

DEP Energy Conservation Plan – Reducing Costs and Our Impact on the Environment

In our continuing efforts to reduce costs and lessen our impact on the environment, the Department will take specific, measurable actions to reduce our energy usage, make a stronger commitment to “reduce, reuse and recycle”, modify the use of state cars and more at 79 Elm Street and field offices. By conserving energy and resources, we will not only save the State money, but we will “practice what we preach” and be a model for other State Agencies.

This Plan outlines where opportunities exist to operate more efficiently in six major areas: Transportation, Building Mechanical Systems, Primary Office, Field Offices, Recycling and Solid Waste Management, and Environmentally Preferable Purchases. The Plan will evolve as we discover more areas for improvement. Outlined below are the six major areas including a policy statement and suggested actions for meeting goals in each of these areas.

How will we know if we are successful in our efforts? First, we are in the process of getting baseline data of all systems we want to measure (e.g. electricity used, paper recycled, etc.) and continue to monitor them. One challenge we face is that many state buildings are leased from the Department of Public Works and the day-to-day operations of the building are under someone else’s purview. The specific information we need to measure our success is not now in a form that we can easily access. So an important part of this effort is going to be compiling, analyzing and reporting on the data from the systems we have initially targeted and setting our goals. For example, a goal is to reduce our electricity usage by 10% by November 2009. This will require getting electricity records for our separate buildings for at least the previous year and implementing ways to conserve, such as more efficient lighting and behavior changes like turning off our computers when we leave at the end of the day.

We plan on keeping you informed on our accomplishments through InSite, displays in the lobby and communications from the Commissioner. The success of this Plan depends on the creative thinking and cooperation of all DEP staff.

State employees can also submit their ideas for saving money to the Governor’s Innovation awards at www.ct.gov/governorrell/cwp/view.asp?a=1809&Q=419756

Transportation

POLICY STATEMENT: Minimize expenditures for transportation by 10% through more efficient use of existing resources.

DEP leases around 290 vehicles from DAS and owns approximately 370 vehicles. Each vehicle costs between \$350 and \$550 per month (totaling \$140,000/month and \$1.7 million/year).

Reorganize Access to Efficient Vehicles

- Reduce the number of light duty vehicles leased by at least 10% agency-wide
- Identify and eliminate the individual assignment of underutilized vehicles
- Establish vehicle pools at the main and district offices for general use
- Field staff should have access to the most fuel efficient vehicles. If someone at a field office needs a large vehicle a few times in a year, look to create options where a pool of oversized vehicles is available at DEP and other state facilities that can be borrowed and used only when needed by any state agency.
- Enterprise Rent-a-Cars have been eliminated (\$12,000 annual savings)
- Garage leased vehicles in locations close to work stations to minimize gas utilization.

Work with DAS to downsize vehicles, purchase only most fuel efficient and hybrid vehicles, and introduce other options

- DAS orders vehicles used by DEP field staff. Vehicles are kept for six years per guidelines established by OPM. In 2009 and 2010, DEP will be replacing 35 cars each year; DAS will provide recommendations for more efficient replacements (i.e., replace 9 Expeditions with 9 Escape hybrids, replace 5 Crown Victorias with 5 Prius hybrids), and DEP's Agency Transportation Administrator should make every effort to replace with the more efficient vehicle. CGS 4a-67d, states that the fleet average should be at least 40 mpg, but perhaps this should be re-evaluated and increased. Hybrids vehicles should make up a good portion of what will be ordered. On the SUV side there still aren't many options beyond the Ford Escape Hybrid and 2009 production is already fully committed.
- Evaluate and minimize the need for loaner vehicles, e.g., fully retrofitted emergency vehicles that sit idle until they are needed as temporary replacements.

Provide staff with alternatives to fossil fuel vehicles, traveling alone, and the need to travel

- Replace seasonal park vehicles that are used for in-park commuting with golf carts where appropriate.
- Purchase bicycles and helmets that can be used by seasonal park workers instead of trucks and cars and for office staff to use to travel to nearby meetings where appropriate.
- Encourage DEP staff to use public transportation when possible for traveling to meetings and conferences. Routes and schedules are easily found on www.ctrides.com
- Encourage teleconferencing to reduce trips to Hartford, Division offices, and other meetings.
- Utilize carpooling when multiple DEP staff are attending the same meeting or just going to the same town for different meetings. To facilitate this, a calendar on InSite could be developed. A list of Connecticut's Park and Ride lots can be found at www.ct.gov/dot/ search for Park and

Ride. NuRide is a ride matching organization supported by the CT DOT that might also be utilized.

Re-evaluate use of state cars for commuting

- Identify and eliminate the use of state leased vehicles for commuting back and forth to work – and monitor usage on an on-going basis.
- DEP field staff with cars assigned to them should map out the most efficient routes to the sites they visit, and try to combine trips whenever possible.

Stress the importance of proper vehicle maintenance for state cars and renewable fuels

- Make sure a system is in place so that cars assigned to field staff follow vehicle maintenance schedules to have tire pressure checked weekly.
- Use B-20 for vehicles and equipment that would otherwise use standard diesel fuel.

Discourage idling of all vehicles driven by DEP staff at all times

- Drivers should be informed that when the vehicle is not in motion, it should be turned off. A sticker can be placed in all vehicles assigned to DEP as a reminder.

Building Mechanical Systems

POLICY STATEMENT: Incorporate energy upgrades, where feasible, throughout DEP facilities.

Follow new state regulations for green building design and construction.

- The energy bill passed in 2007 requires that State-funded projects including public K-12 schools (over \$5 million for new construction or \$2 million for renovation) follow the regulations that require buildings to operate similarly to a building certified at the LEED silver level. The regulations are currently in review. For more information on LEED, go to www.USGBC.org

Evaluate solar panels for the roof at 79 Elm Street. DEP staff have requested that the Department look into the potential of installing solar panels at 79 Elm Street. An on-site clean energy installation would show DEP leading by example, reduce our carbon footprint, and perhaps save money on energy bills. A feasibility study on renewable energy for DEP headquarters was done in 2001, but technology, rebates, and DEP's energy situation have all changed since then. DEP will talk with the CT Clean Energy Fund and solar installers to determine the current feasibility of installing solar energy at 79 Elm Street.

Use energy misers for computers, printers, copiers and vending machines.

Evaluate Energy Management System at 79 Elm to ensure programming that optimize energy efficiency and worker comfort. Train building operators in correct use of EMS.

Conduct a thorough evaluation of 79 Elm Street for over/under lighting.

- Consider using partial power more often, not just on high electric demand days.

The following items are included in a new DPW contract to upgrade building systems at 79 Elm Street in Hartford (more details listed in factsheet on energy page):

Incorporate energy efficient motors and VFDs.

- The DEP 79 Elm Street headquarters will have premium-efficiency motors and variable frequency drives (VFDs) on hot water pumps installed under a current contract managed by the Ct Department of Public Works.

Install Occupancy Sensor Lighting Controls in all areas where occupancy patterns are considered sporadic.

Install Super T8 Lighting Systems.

- Using less wattage, these systems produce more light than standard T8 lamps. They have reduced-power electronic ballasts for maximum savings. They are programmed-start/rapid-start which optimizes lamp life in situations where they are switched on/off frequently. For entire building, savings are expected to be around \$30,000/year and have an 8+ year payback.

Replace metal halide fixtures with compact fluorescent lighting in the historic sections of the third and fifth floors.

- There are energy efficient replacements that provide savings over current long warm-up time required for these fixtures. Estimated cost savings are \$3,700/year with a 5+ year payback.

Primary Offices

POLICY STATEMENT: Make energy conservation practices “regular life” at the DEP.

DEP staff can individually take steps to save energy and play a significant role in reducing usage.

Education

Develop an employee education campaign / training session so that staff is aware of DEP’s energy consumption, reduction goals, and energy savings associated with different conservation efforts. A “Turn It Off” campaign or something similar could be helpful. Utilize EPA’s new Energy Star at Work Online Tool Helps Employees at <http://www.energystar.gov/work>. The Governor’s One Thing campaign can also be used.

General

- Encourage staff to turn off all computers, monitors, cubicle lighting, coffee pots, etc. at the end of the day or if they will not be used for a few hours. Use signs, posters or other ways (e-mail or voice mail messages) to remind staff.
- Eliminate use of personal space heaters, fans, lighting (unless using CFLs), hot water heaters (we have this feature with the water dispensers and we have microwaves in lounges), and put out a friendly memo from Commissioner telling employees why they should not use these.
- Energy saving features should be checked on a regular basis to be certain they are still in place and operating as intended. A DEP staff member should be assigned to this.
- Utilize LEAN strategies and reduce the amount of paper, photocopying, printing and faxing.
- Share printers whenever possible and reduce the purchase of new printers.

Office Equipment

- If possible, install timing devices on shared equipment, such as printers and copiers to power down machines during times of low use. Assign staff to be in charge of turning off shared equipment at the end of the day.
- When purchasing or leasing equipment specify EnergyStar.
- Printers, computers, copier, and all other equipment should be set to utilize power saving features.
- Equipment should be checked periodically (monthly) to make sure that power-saving features are still working.
- All the new personal computers (PC's) put in service during our recent refresh are liquid crystal display (LCD) Monitors (between 800-900 units). The LCD monitors are 35 – 70 % more energy efficient than the older CRT monitors. We do have some older CRT's (most of them in the server room that are turned off daily) but possibly 80 or so are still in service in Hartford.

Lighting

- Install motion sensors in conference rooms, restrooms, lounges and other common spaces where possible.
- Turn off lights in unoccupied rooms.
- Use natural day lighting whenever possible instead of turning on lights.

Heating, Cooling, Hot Water

- If not already installed, purchase and install programmable thermostats
- Maintain winter temperatures at 65 degrees during work hours, 55 degrees overnight; Maintain summer temperatures at 78 degrees during work hours, 85 degrees overnight (see CGS 16a-36, 36a). Determine a mechanism to verify and enforce.
- Determine if hot water temperature can be lowered or if there are any water saving devices that can be utilized at sinks in restrooms and lounges.

Other

- Close blinds to help conserve heat in the winter and keep the building cooler in the summer. However, day lighting is also important, so blinds should be closed at the end of the day.
- Encourage employees to use the stairs rather than the elevator for short, one to three floor climbs. Posters or signs announcing the health and environmental benefits of this could be useful.
- Use telecommuting as a way to reduce employee energy consumption from office equipment, lighting, etc. (i.e., CERC and CT Clean Energy Fund).

Field Offices/Maintenance Facilities

POLICY STATEMENT: Through efficient practices, show the public that the DEP embraces energy conservation at all of its facilities.

With DEP managing over 300 parks, forests, wildlife areas and boat launches, there are numerous opportunities for conserving energy in the agency's field operations. Many of DEP's facilities are located in remote locations away from the department's headquarters in Hartford. However these facilities are often the face of DEP that the public sees. It is important that buildings at the facilities, as well as the staff's day-to-day actions (e.g., not idling vehicles), become examples of energy efficiency.

Some initiatives to reduce fuel and energy consumption include:

For Existing Buildings:

- Turn off lights in areas when not in use. (*Being implemented.*)
- Increase setting on air conditioning (78 degrees during work hours and 85 degrees for non-working hours. If room units, use only when the areas is occupied. (*Being implemented.*)
- Lower thermostat settings during heating season to 65 degrees during working hours and 55 degrees for non-working hours.
- Install programmable setback thermostats (*Installed at Thomaston Garage and Western District Headquarters.*)
- Perform energy audits on all buildings that are heated, cooled or use electricity.
- Retrofit most energy inefficient buildings first. Improvements may include replacing leaking windows and doors, replacing inefficient heating or air conditioning systems, installing lighting with T-8 bulbs, or increasing insulation. Understanding that the improvements will require additional funding, it may be possible to improve efficiency in the meantime with less costly measures, such as installing weather-stripping, retrofitting existing furnaces, and replacing incandescent bulbs with CFLs.
- Explore options for using alternative methods for heating buildings, such as wood and waste oil. (*Waste oil furnace installed at Thomaston Garage and Squaw Rock Maintenance Facilities. Wood is used to supplement use of oil at some facilities, including Western District Headquarters.*)
- Include water conservation devices on faucets to cut down on the amount of hot water used. Turn the temperature of the hot water down to 120 degrees and insulate water heater tanks.
- Plant trees to reduce the consumption of energy for heating and cooling of buildings.
- Consolidate field staff during winter months to reduce energy consumption associated with operating all facilities.

Use of Vehicles and Equipment:

- Purchase only "Energy Star" equipment, such as appliances and computers. (*See www.EnergyStar.gov*)

- Increase the number of trained Bike Patrol Officers and Seasonal Rangers to patrol on bicycles.
- Reduce the size of vehicles used and include alternatives to cars and trucks such as golf carts, Gators/Mule, Segways, etc., especially within large parks and facilities such as Hammonasett, Rocky Neck, and the fish hatcheries.
- Park heavy construction equipment such as dump trucks and tractor-trailers overnight at a secure DEP facility as close to the assigned project as possible. *(Being implemented.)*
- Combine pick-ups and deliveries to reduce the number of trips required for mail, construction materials and stocking activities. *(Being implemented for some activities. Look for other opportunities, such as consolidating deliveries for the pheasant stocking program.)*
- Have vendors deliver materials to project site rather than to central location. *(Being implemented for Quality Craft Worker initiated projects.)*
- Encourage teleconferencing so that field staff does not have to travel into Hartford or District Offices for meetings.
- Review programs for ways to cut down on site visits. *(e.g., require applicants for triploid grass carp permits to submit digital photos to help avoid multiple trips by DEP Inland Fisheries staff to the site.)*
- Reduce mowing schedules and let fields revert to natural areas. *(Being implemented at some facilities. Look for other opportunities, including adding native wildflowers and shrubs as an example to the public of natural landscaping. For organic land care standards, see www.organiclandcare.net)*

Case study: Fish Hatcheries Conservation Efforts, Summary of Potential Energy Conservation Measures For the Burlington and Quinebaug Valley Trout Hatcheries

In January 2005, Alternative Resource Management, Inc., under the State Energy Conservation Program (Project#B1-2B 176(20A & B)) for the CT Dept. of Public Works, performed an energy analysis of both hatcheries for potential conservation areas. They looked at energy sources and utilities, building envelopes, heating, ventilation and cooling systems, domestic hot water, lighting and well water systems at both hatcheries. Implementation is scheduled to begin in spring 2009.

Quinebaug Valley Trout Hatchery

Since renovations to this facility were done in 1995, 1996 and 1997, most of the energy consumers were relatively new, so few substantial energy saving measures were found. The hatchery building is also scheduled for improvements to public display areas, the auditorium and restroom, so these areas were not assessed.

Four measures were recommended that combined can save 114,487 KWh of electrical energy per year with no change in electrical demand. The estimated cost of the combined measure is \$75,042 with a simple payback period of 7.53 years. The recommended measures are:

- Replace 14 standard efficiency motors on the well pumps with high efficiency motors
- Replace 3 standard efficiency reuse pumps (used for recirculating water back to the main tank) with high efficiency motors
- Replace heating supply pumps in two buildings with variable speed drive (VSD) to allow for equal operation of both pumps
- Install motion sensors on 25 fixtures in the main office to control lights when buildings are unoccupied

Other proposed measures include migrating to liquid oxygen and installation of a 100 kW photovoltaic array.

Burlington Trout Hatchery

The Burlington Hatchery is a good candidate for energy conservation measures. For example, it uses twice as much per square-foot fuel oil consumption as compared to Quinebaug Valley hatchery. The source of the high fuel usage comes from the low water temperatures from the artesian well continuously flowing in the tanks and the building itself. The estimated cost of the combined measures is \$22,210 with a simple payback period of 8.8 years. The recommended measures are:

- Convert steam and electric heating to hot water heating system (no boiler replacement necessary)
- Replace fluorescent lighting with electronic ballast and T-8 fluorescent lamps
- Install one motion sensor in office area and staff room

Other proposed measures include installing a ground source heat pump and aerator timers.

Reduce, Reuse, Recycle and Solid Waste Management

POLICY STATEMENT: The DEP will encourage conservation of resources and saving energy through increased reuse of existing materials, recycling more and reducing the amount of trash produced.

The DEP should be a model for residents, businesses and institutions and other government agencies in practicing the 3R's - "Reduce, Reuse, Recycle" - at 79 Elm, field offices and state parks and forests. We should also support the solid waste hierarchy detailed in the [State's Solid Waste Management Plan](#) focusing on source reduction, recycling, composting and energy recovery from solid waste with disposal as the last resort.

Recycling and reusing items are both effective ways to save energy and are an important component of the [CT Climate Change Plan](#). Making new items from recycled materials saves considerable energy and reduces consumption of our natural resources. Reusing items prolongs their useful life and saves money, energy and natural resources.

Although there is room for improvement, DEP, through the work of the inter-departmental Pollution Prevention (P2) Work Group, (contact Mary Sherwin for more information) has been successful at implementing many initiatives, e.g. [recycling of all mandatory and non-mandatory items](#), and practicing reuse to decrease waste and the amount of money spent on new office supplies. In addition, DEP has been [composting food scraps at the 79 Elm St. building](#) since 1997.

Currently, in an effort to improve recycling at DEP headquarters, we are undertaking a six month [pilot program](#) to measure how much "other paper" is generated in addition to high grade white office paper. See attached report on recycling at 79 Elm Street.

DEP can lead by example by:

- Purchasing 3-part containers for each of the 14 public elevator areas of each floor, for Paper, Commingled Containers and Trash. This along with signage will communicate that DEP has an active recycling program. See example of such a receptacle: <http://www.forms-surfaces.com/products/litter/transit.htm>
- Keeping staff and the public mindful of recycling and composting through the use of signage in conference rooms, copier rooms, break rooms, and mail rooms. Use periodic e-mails for a refresher on what can be recycled and reused in the building. Similar efforts should be implemented at field offices and parks.
- Continue the efforts of the P2 Work Group to work with building management towards constant improvement and reporting the success of our recycling program. Encourage the formation of waste reduction teams in field offices and parks to do the same.
- Institutionalize reuse of office supplies by the establishment of agency reuse storage areas for bulky items such as file folders, binders.
- Encourage employees to reduce the amount of waste generated at events and trainings by bringing reusable items (cups, silverware, etc.), providing composting opportunities and having recycling containers available.

- As part of orientation, provide information to new employees about recycling requirements and compost as well as reuse opportunities.
- Reinforce the reuse and recycling message of the agency through management policy and agency directives.
- Work with DAS to negotiate vendor contracts for trash and recyclables with incentives for recycling and waste reduction.
 1. Work with DAS to review annual recycling reports for DEP and other buildings under their jurisdiction.
 2. Identify a recycling contact for each state agency, preferably in facilities management. Work with this group to improve recycling efficiency statewide.
 3. Work with DAS to also require vendors to list tonnages for various items recycled under contracts .

Environmentally Preferable Purchases

POLICY STATEMENT: Incorporate environmentally preferable purchasing practices through education and reporting.

- Work with DoIt and DAS and others as necessary to prepare a proposal for CT state agencies to join the State Electronics Challenge (SEC); consider DEP joining by the end of 2008. Require DEP and other state agencies to purchase at least 95% Electronic Product Environmental Assessment Tool (EPEAT)-registered products in all relevant electronic product categories, as the federal government has just done. At DEP request, DoIT has recently specified EPEAT-Silver level as a minimum rating for purchase of laptops in this product contract.
- Conduct an assessment of DEP and state agency green purchasing policies and practices and identify opportunities for improvement.
- Create policy statement on environmentally preferable purchasing and implement required training for all business managers and personnel involved with CORE regarding EPP.
- Require reporting of purchase of EPP products (e.g., EPEAT computers, green cleaners, recycled content paper and other products). Note that P2 has worked with DoIt to include language from the State Electronic Challenge (SEC) into bid specs for laptops. This language includes requirement for purchase of computers rated EPEAT Silver or higher and required reporting of numbers of EPEAT computers sold to state.