctuate within an acceptable range to avoid wasteful over-control patterns. For buildings primarily used as office space, set temperatures to 70°F in winter and 74°F in summer, with a plus or minus 2.5 degree float where feasible.
   ii. For non-office facilities, Facility Managers or designees are encouraged to consult ASHRAE Standard 55, Thermal Comfort Conditions for Human Occupancy to determine thermal comfort conditions..
   iii. Extended Operations require approval in advance by an Agency Administrator or Facility Manager.
   iv. Minimize HVAC runtime to only that which is needed to achieve an acceptable range during Normal Operations. In periods of extreme weather, operate building systems during nights and weekends at the lowest levels needed to maintain building temperatures.
   v. Maximize efficiency of HVAC operation and building automation systems by using strategies such as delayed and “optimum start,” supply temperature resets, and use of demand-control ventilation.
   vi. Whenever practical, use all of the “free-cooling”/economizer options available and operate, maintain and adjust economizer controls to optimize use of outside air for cooling.
   vii. Regularly inspect and maintain ducts, dampers, actuators, air filters and other related hardware to maximize energy efficiency.
   viii. Tune up all forced and induced draft gas and oil-fired boilers annually.
   ix. When replacing heating/cooling equipment, size equipment to match the current or foreseeable future heating/cooling load and avoid oversizing.
   x. Keep doors to outside and unconditioned spaces like stairwells and vestibules closed at all times.

B. When replacing heating/cooling equipment, procure certified energy efficient options, following DAS procurement standards for energy efficient equipment.

e. Interior lighting

A. Agencies with control over interior lighting systems will light buildings as efficiently as possible.
   i. Take advantage of natural lighting and high-efficiency LED task lighting to provide the lowest appropriate level of general ambient lighting.
   ii. Recommended average light levels for office buildings are 30-40 foot candles for office spaces (30 inches above finished floor). Common areas, conference rooms, break rooms, restrooms, corridors and other spaces may be operated at lower levels. Agencies may also deploy lower lighting levels in office spaces depending on lighting technologies used and functional needs. Refer to current Illuminating Engineering Society (IES) Illumination Recommendations and Guides for additional recommended task-specific lighting levels.
   iii. Reduce lamps and luminaires in number and wattage where appropriate to provide the lighting level needed for the activities of a work area.

iv. Outside of Normal Operations, deploy lighting sweep systems to disable ambient lights and prevent accidental overrides. Allow employees to use zone and task lights when working outside of Normal Operations.
v. Request that employees manually turn off lights in unoccupied rooms at all times, where occupancy sensors do not exist.
vi. Employees may not attempt any removal of lamps or disabling of controls, nor installing any workspace shading devices without approval from the Facility Manager.

B. When replacing lighting equipment, replace older lighting with LED lighting where feasible. Procure certified energy efficient options, following DAS procurement standards for energy efficient equipment.

f. Exterior lighting

A. Agencies with control over exterior lighting systems will light areas as efficiently as possible.
i. All new or replacement parking lot fixtures must be LED with a combination of photocell, occupancy, or time switches to ensure exterior lighting operates only as needed.
ii. Set lighting to provide appropriate light levels, uniformity and directionality, and meet any safety or egress requirements. Use current Illuminating Engineering Society (IES) Recommendations and Guides for area-specific lighting levels.

g. Holiday lights: refer to policy 107-011-130, Holiday Decorations.

h. Lighting controls

A. Agencies with control over building lighting control systems will utilize controls to maximize energy efficiency and conservation.
i. Install occupancy or daylighting sensors to control lighting where feasible. Prioritize occupancy sensors in frequently unoccupied or partially occupied areas such as meeting rooms, storage rooms, common areas and restrooms. Prioritize daylighting sensors at perimeters of buildings and near other natural light sources.
ii. Select occupancy sensors that are appropriate to the room geometry, usage patterns and control point (local, zone, hybrid). Regularly inspect controls to ensure functionality.

i. Computers, IT computer infrastructure and office equipment

A. Agencies will manage computers, IT computer infrastructure and office equipment in the most energy efficient manner possible within the context of an agency's mission and resources. IT Managers will:
i. Manage the power environments in which computers and monitors operate through central, automated solutions that apply sleep modes when a device remains idle yet allows for patching and security updates outside of Normal Operations. Deploy "balanced" power settings when computers are operating wherever feasible.
ii. Absent a central, automated solution, implement sleep settings on individual computers and monitors.
iii. Locate all physical IT computer infrastructure such as servers, backups, appliances, storage and other similar equipment to the State Data Center, unless exceptional security or other special circumstance requires an onsite location.

iv. If exceptional security or other special circumstances prevents IT computer infrastructure from being moved to the State Data Center:
- HVAC equipment should be sized properly for the space.
- Set cooling to 74°F.
- Setpoints can also be determined using the total system performance ratio metric outlined in ASHRAE 90.4.)
- Stand-alone cooling or fans should only be used if they are the primary source of cooling.

v. Program all smart boards and other audiovisual equipment to enter sleep or other appropriate low-power modes when not in use.

vi. Eliminate personal printers in favor of shared multifunction devices (printers, scanners, copiers) with secure, on-demand printing. Optimize the number of devices to match typical printing demands during Normal Operations. Consider utilizing DAS Publishing and Distribution (P&D) Managed Print Services (MPS) for remote printer management, as well as P&D in-house printing services for large print runs and peak demand times.

vii. Set printers to two-sided (duplex) mode and program all multifunction devices for the most efficient energy use (e.g. power saver or sleep modes).

B. Procure certified energy efficient computers and office equipment following DAS procurement standards for energy efficient equipment.

j. Employee workspace devices and personal appliances

A. Essential powered devices and chargers provided by agencies to employees or associated with state business are permitted in workstations. Examples include computers and monitors, tablets, LED task lights, desk phones and one cell phone charger.

B. Unless approved by an Agency Administrator or Facility Manager, personal appliances are prohibited in employee workspaces, with the following exceptions:

i. One personal cell phone using the one permitted charger.

ii. New desk fans of 15 watts or less. Agency Administrators or Facility Managers may in special circumstances approve exceptions for higher-wattage new desk fans, provided that wattage increases are minimal.

iii. Personal foot warmers or warming panels of up to 150 watts for use in areas where measured ambient temperatures are outside the established temperature set-points for the building, and only after exhausting all reasonable energy-free options.

iv. Space heaters are prohibited except where employees demonstrate an extraordinary need (e.g., unconditioned workspace in a warehouse, medical issues) that cannot be accommodated by any other means. Use of space heaters must be approved by Agency Administrators, only as a last resort.

C. Examples of prohibited personal appliances and related activities in workstations (not an exhaustive list):

- Digital picture frames
- Microwaves
- Coffee makers
- Refrigerators
- Crock pots
- Toasters and toaster ovens
- Fish tanks
- Warming plates
- Hot plates
- Halogen lamps
- Charging of personal devices other than one personal cell phone (e.g., personal tablets)

D. Minimize the operation of energy-consuming devices in individual workstations where shared options exist, such as label printers, electronic staplers and electronic pencil sharpeners.

k. Plug load control devices

A. Deploy advanced plug strips where feasible to control multiple plug loads in workstations and other areas. Load-sensing plug strips control loads with a master device. Occupancy-based strips control loads based on the presence or absence of the occupant.

l. Communal appliances

A. Facility Managers and agency building tenants in state-owned or leased buildings must agree on communal equipment quantity and capacity, plug loads, and any related custodial and safety issues, with the following parameters:
   i. Right-size communal appliances based on the number full-time equivalent employees using the appliances.
   ii. Kitchenettes and break rooms will not exceed agreed-upon equipment capacity or plug loads.
   iii. Prior to purchasing or installing appliances for communal use, groups of employees must contact their building's Facility Manager to discuss equipment or plug load changes.
   iv. Conventional ovens should not be provided in break rooms unless they are critical to staff operations.
   v. Keep appliances in good condition, ensuring clean cooling coils or vents, and ample air space, and do not store combustible items above or around appliances.
   vi. Refrigerators
      - Provide only enough refrigerator capacity necessary for the number of staff.
      - Remove or replace under-used or ill-maintained refrigerators.
      - Set the temperature set point for refrigerators to ENERGY STAR guidelines of 35-38°F.

B. Do not use Communal Appliances in individual workstations.

C. Install commercial quality plug-in timers for communal water coolers, commercial coffee makers and under-counter water heaters to ensure automatic shutdown after Normal Operations. Ensure the Facility Manager approves of the equipment and its installation process.

D. When providing or replacing communal appliances, procure certified energy efficient equipment following DAS procurement standards.

m. Other building operation energy best practices

A. Agencies with control over building operations will operate buildings as efficiently as possible.

B. Set hot water at a temperature no hotter than 120°F. (Refer to ASHRAE 12-2020, Section 4.2.2.2. Recommended Treatment for recommendations on higher settings for food service, laundries and other uses.)

C. Agencies are encouraged to:
   i. Actively manage window screens and blinds throughout the day to mitigate heating and cooling loss and gains.
   ii. Install awnings above south facing windows to keep summer sun out and allow winter sun in.
   iii. Seal building envelopes, which includes air-sealing windows, doors and other penetrations to reduce air flow. Keep exterior doors and windows closed. Maintain weather stripping.

D. To track and continuously optimize energy performance, agencies should install, where cost effective and feasible, building-level meters and branch circuit sub-meters for electricity, natural gas and steam.

E. Agencies are encouraged to explore:
   i. Feasibility, methods and mechanisms to install on-site renewable energy or purchase renewable energy through utility green power programs.
   ii. Financial incentives that can reduce purchase costs.

n. Building walk-throughs and retro-commissioning

A. Where feasible, conduct formal walk throughs (such as night walks/audits) of buildings on a reasonable schedule. Individuals or teams conducting walk throughs should document topics such as:
   i. Status of authorized and unauthorized communal area appliances and equipment, including whether the devices are on or off (e.g., shared printers, break room appliances).
   ii. Permitted and unauthorized employee workstation appliances and equipment left on (e.g., task lights, computers, monitors).
   iii. Ambient lighting systems left on or HVAC equipment running.
   iv. Functionality of lighting controls.
   v. Other resource conservation issues and opportunities (e.g., waste/recycling, water).
   vi. Estimates of the amount of energy “wasted” based on the findings.

B. A Facility Manager, designee, or members of a green/sustainability team (where a team exists) may assist in walk-throughs. Walk-throughs can be conducted during Normal Operations hours or at night depending on agency/occupant needs.

C. Agencies may ask employees to remove unauthorized items and may charge agency tenants for excessive amounts of energy-consuming equipment that remains on after Normal Operations.

D. Agencies are encouraged to retro-commission state-owned buildings on a regular schedule and leverage available technical and financial assistance from ODOE, Energy Trust of Oregon and local utilities.

2. Indoor water use

a. Agencies that own or lease buildings will use water efficiently and conserve water.

A. Fully conform to local water system requests to conserve water. In drought or other water emergency, state-owned facilities and leased sites should seek ways to demonstrate leadership in water conservation practices.

B. Deploy signage encouraging staff to avoid wasting water in break rooms, restrooms and other common areas.

C. Develop leak detection monitoring and reporting protocols and direct staff to immediately report water leaks.

D. Optimize cooling tower operations by optimizing cycles of concentration, managing controls, preventing loss and employing other best practices.

E. Eliminate equipment with single pass-through cooling wherever feasible.

F. Install building-level water meters where feasible to allow for the management of water use and detection of leaks.

G. Evaluate opportunities for rainwater harvesting and appropriate use of graywater.

H. When providing or replacing water-using equipment, procure certified water-efficient equipment following DAS procurement standards.

3. Waste reduction and recycling

a. Agencies will develop and implement specific waste reduction and recycling assessments, plans and goals for state-owned buildings and, where feasible, for privately leased facilities.

A. Consider ways to reduce waste before addressing recycling. Measures may include:
   i. Providing or promoting reusable dishware, beverage containers and cutlery.
   ii. Reducing paper consumption by implementing paperless procedures and processes.
   iii. Evaluating ways to reduce packaging.
   iv. Re-using items before purchasing new items and checking state surplus.

B. Promote good recycling practices such as:
   i. Inform employees about their responsibility to follow recycling rules and signage, including use of sorting stations and recycling containers where available. (Also refer to section 6, Employee engagement, for additional guidance.)
   ii. Conduct waste audits to calculate waste and recycling rates and identify opportunities to reduce waste and recycle.
   iii. Recycle all electronics (e-waste) and household hazardous waste or dispose of it in an appropriate, separate collection location.

iv. Establish procedures, mechanisms and collection systems within each building for the proper separation and disposal of recycled items, including:
    - Clearly marking recycling bins in every location where recycling is collected.
    - Locating paper recycling containers next to each central print station.

C. Monitor materials that recycling service providers collect, expanding recycling opportunities whenever possible. Where supported by recyclers, collection of recyclables should include:
    - Corrugated cardboard.
    - Newsprint, office paper and mixed paper.
    - Beverage containers.
    - Metal cans and containers.
    - Glass bottles and containers.
    - Certain plastics (check with hauler).
    - Shredded materials (e.g., paper, compact disks).
    - Toner cartridges.
    - Batteries.

D. Recycle other materials where feasible, including waste oil, plastic bags, Styrofoam blocks, and construction and demolition debris (e.g., carpet, drywall, scrap wood and metal).

E. Implement composting where feasible.

4. Custodial operations

a. In state-owned buildings, custodial operations will be conducted with efficient and sustainable practices.

A. When practical, perform custodial services during Normal Operations. Where lighting systems allow, custodial staff should work in teams, and turn off lights as they vacate a space.

B. Use the most sustainable and environmentally preferred products possible, according to mandatory statewide price agreements.

5. Laboratories and cafeterias

a. Agencies that operate laboratories will develop suitable energy and resource conservation plans and standards.
b. Agencies and contractors that operate cafeterias in state-owned or leased buildings (Operators) will conserve energy and resources.

A. Operate cafeterias only during the hours required to meet tenants' needs.

B. Turn off all equipment, machines, exhaust fans and lights when not in use. Deploy sleep modes on equipment such as walk-in coolers and occupancy sensors on vending machine lighting controls.

C. Monitor plug load capacity to ensure the space will accommodate the equipment.

D. Do not add equipment not designed for a space. Remove under-utilized equipment.

E. Prior to installing additional or replacement equipment, Operators must consult the Facility Manager and submit any requested documentation prior to installing or reconfiguring equipment.

F. All vending machines with non-perishable items must have one of the following:
   i. Built-in low power modes for lighting and refrigeration, as applicable and described in ENERGY STAR program requirements for refrigerated beverage machines.
   ii. An installed after-market occupancy sensor.

G. Minimize disposable packaging and reduce, reuse and recycle all materials to the maximum extent practicable.

H. Reduce or avoid excessive use of single-use cutlery, plates, beverage containers and packaging.

I. When providing or replacing laboratory or cafeteria equipment, Operators must procure the most efficient options practicable, following DAS procurement standards for energy and water efficient equipment.

6. Employee engagement

a. Agencies should make available materials, resources or training for employees that outline the agency's expectations for resource conservation, waste prevention and recycling. Examples include:

   A. Educate employees on use of personal appliances and plug load management, water and energy conservation, and other building conservation best practices.

   B. Publish resource conservation tips in agency or employee newsletters and other publications.

   C. Provide resource conservation information in training/orientation for new employees.

b. Agencies should:

   A. Establish and engage "green" or sustainability teams in energy and resource use tracking and implementation of conservation activities.

   B. Employ posters, stickers and reminder labels to power off computers and equipment at workstations.

   C. Pursue sustainability assessments and certifications for buildings.

   D. Conduct special campaigns or challenges to engage staff in resource conservation activities.

   E. Agency Administrators or their designees should distribute an annual email to educate all employees about the importance of minimizing energy use and conserving resources and ask employees to review relevant state policies and guidelines.

7. Documenting progress

a. To help assess efficacy of practices and aggregate projected conservation savings, DAS from time to time will request that agencies share progress, challenges and estimated savings related to this policy. Agencies should periodically document:

   A. Highlights of overall energy, waste and resource conservation initiatives.

   B. Steps taken to reduce plug loads.

   C. Audits/assessments completed.

   D. Any plans/major initiatives related to water conservation and recycling.

   E. Steps taken to educate and engage employees.

b. Agencies are encouraged to use existing documents or plans, such as sustainability plans, to document activities and savings related to this policy.