

Energy Conservation Policy

A. General

Orange County's "Environmental Responsibility in County Government" goal includes the objective: "Initiate policies and programs that conserve energy, reduce fuel/utility/resource consumption..." In support of this goal, the County has adopted this Energy Conservation Policy.

Energy cost for electricity, natural gas, propane and fuel oil for County facilities is a significant County cost. Beyond this, energy consumption has significant environmental impacts. As a result, it is both necessary and beneficial for the County to adopt a policy of energy conservation and efficiency.

Water conservation and vehicle fuel conservation will be addressed in separate policies.

B. Purpose

The purpose of this policy is to reduce the County government's energy consumption, wherever possible, and improve energy efficiency for that energy that must be used throughout Orange County government buildings, consistent with the need for safe and secure County facilities.

C. Policy Goals

The policy addresses both short and long term goals.

1. Short Term (One to Two Years)

- Establish the policy foundation of responsibilities, planning, programs, standards, performance measures and the like to manage the County government's energy use and conserve energy.
- Manage energy and other utility consumption to minimize use to the greatest extent possible while maintaining safe and acceptable work conditions.
- Achieve a reduction in average energy consumption per square foot annually.

2. Long Term (Three Years or More)

- Incorporate energy conservation and efficiency systems, techniques and design in all major renovations, system replacements and new construction.
- Support change to State utility budgeting and public utility commission policy that fosters monetary incentives to make energy conservation and efficiency efforts

economically attractive and streamline program justification requirements so that projects can be executed within a timely interval and savings quickly realized.

D. Scope

1. Facilities

This policy applies to County owned and leased buildings, whether occupied by the County, the courts or other agencies.

2. Equipment

This policy applies to County owned or leased equipment, including computer equipment.

3. Energy Sources

This policy applies to use of electricity, natural gas, propane and fuel oil.

E. Responsibilities

1. Energy Conservation Task Group

The Manager appoints an Energy Conservation Task Group that includes the:

- County Manager
- One County Commissioner
- Assistant County Managers
- Chief Information Officer
- Cooperative Extension Director
- County Engineer
- Energy Conservation Manager
- Environment and Resource Conservation Director
- Personnel Director
- Public Works Director
- Purchasing and Central Services Director
- Others as appointed by the Manager.

The Task Group provides direction, counsel and oversight as to implementation of the Energy Conservation Policy. As necessary, the Task Group addresses questions of policy interpretation and adherence.

2. Energy Conservation Manager

The Manager appoints an Energy Conservation Manager who provides leadership, analytical, monitoring, coordination and communication support to the energy

conservation initiative. Among other things, the Energy Conservation Manager:

- Coordinates development and implementation of the County's annual energy conservation action plan.
- Tracks and assesses the County's energy conservation performance and progress, including building data collection and analytical tools.
- Working through the departments involved, identifies and appoints a volunteer Building Energy Representative for each County facility.
- Conducts spot check energy audits after normal business hours to assess the County's adherence to policies and standards.

3. Building Energy Representatives

The appointed volunteer Building Energy Representatives serve as:

- A resource to building occupants about policies and responsibilities.
- "Energy conservation champions" to support awareness of energy conservation and goal achievement.
- Field representatives to the Energy Conservation Manager, observing and reporting to the Conservation Manager on building conformity during normal business hours with energy conservation standards such as those for heating and air conditioning thermostat settings.

4. Public Works Department

The Public Works Department is responsible for:

- Up fitting as authorized and maintaining County facilities in accordance with the requirements of this policy, including installation of energy conservation equipment and verification of correct equipment settings and operation.
- Identifying situations above and beyond those envisioned in this policy that may require individual analysis and action to provide a comfortable, functional work environment.

5. Department Heads

Department heads are responsible for:

- Communicating the County's energy conservation goals and policies to staff, providing guidance and promoting adherence.

- Working with the Public Works Department and Energy Conservation Manager to identify energy reduction techniques or systems that can be implemented without affecting service delivery to the department's customers as well as bringing to their attention any areas that require further action to address.

6. Employees

County employees are responsible for:

- Becoming knowledgeable about the County's energy conservation policies and initiatives and complying with these policies.
- Advising the supervisor of any circumstance that prevents adherence to the County's policies.
- Bringing forward ideas and suggestions for energy conservation and efficiency that may not have been identified to them.

F. Energy Conservation Action Plan

1. The Energy Conservation Manager, in conjunction with the Energy Task Group, Public Works Department and others involved coordinates the development of an annual "Energy Conservation Action Plan."
2. This annual plan identifies specific actions to be implemented, proposed or estimated time lines and responsibilities for implementation.
3. The action plan is submitted to the Board of County Commissioners for review and approval, in coordination with the annual budget process.
4. The action plan is reviewed and updated annually along with evaluation of the previous year's performance, during the annual budget process.

G. Reporting, Benchmarking and Performance Measurement

1. Reporting

In conjunction with the Public Works department, the Energy Conservation Manager:

- Obtains information for all billing periods for each energy utility (electricity, natural gas, fuel oil and propane gas) to provide reports on a monthly/quarterly and annual basis assessing progress, by building and/or department where feasible as well as for the County as a whole, in reducing energy demand. This includes analysis of the information and assessment of trends.

- Presents reports to department heads and the County Manager to aid in determining if conservation efforts are meeting goals or additional efforts are required.
- Presents reports to the Board of County Commissioners to advise them of progress in conserving energy.

2. Benchmarking/Performance Measurement

The Energy Conservation Manager uses reporting information to benchmark and measure performance:

- From year-to-year (aggregate and by individual building) adjusted for heat and cooling degree days, humidity levels, and the like in keeping with accepted industry practices, and
- Compared to results for organizations located in similar geographic areas.

H. Energy Use Standards

1. General

The intent of the energy conservation policy and program is to achieve reductions in energy consumption while maintaining reasonable comfort levels for building occupants.

Initial temperature set points were based upon ASHRAE comfort chart for 50 percent relative humidity, and employees at light work.

2. Heating and Air Conditioning Standards

Except as otherwise noted, temperature set points are based on the standards (Attachment) of the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) and are as follows:

Cooling Season Set Points	75° F – 78° F
Heating Season Set Points	68° F – 72° F

Occupied air conditioning temperature settings are not set below 75 degrees and heating settings are not set above 72 degree, except for operations which require other settings based on function such as Health Department examination rooms, medical laboratories, computer equipment rooms, library stacks, recreation rooms, animal quarters or the like.

3. Use of Windows

Windows are to be kept closed, unless specifically authorized such as when the HVAC system is disengaged, because open windows throw the HVAC system off balance, and interfere with providing uniform heating or cooling in large buildings.

4. Auxiliary Heating and Cooling Sources

Personal portable space heaters are not allowed because of their excessive energy consumption, fire code and safety issues. If a room is not consistently within the heating/air conditioning set-point range, Public Works should be notified so that the problem can be addressed. If building conditions are such that acceptable temperatures cannot be achieved by the HVAC system, Public works takes necessary measures to resolve/rectify. If auxiliary heating or fans are required, Public Works will provide these.

5. Night, Weekend and Holiday Temperature Set-backs

The heating temperatures are set to 60 degrees for all buildings for periods when buildings are not normally occupied. The air conditioning temperatures are set to 80 degrees when buildings are not normally occupied. Normal occupancy for most buildings is from 7:30 a.m. to 6:00 p.m. This means that from 7:30 a.m., until 6:00 p.m., the temperature will be within the set points defined in Item H2 above.

Note: Exceptions to the set backs are made for those functions that must remain operational during these periods such as for night meetings, Emergency Management or the Jail. Also some buildings have unique requirements for longer start up times to reach heating or cooling set points.

If a building has complete digital control, and individual zone or office temperature control, occupants will be able to override the schedule to provide heating/cooling for their office at any time, for a limited period (typically two hour intervals).

I. Lighting Policy

1. Office and conference room lights are to be turned off whenever rooms are likely to be unoccupied for more than 15 minutes.
2. Each department or agency shall assign an employee to turn off common area lighting other than corridor lights at the end of the business day. Lights are to be turned off even if it is anticipated that custodial staff will soon be in the area.
3. Custodial staff are responsible for turning lights on as needed basis while working; that is, turning on lights only while an office or room is being cleaned, and turning lights off as soon as cleaning has been completed. Custodial staff turns off corridor and related lighting prior to leaving the building at the completion of cleaning.

4. Parking lot lights and streetlights located near buildings are typically owned by power companies such as Duke Power and are controlled by photocells or timers. Costs for this lighting are on a flat rate basis, and turning them off does not result in cost savings regardless of usage.
5. Athletic Field lights are to be operated only as needed. They should not be in operation during daylight hours. Lights generally will not be operated on weekends, except for special events.

J. Refrigerators, Microwaves, and Similar Devices

As a longer-term goal, the County will assess the use of refrigerators, microwaves and similar devices and possible replacement of less energy efficient equipment with more energy efficient equipment and approaches.

K. Computer Equipment

The Chief Information Officer assesses energy consumption of personal computers, printers and related devices and recommends to the County Manager guidelines for turning on or off and setting the "sleep" modes that reflect the technology in place. The County Manager issues guidelines for such equipment that apply to all County departments. Later as experience is gained this will be issued as policy.

L. Programs

To support the Energy Conservation Policy and initiative, the County implements a variety of programs including:

1. Employee Awareness

The County conducts communications programs to promote employee awareness of the need for energy conservation. This includes such activities as distribution of this Energy Conservation Policy, reminders via pamphlets, e-mails, Orange Alive, coverage in new employee orientation, and opportunities at employee events to reinforce the conservation ethic.

2. Incentives

Incentive programs will be developed to improve compliance and acceptance by County employees and other building occupants. These may include building versus building contests, department versus department contests, financial incentives, preferred parking and the like.

3. Preventive Maintenance

Preventive Maintenance procedures are used to obtain optimal energy-efficient operation of equipment.

4. Repairs

Repairs/replacement of equipment take into consideration the most cost effective solution over the life of the repair/equipment. Considerations shall include future maintainability, improved operation, improvements to energy efficiency, requirement for additional or reduced Preventive Maintenance, and the like.

5. Energy Efficiency Retrofits

The County bases energy efficiency retrofitting project priorities upon the availability of capital improvements plan funds and maintenance needs such as the condition of the equipment. The County develops and maintains a priority list of retrofit needs.

6. Renovations

Renovations to County facilities, whether major or minor, are to meet standards for energy-efficient equipment and design.

7. New Construction

New construction is required to follow energy efficient standards as set forth by the Guidelines for Sustainable Public Facility Design and Development. Life-cycle cost analyses are required, and energy efficient designs, including Passive and Active Solar systems, natural lighting, cogeneration and thermal storage, are considered as feasible.

8. Equipment Selection

The selection of all equipment procured for Orange County, to include computer equipment, printers, copy machines, equipment, refrigerators, and so forth is to consider carefully the anticipated energy use and available energy saving devices.

9. Automation

With the direction and leadership of the Energy Task Group, each County department pursues automation solutions, as feasible, to replace travel-intensive, paper-intensive or other energy consuming activities.

From American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standards

1. Thermal comfort is that condition of mind that expresses satisfaction with the thermal environment. There are large variations, both physiologically and psychologically, from person to person, which makes it difficult to satisfy everybody in a space. The environmental conditions required for comfort are not the same for everyone. However, extensive laboratory and field data have been collected that provide the necessary statistical data to define conditions that a specified percentage of occupants will find thermally comfortable.
<http://industries.bnet.com/whitepaper.aspx?scname=Plumbing+and+HVAC+Equipment&docid=114190>
2. This standard specifies the combinations of indoor space environment and personal factors that will produce thermal environmental conditions acceptable to 80% or more of the occupants within a space. The environmental factors addressed are temperature, thermal radiation, humidity, and air speed; the personal factors are those of activity and clothing.
<http://www.constructionbook.com/xq/ASP/ProductID.3695/id.402/subID.636/qx/default2.htm>
3. ASHRAE Standard 55-1992 Thermal Environmental Conditions for Human Occupancy, recommends the following acceptable temperature ranges at relative humidity (RH) of 50% and air speed less than 0.15 m/sec. (30 fpm).

Acceptable Temperatures		
Season	Clothing	Temperature
Winter	Heavy slacks, long sleeve shirt and/or sweater	20-23.5°C (68-75°F)
Summer	Light slacks and short sleeve shirt	23-26°C (73-79°F)

http://www.ccohs.ca/oshanswers/phys_agents/hot_cold.html