

Town of Leesburg Strategic Energy Conservation Plan
To Meet the Town's Ten-Percent Energy Reduction Goal



May 26, 2009 **DRAFT**

Leesburg 
discover the charm.

Acknowledgments

This document could not have been completed without the voluntary contributions of the entire Leesburg Energy Efficiency Program (LEEP) Committee:

Irish Grandfield, Planning and Zoning, Chair
Bob Lilly, Public Works, Vice Chair
Kathy Elgin, Procurement
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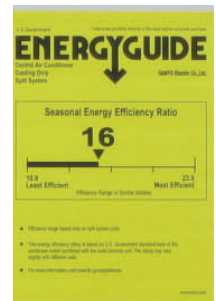
Executive Summary

Currently the Town of Leesburg, Virginia is undertaking a number of interrelated energy conservation initiatives. These include contracting for technical energy audits of key Town facilities, development of an Energy Conservation Strategy including provisions to achieve a ten-percent energy reduction in Town facilities by 2012, and completion of an Energy Efficiency Conservation Block Grant (EECBG) application for dedicated federal stimulus funds. The Energy Conservation Strategy will provide the blueprint for the Town to follow to meet its goals. Part one of the strategy is this Energy Conservation Strategy to achieve the Town's ten-percent energy reduction goal. Part two will be an implementation plan that will be completed following technical audits of Town facilities later this summer.

This strategic plan describes the energy accounting methodology, documents energy conservation measures already in place, and outlines the methods for conserving and improving efficiency in the use of energy resources to meet the Town's ten-percent reduction goal by the year 2012 as measured from calendar year 2007. The plan outlines opportunities and challenges and should be updated yearly to reflect implemented energy conservation measures and assess their impact toward achieving the reduction goal.

Background and Purpose

Energy conservation has dual benefits of controlling energy costs and reducing the impact of our "carbon footprint" on the global climate. Local jurisdictions across the region and the nation are adopting energy and/or emissions reduction goals to save money and reduce pollution associated with energy production. Examples in Virginia include Albemarle County, VA which has set a goal to reduce overall energy consumption by 30%, Arlington County, VA who has set a goal of reducing greenhouse gas emission by 10%, and most recently, Loudoun County who adopted a 15% energy reduction goal in 2009.



Energy Efficiency Rating



Compact Fluorescent Light Bulbs

Interest in energy conservation in Leesburg has been on the rise over the past several years due largely to a growing awareness of the contribution of energy production to global climate change and to the escalating costs associated with energy production. In 2005, Town Council adopted an updated Town Plan that included a policy for the Town to pursue "energy saving and air quality benefits" by encouraging appropriate measures in site design, building, and land use planning practices (Leesburg Town Plan, Natural Resource Objective 6, p. 18).

In 2007, the Town's Environmental Advisory Commission (EAC) discussed the Cool Cities movement to help curb global warming. At that time, the EAC did not recommend to Town



*Electrical Transformers at
Water Pollution Control Facility*

Council enrollment in Cool Cities but did ask staff how the Town government could pursue actions to conserve energy. As a result of that discussion, Irish Grandfield, the Town's Environmental Planner organized a group of key staff to work on energy conservation in the Town. The group adopted the name Leesburg Energy Efficiency Program ("LEEP") Committee and for the past two years has led efforts in employee education and awareness, energy audits, and in information sharing among building managers. Over the same time period, many Town Departments took their own initiative to implement measures at their facilities to reduce energy use.

In October 2008, at the recommendation of the Town's Environmental Advisory Commission, Leesburg's Town Council adopted a resolution for reducing Town government energy use by ten percent by the year 2012 as measured from January 1, 2007 (see Appendix 1). Council also directed staff to prepare a plan to achieve the goal and report back by June, 2009. This plan provides an overall strategy but does not identify the specific maintenance or capital projects to reduce energy consumption. The plan describes the energy accounting methodology, documents energy conservation measures already in place, and outlines the methods for conserving and improving efficiency in energy use to meet the ten-percent reduction goal. Specific energy conservation measures will be identified this summer as part of a series of technical energy audits of key Town facilities.



Light Switch at Town Hall

Because there is no single staff position responsible to oversee and coordinate energy use in the Town, the Environmental Planner had the responsibility for development of this plan. While he took the lead on writing the plan, staff from a variety of staff from several departments provided major contributions to the plan's development. See the acknowledgements section of this report for a list of contributing staff.

Energy Accounting



*Motion Sensor Light
Switch at WPCF*

Overview

The Town will track electricity, natural gas, and motor fuel use to assess progress toward meeting the ten-percent energy reduction goal. In February 2009, LEEP began collecting electricity and natural gas energy use information from January 2007 to the present for twelve primary facilities (see table below). The data is being input into EPA's Portfolio Manager software for tracking energy use. The Airport Director is maintaining the Portfolio Manager database and departments are required to scan electric and natural gas utility bills when they are received and forward them to the Airport Director so that the database is kept current.

Table 1. Primary Town Facilities

| Facility | Year Built | Location | SF |
|---|-------------------|---------------------------------------|---------------------------|
| Airport Terminal | 2004 | 1001 Sycolin Rd. | 19,000 |
| Balch Library | 1922 | 208 W. Market St. | 7,480 |
| Ida Lee Farm House | 1890* | 50 Ida Lee Park Dr. | 1,700 |
| Ida Lee Rec Center | 1994 | Ida Lee Park | 71,000 |
| Izaak Walton Park | 1950* | Off Davis Dr. near S. King St. | 700 |
| Public Safety Center | 2001* | 65 Plaza St. | 24,769 |
| Public Works | 1987* | 1393 E. Market St | 16,728 (bldg only) |
| Tennis Bubble | 2007 | Ida Lee Park | 30,000 |
| Town Hall | 1991 | 25 W. Market St. | 35,546 (bldg only) |
| Utilities Maintenance Building | 2008 | E. Market St | 20,800 |
| Water Pollution Control Facility | 1969 | 1391 E. Market St. | 58,500 |
| Water Treatment Plant | 1980 | 42324 Edwards Ferry Rd. | 38,700 |

*estimated construction date

Electrical use and natural gas will be tracked yearly for each facility and compared against the previous year’s energy use. Energy use accounting must factor in yearly weather variations as well as changes in the size of a facility. Portfolio Manager automatically adjusts energy use figures year to year to normalize for weather differences. Town staff will update the size and use of the facility as changes occur. Energy use totals will be reported on a square foot basis to account for growth of a facility so that a meaningful comparison can be made between the 2007 baseline year and subsequent years.

For each of the twelve primary Town facilities, annual energy use is based on twelve month’s bills. Because the monthly utility bills vary in start date and the number of days (or “billing cycle”), the first and last bills of the year fall within two different calendar years. For our energy accounting purposes, the end date of the bill is used to determine which calendar year the bill will be recorded in (i.e. a bill for December 15, 2006 – January 18, 2007 bill will be recorded as part of calendar year 2007 while a December 16, 2007 – January 20, 2008 bill would be recorded as part of calendar year 2008).



Baseline Energy Use

As of the date of this writing, staff does not have a complete assessment of energy use in the baseline year of 2007. Prior to reporting the baseline energy use, the Town needs to fill a few holes in data and confirm with EPA some of the parameters used in the Portfolio Manager software. Portfolio Manager is free software and to date, staff has had difficulty getting the level of support it needs to complete the baseline assessment. If issues related to the Portfolio Manager software cannot be resolved, the Town should contract for assistance and/or purchase commercially available energy tracking software.

Town Utility Facilities

The Water Pollution Control Facility (WPCF) and Water Treatment Plant (WTP) are the Town's two highest users of energy. Due to the unique characteristics of facility operation, the methodology for comparing energy use at these facilities is not as straightforward as in other Town buildings. Energy accounting at the utility plants needs to factor in the quantities of drinking water produced and wastewater treated since the vast majority of energy used at these facilities involves pumps and treatment processes for these purposes (as opposed to heating,



*Water Pollution Control Facility and
Utility Maintenance Building*

Water Treatment Plant

cooling, and lighting in other Town buildings). Energy use for drinking water production and distribution is highly dependent on seasonal irrigation use by customers, and can vary from year to year depending on precipitation. The quantity of wastewater treated also varies significantly with precipitation and with seasonal biological treatment requirements. Separate energy accounting methodology needs to be established for these facilities based on the variables that affect their respective energy uses. Staff anticipates that the Town's contractor for technical energy audits will be able to advise us on an appropriate methodology for energy tracking at the utility plants.

Measuring Annual Energy Use

For office buildings, the methodology for calculating energy use is the Energy Utilization Index (EUI). The EUI is a measure of the total energy consumed in a building per year standardized based on square footage of the heated/cooled space in the building, and is expressed in "British Thermal Units" (BTU's).

To calculate the EUI, the consumption of electricity and natural gas usage are first converted to equivalent BTU consumption via the following formulas:

ELECTRICITY Usage

$$[\text{Total KWH /yr}] \times [3,413 \text{ BTUs/KWH}] = \text{_____ BTUs / yr}$$

NATURAL GAS Usage

$$[\text{Total gal/yr}] \times [802 \text{ BTUs/CF}] = \text{_____ BTUs / yr}$$

Then BTUs/Yr is divided by the square footage of the heated/cooled space in the building to obtain the EUI. Because of the varying types of operations, we will not use the EUI as a comparison tool between facilities (such as comparing the airport terminal to the water treatment plant) but instead to see how a single facility varies from one year to the next.

Motor Fuel Use

The Fleet Maintenance Division currently handles the repairs and maintenance for most of the Town owned fleet. Most fueling for on road use is done at the Public Works Facility fuel pumps which are controlled by a system known as GASBOY. This system allows for tracking of fuel use in many ways (i.e. total fuel, total fuel by department, by vehicle, vehicle type, etc.).

The goal of achieving a 10% reduction in fuel use will be met by using many strategies including matching vehicles to use to get the most efficient vehicle for the job, tracking use and mileage, implementing policies, i.e. Anti idling, combining trips, better route planning, efficient vehicle purchases and others.

The Fleet Maintenance Division will work with the other departments to assure that vehicles are being properly utilized. Both underutilization and over utilization are to be avoided. There are opportunities for leasing of vehicles for special uses, travel, and short term events like weather emergencies that need to be more closely analyzed.

The Fleet Maintenance Division will begin giving the various departments quarterly updates on the fuel uses of their department by total, by vehicle with MPG data included and total miles per vehicle. Fuel use for calendar years 2007 and 2008 is attached in Appendix 2.



Town Motor Fuel Pumps

The goal of a 10% reduction in fuel use will need to take into account that certain departments may actually see an increase in fuel use over the five year period as demand for services increases with the size of the Town population. There can be adjustments made that will allow for such increases while still focusing on the goal of a 10% total fuel use reduction for motor fuels.

Facilities and Programs Not Included

For ease of accounting purposes, the energy accounting program excludes minor facilities such as pump stations and other small storage buildings that are not significant energy users. In addition, street lighting and traffic lights are not included in the energy accounting exercise due to nuances with the way energy use is recorded and billed. Regardless of these energy uses not being included in the accounting, the Town has implemented many measures to reduce energy use in these facilities and programs and will continue to do so. For example, the Town has installed LED lighting on traffic signals over the last several years and consistently monitors electricity use looking for ways to further conserve energy.



Electric Transformers and Street Lamp

Conservation Measures Implemented to Date

LEEP

The Leesburg Energy Efficiency Program (LEEP) Committee is a volunteer group of Town employees who united in May 2007 for the purpose of sharing and distributing energy efficiency information, promoting energy efficiency measures, and developing recommendations of Town energy policy and actions. Its focus is on Town owned buildings and facilities. LEEP includes staff with building management, energy use, procurement, and environmental management expertise from a wide range of Departments including Planning and Zoning, Engineering and Public Works, Parks and Recreation, Utilities, Finance, the Airport, Capital Projects, and Balch Library. Senior Environmental Planner Irish Grandfield in Planning and Zoning is the Committee Chair, Bob Lilly in the Department of Engineering and Public Works is the vice chair. Free technical support and assistance is provided from Loudoun County's Energy Manager Najib Salehi.

LEEP initiatives to date have included:

- Evaluation of energy accounting software and use of EPA's Portfolio Manager Program to track energy use.
- Employee Awareness Campaign including periodic e-mails, employee newsletter pieces, light switch stickers, "last one out" procedures.
- Securing free energy audits by Loudoun County Schools' staff for Town Hall and Balch Library resulting in changes that increased energy efficiency.
- Evaluation and adoption of a VEPGA "Municipality" contract that lowered the electrical rate that NOVEC charges the Town.
- Promotion of replacement of T-12 florescent lighting fixtures with more efficient T-8 ones.
- Evaluation of implementing a Town telecommuting policy.
- Initiation of the Energy Audit RFP in May 2009 for technical energy audits of additional Town facilities.

- Participation in Virginia Municipal League (VML) Green Government Challenge in 2008. The Town received a certificate for being a Cool City.
- Participation in the East Coast’s largest natural gas reverse auction to secure a long term affordable natural gas contract. The Town savings is estimated at \$100,000 in the extended term of the contract.

Department Initiatives

The Town has implemented several energy conservation measures through HVAC and lighting upgrades, information technology purchasing, and other various programs. The Water Pollution Control Facility and building management section of Public Works have been leaders in energy management in the Town. A partial list of these initiatives is provided in Appendix 3.



T-5 Fluorescent Lighting at WPCF

Strategic Plan

The Town’s strategy includes energy audits, development of an Energy Conservation Strategy, and completion of an Energy Efficiency Conservation Block Grant (EECBG) application for dedicated federal stimulus funds. These initiatives are all key components of the Town’s energy conservation plan. The following section describes these and other measures that the Town should take to meet its energy reduction goals and objectives.

Energy Audits

The Town has solicited “back of the envelope” energy audit proposals from Energy Services Companies (ESCOs) per the VA DGS Division of Engineering and Buildings Contract No. SRM20080328 (RFP NUMBER: 100120-FY09-01, BID DUE DATE: May 27, 2009) for four buildings (Town Hall, Balch Library, the Airport Terminal, and the WPCF). The audits will evaluate the energy conservation measures (ECM) listed below. In addition to those, other techniques may be investigated on an individual basis and implemented, if deemed cost effective by the Town and the ESCO:

- Energy management control system
- Large-scale lighting control
- Individual room lighting control (motion sensors)
- Optical reflectors for fluorescent light fixtures
- Fluorescent lamp and ballast replacement
- Incandescent to florescent lighting conversion
- kW Demand Control
- Meter consolidation (electric and/or gas)
- Power Factor correction
- Conversion to HID
- Motion sensor control
- Day lighting control
- Exit sign conversion
- Other lighting modifications
- Air conditioning unit replacement



Variable speed pumps at WPCF

- Chiller replacement
- Chiller optimization and control
- Economizer control
- Thermal storage for heating and cooling
- Environmental system control replacement
- Heating, ventilating and air conditioning system modifications
- Variable speed/frequency drives
- Air compressor replacement/ upgrade
- Fuel conversion
- Boiler/burner replacement
- Boiler heat recovery
- Boiler combustion controls
- Building envelope improvements
- Domestic hot and cold water systems
- Air management systems
- High efficiency motors
- Motor down-sizing
- Energy conservation Awareness training



Programmable Thermostats at Balch Library allow setbacks for times when the building is unoccupied

Following the “back of the envelope” audit, the Town will enter into a contract for the technical audit of up to twelve facilities. The technical audit will identify specific energy conservation measures and their payback period. The Town will then prioritize the recommended conservation measures, determine which to pursue, and outline an implementation program.

Funding

The Town can choose to fund energy conservation measures from one of several means. Some of the measures will be implemented with dedicated EECSBG funds from the federal stimulus package (the Town is designated to receive \$164,700 in EECSBG funds). Other measures may be partially financed by the savings that they will generate. A third option that may be employed is to budget for the given measure as a maintenance expense in the affected department’s yearly budget. A fourth option may be for the ESCO provider to arrange the financing. Finally, if Town Council determines to undertake a large slate of energy conservation projects, the measures could be bundled into a single capital project and funded with a bond. Once the results of the technical audits are available in the summer of 2009, staff will provide a detailed analysis of each of these funding options. The Town will need to evaluate financing options of the selected energy conservation measures and as necessary, consider them as part of the FY 2011 and FY 2012 budgets.

Centralize Energy Management

Currently, the Town has six different departments each operating their own buildings (Airport, Balch, Parks and Recreation, Police, Public Works, and Utilities). Some of these departments have different staff for different buildings so the actual number of managers responsible for facilities is greater. Coordination is needed between the various departments and facility managers in order to be successful in meeting the ten-percent energy reduction goal.



Energy Efficient Inverter added to Town Hall to cool data closet when the building is in setback mode

While LEEP has been successful in moving the Town forward on several energy conservation initiatives, it is limited by its ad-hoc voluntary status. Staff participating in this group does so on their own volition and without clear obligations to perform specific tasks. Some departments do not commit resources to the group. No one in the group has extensive energy management experience or expertise. These factors all contribute to limit the ability of the group to complete large projects such as development of this energy-conservation plan. With the adoption of the ten-percent energy reduction goal by Town in October 2008, the initiation of the federal EECBG program making available dedicated grant funds, and the energy audit RFP, the opportunities and work expectations exceed what volunteers to this group can do. It is time for the Town to formalize the energy management function with a dedicated facility/energy manager staff position and a Town Manager designated group of key staff to steer the Town's energy conservation program.

A Town-wide approach to energy management would best be accomplished through the establishment a centralized facility/energy manager position or thru assignment of the responsibility to provide oversight and ensure progress toward the goal to qualified staff. Existing staff lacks the specific skill set to perform this function. The Town should create a new position or reclassify an existing engineering, project manager, or analyst position and hire a qualified individual. The facility/energy manager position should reside in the Executive Department, Capital Projects Management, or Public Works and be responsible for providing technical assistance and guidance to facility managers within the various departments, developing and implementing an employee awareness program, pursuing grant opportunities, tracking energy use, and updating this energy management plan yearly to ensure attainment of the ten-percent energy reduction goal. Alternatively, the Town could develop a strategy to perform these functions as part of a team approach.

Town Energy Policy

The Town should formalize its expectations for energy conservation in an administrative policy proclamation by the Town Manager. The policy should address heating and cooling, lighting,

electronic equipment, structural integrity, engine idling, and internal auditing. A draft policy is provided in appendix 4.

Energy Performance Standards for Town Projects

The Town should adopt Energy Star and/or LEED green building standards for construction of new Town facilities. New facility construction need not be certified by LEED but should meet the equivalent of the LEED silver green building standard. Capital Projects Management will need to add this requirement to the scoping process for new building construction.

Evaluation and Reporting

Town Council directed staff to report annually on progress made toward meeting the goal. The strategy will be updated in fall 2009 to reflect the results of the technical energy audit. Thereafter, the plan should be evaluated yearly and modified periodically to ensure continued progress toward the ten-percent energy reduction goal. Every year during the Town budget work sessions, the Town Manager will report to Council on progress toward meeting the ten-percent energy reduction goal and outline the energy conservation measures proposed in the year's budget.



Vending Machines like these at Ida Lee can be programmed to be off when the facility is closed

Key Actions

1. Complete and submit the EECBG application by the June 25, 2009 deadline and submit a complete Energy Conservation Strategy within 120 days of June 25 consistent with the grant requirements.
2. Adopt the Town Energy Policy by July 2009.
3. Hire a central facility/energy manager by September 2009 to coordinate the Town's energy conservation efforts.
4. Complete the steps to become an EPA Energy Star Partner by September 2009.
5. Dissolve LEEP and establish a committee of facility managers and other key staff overseen by the town's facility/energy manager to update this energy management plan, implement an employee awareness program, and track progress to meet the ten-percent goal by September 2009.
6. Establish the 2007 year baseline for energy use by October 2009 and maintain energy tracking data.
7. Prioritize energy conservation measures identified in the technical audit and develop a schedule for implementing the key measures by December 2009.
8. Determine financing options for implementing the immediate key energy conservation measures and if necessary, include them in the Town's FY2011 budget by December 2009.
9. Establish energy analysis requirements and standards for Town Capital Projects by December 2009.
10. Revise this plan by September 2009 based on the results of the energy audits and move forward with its implementation.
11. Adopt the LEED green building silver certification standard for Town Capital Projects by September 2009.





HVAC units at Balch Library

Appendix 1

PRESENTED October 28, 2008

RESOLUTION NO. 2008-158

ADOPTED October 28, 2008

A RESOLUTION: ADOPTING A TEN-PERCENT ENERGY REDUCTION GOAL BY 2012 FOR MUNICIPAL GOVERNMENT OF THE TOWN OF LEESBURG

WHEREAS, the Town of Leesburg, Virginia, is committed to the effective stewardship of the environment and promoting its protection to create an environmentally sustainable community where its citizens can live, work and play; and

WHEREAS, reducing energy use lowers the Town's energy costs and consumption while, at the same time, reducing pollution and our nation's dependence on foreign energy sources and finite domestic natural resources; and

WHEREAS, the burning of fossil fuels to produce energy and the release of its associated pollutants into the oceans, air, soil, and lungs jeopardizes the public's health and is believed to contribute to global warming; and

WHEREAS, the Town Plan calls for securing energy savings and air quality benefits for the Town and region; and

WHEREAS, the Town Council recognizes that "the least expensive kilowatt hour is the one we don't use" and because it is fiscally prudent to save the taxpayers of Leesburg money whenever possible; and

WHEREAS, many local jurisdictions across the United States have adopted energy saving goals; and

WHEREAS, the Environmental Advisory Commission endorses setting a energy reduction goal for the Town; and

WHEREAS, through the efforts of the Leesburg Energy Efficiency Program (LEEP) Committee, town staff have led an internal effort to improve energy efficiency within town operations over the past year; and

WHEREAS, reducing energy consumption in a cost-effective manner by 10% over the next 4 years is an achievable goal that will result in environmental and economic benefits, improved level of services, and a lessening of the demand for new electrical generation and transmission facilities.

THEREFORE RESOLVED by the Council of the Town of Leesburg in Virginia as follows:

SECTION I. The Town Council hereby sets a goal of 10% reduction in town government operations energy use by June 30, 2012 as measured from July 1, 2007; and

SECTION II. That Town Council directs staff to explore available technologies for energy efficiency and renewable energy use in municipal operations and to prepare an implementation plan by the end of the FY-2009 to reach the goal of 10% energy reduction by June 30, 2012.

SECTION III. That Town Council directs staff to report annually on progress made toward meeting the goal.

PASSED this 28th day of October, 2008.

Kristen C. Umstatt, Mayor
Town of Leesburg

ATTEST:

Appendix 2 Motor Fuel Use

[[To Be Added]]

Appendix 3 Conservation Measures Implemented To-date

AIRPORT

- Airport has installed a doorway in the upstairs hallway to reduce unwanted heat from downstairs.

All the bulbs in the terminal are T8 florescent.

BALCH LIBRARY

- Installed programmable thermostats
- Upgraded HVAC units.
- Bi-monthly staff meetings frequently include energy conservation topics.
- Controlled access to thermostats.
- Installed light switch reminders.
- Arranged for cleaning staff to turn off lights and use “Green” cleaning products.
- Installed light sensors for exterior lights.
- Acquired recycling containers for staff at each of their desks.
- Upgraded lighting fixtures and ballasts.
- Disabled the lights in the exhibit case as they generated too much heat and weren’t needed.
- Filters in the heating/AC units are changed regularly (4 x/yr).
- Installed a curtain at base of stairwell to control air floor and reduce heating needs.

Sealed some windows/window seat to stop airflow.

PUBLIC WORKS

- Complete redo of Town Hall HVAC control system.
- Run Town Hall attic fans on thermostats instead of continuously.
- Town hall exhaust fans now on timers.
- Upgrade on doors at Town shop to eliminate wind intrusion.
- Liberty Street outside lights now on photocells.
- Stickers on switches.
- Improved staff awareness for lights on when not needed.
- Anti idle policy at Street Department for vehicles.

Greatly reduced gas heat use at Liberty Street parking area.

UTILITY MAINTENANCE DIVISION

- New building is designed with motion sensor lighting.
- The heating system is controlled via a pc.

This is the base year for this facility to access the energy demands and upon a 12 month generation of data we will be adjusting the demands.

WATER SUPPLY DIVISION

- Skylights installed at all of our new buildings to avoid light use during the day.
- We are using energy efficient fluorescent bulbs during change out.
- Eliminated individual printers at work stations.
- Boiler oil feed nozzles were changed out to obtain higher efficiency burning.

- Solar tubes were installed at the Woodlea Pump Station bathrooms in lieu of electric lights.
 - Sludge Thickening at night time and weekend operation was shutdown eliminating approximately 130 hours of mechanical operating time.
 - We lowered the new Chemical Building temperature to 45 degrees (This is a walk through area). Electrical readings reflect a drop of approximately 2100 KW per day.
 - Paxton Well is operated primarily in off peak hours.
 - Hospital Tank Pump Station operated primarily in off peak hours.
 - Changed all motors to variable speed to obtain better operating efficiency.
- Instituted efficiency program to check large pumps to ensure they are operating consistent with the manufacturer's specifications.

WATER POLLUTION CONTROL FACILITY

- Installed 4160-volt power distribution system reducing resistance losses.
- New IPS designed with 2 small pumps for low flows and 4 large pumps for normal & high flows.
- VFDs on all 6 IPS pumps (920 hp) to match pump rate to flows.
- Primary operating level lowered 1.0 feet for grit removal and wash press operation resulting in decreased electricity usage.
- Changed from ceramic to membrane diffusers to eliminate loss of efficiency from fouling.
- VFDs on Internal Recycle pumps (30 hp) to match pump rate to flows.
- "D O" set point reduced from 1.25 mg/L to 0.7 mg/L and switched blower.
- Reduced all "I R" pumps to 40 hertz.
- RAS pump primary operating level raised to reduce head & electric use.
- Manhole raised and recycle tank modified to prevent RAS overflow if pumps fail.
- Sec. blanket target raised to lower RAS pump rate.
- New IPS designed with 2 small pumps for low flows and 4 large pumps for normal & high flows.
- Power Factor Capacitors added to 7 EQ Blowers.
- Effluent pump primary operating level raised to reduce head & electric use.
- Blend Tank Mixers are now turned off when not needed.
- Reduced "W-3" target operating pressure to save electricity.
- Equipped biofilter fans with VFDs to match seasonal odor control demands.
- Changed number and speed of fans reducing electricity use.
- Skylights installed to reduce daytime lighting needs.
- Photocell activated lighting added.
- High Efficiency lighting installed in new IPS and EPS buildings.
- Lighting Turned off when buildings are unoccupied.

Appendix 4

Town of Leesburg Energy Policy May 2009 (Draft)

Purpose:

This policy is intended to support the reduction of energy consumption in Town of Leesburg facilities, sustain the Town's commitment to environmental improvement, and ensure a successful partnership with ENERGY STAR®. Guidelines are provided in this policy concerning practices aimed at lowering energy consumption, as well as effective use and procurement of energy-consuming equipment. Implementation of this policy will save the Town money and reduce environmental impacts.

Applicability:

This policy applies to the Town of Leesburg local government facilities and employees.

Authority

This policy is provided under the authority of the Town of Leesburg Executive's Office.

Scope

A. Heating, Ventilation, and Air Conditioning

1. During occupied hours, the buildings will be cooled or heated to a pre-determined temperature range based on the 2004 American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Thermal Comfort Standard (ASHRAE 55-2004):
 - Heating Season – 68° F to 75° F
 - Cooling Season – 73° F to 79° F
2. During unoccupied building hours (weekday evenings, weekends, and holidays), the temperature will be set back to the following temperatures to allow the Town to efficiently and economically conserve energy:
 - Heating Season – 63° F
 - Cooling Season – 84° F
3. Cooling and heating for scheduled meetings/events outside of routine business hours will be provided based on need and/or a scheduled request. Each Department should provide the Building supervisor with a list of individuals authorized to request off-hour/holiday heating or cooling. Building supervisor must be notified with the dates, times and location of special events at least 48 hours in advance.
4. Building occupants and staff are requested to keep windows and outside doors closed while the air conditioning and heating are on.
5. Personal space heaters are prohibited. These heaters use an inordinate amount of energy, can be a fire hazard, and also work against the pre-settings of the thermostat. Employees are encouraged to dress for their personal thermal comfort. Exceptions may be granted for employees with a medical condition or some extenuating circumstance.
6. Timers will be installed on hot water heaters to ensure they are turned off when not in use. Heat traps and insulation may be installed on hot water heaters, as feasible, in order to conserve energy.

B. Lighting

1. Lights are to be turned off in unused areas, with the exception of emergency lighting.
 - When an employee leaves his/her office, he/she should turn all lights off.
 - Custodial staff will turn off lights in the building after cleaning is completed each afternoon/evening.
2. Compact fluorescent bulbs (CFLs) are to be used in desk lamps, in place of halogen or Incandescent bulbs.
3. Occupancy sensors are to be installed where logistically feasible, and shall be specified in all new construction and renovation projects.
4. All renovation and construction projects that involve lighting must ensure that light levels and equipment types meet certain industry standards for energy efficiency. (e.g. T-8 bulbs and electronic ballasts or better should be used)

C. Electronic Equipment

1. Computers, printers, and copiers shall be turned off at the end of each work day. It is acceptable to leave fax machines on if a fax is expected overnight, but otherwise, fax machines should be turned off as well.
2. During work hours, all capable PCs should be programmed for the highest energy saving mode appropriate for the particular PCs using the *power options* feature.

D. Procurement

1. To the extent legally permissible, product specifications and/or evaluation criteria will include and/or give points for the ENERGY STAR® or any other environmentally recognized label (e.g. appliances, electronic equipment, roofing, etc.)

E. Building Envelope

1. Window, door, roofing and other insulation materials will be periodically inspected for efficiency (e.g. air-tightness, etc.) by the General Services Department (or certified contractor) in order to evaluate any need for replacement or updating.

F. Periodic Internal Audits

1. To ensure this policy is successfully implemented, internal audits will be conducted periodically by the Town's Energy Manager, or designee.
2. Audits will cover all sections of this procedure, and all town facilities.
3. Audit results will be documented and retained by the Energy Manager.
4. Audit findings will be addressed by the Energy Manager.

G. Idling Policy

Town vehicles will not be stationary with the engine operating for more than two (2) minutes unless it is essential for performance of work. When engines must be left operating, for any reason, the operator will remain with the unit. Operational exceptions are granted for emergency vehicles, vehicles that have temperature sensitive equipment, heavy duty diesel powered motor vehicles during a necessary start up period, and vehicles that are required to idle to operate auxiliary equipment.



For more information, contact:

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