

Government Agencies Stop and Re-think

Government agencies have a mission to protect and serve the public, but more and more they are also on a mission to protect the environment. They are leading the way and saving taxpayer money right in their own offices.

What's Inside

Caring for the Environment
Never Gets Old 2

Fuel Cells – Instate Success
for the Future of Clean
Energy 4

Recycling Roundup —
Sustainability Works
at Home..... 6

What's New in P2? —
Aquifer Protection Municipal
Manual is Green..... 6

Ask Eartha —
Too Many Crayons! 7
Calendar..... 8

DEEP employee shows the small amount of trash she generates due to all the recycling opportunities at the office.



More than 100 Connecticut state and local government staff members attended a half-day workshop this fall hosted by the Connecticut Department of Energy and Environmental Protection (DEEP). **Going Green Makes Sen\$e** focused on environmental practices offices can undertake that are also money-savers. This event was different from a typical workshop or conference in that it was run like an “open house.” All participants were invited to come and see projects that have been implemented at DEEP’s headquarters in Hartford over the past few years with the help of its Green Team.

Continued on page 2

Government Agencies Stop and Re-think

Continued from page 1

The day began with presentations and a panel discussion about real examples of things that can be done as well as their cost savings and environmental benefits. Advice on how to carry out projects included engaging the entire office/agency, creating a formal structure or team and branding the message. Attendees then toured the building, inside and out, making about a dozen stops that included break rooms, bicycle and vanpool parking areas, the native garden and central recycling area. Along the way, they saw signs posted throughout the building that serve as friendly reminders to staff. DEEP's "Re-Think," "Re-Cycle" and "Re-Supply" signs use our original design and Green Team logo.

To make it easy for participants to make changes at their own offices, our signs can be downloaded from DEEP's website. Fact sheets, such as Starting a Green Team, Environmentally Preferable Purchasing, Reducing Energy Use, and Recycling Food Scraps at Your Office, are also available online (www.ct.gov/deep/p2).



- Saved more than \$12,000 (and 5 tons of CO²) by holding building-wide cleanouts, collecting usable office supplies and setting up a ReSupply Center where employees can "shop."
- Avoided \$6,600 in waste disposal fees by composting food waste (500 lbs/month), and separating and recycling white and other/mixed paper and several other items. Trash pick-ups were reduced from 17 to 10 per year.
- Reduced by 950,000 (and avoided 412 tons CO²) Vehicle Miles Traveled by employees commuting to work by promoting public transit and NuRide.
- Cut energy use by 20% by switching from distinct printers, scanners and fax machines to multi-function machines, using vending machine misers, purchasing only EnergyStar computers, using occupancy sensors, modifying lighting, and upgrading building mechanicals.

Caring for the Environment Never Gets Old

The Orchards at Southington is a senior citizen community that cares for the elderly. It also cares about the environment and for those efforts it was recently recognized with a GreenCircle Award from DEEP.

The more R's the better. This 90-unit community, home to independent- and assisted-living seniors, exemplifies the impact an eco-conscience staff can have. After forming a Green Team, that comprises the maintenance and housekeeping supervisors, the executive chef and other interested staff and residents, the group is coming up with new ways to do what they routinely do, only "greener." They practice the "4 Rs" – reduce, reuse, recycle, recover – and have carried out many environmentally-friendly changes throughout the complex. Their efforts go far beyond collecting required recyclables (i.e., cardboard, bottles and cans, newspapers, white paper, leaves) to include eliminating toxic chemicals, conserving water, reducing energy usage and waste, and preserving habitat. The staff and the residents actively participate and support environmentally responsible practices, with dozens of projects underway.

Continued on page 3

Continued from page 2

How low can the VOCs go? Concern over the effects of cleaning products used around residents and staff, especially those with respiratory conditions, resulted in eliminating products that contain VOCs or hazardous chemicals; only Green Seal certified and Design for the Environment (DfE) cleaners and disinfectants are now being used. Carpets are cleaned without water or shampoo, using a system called HOST® Dry Extraction Carpet Cleaning System. Most times, all that's used on table tops, floors and the grill is a solution of white vinegar and water. The paint, carpeting and vinyl flooring used in the building and residents' apartments are low/no VOC.



Staff from The Orchards receive a Green Circle Award from DEEP Commissioner Dan Esty.

Wasting H₂O is a no-no. Thousands of gallons of water are being saved annually through the use of aerators on all faucets and showerheads and replacing toilets with power-assisted flush units that reduce water usage by 0.6 gallons per flush. In the food service area, a water-restricting spray nozzle was installed that uses half the amount of water for pre-washing dishes. And the use of Ecolab's Apex® warewashing technology is saving water and energy and minimizing the impact of products on the environment with reduced packaging and transportation.

Putting trash on a reducing diet. The Orchards is also reducing the amount of solid waste it generates by buying products with less packaging and recycling everything from electronics and ink cartridges to light bulbs and batteries. All paper towel and soap dispensers throughout the building were replaced with motion sensor dispensers, a move that has cut down the waste and expense of these materials by 50%. Although the town of Southington does not collect #5 plastic yogurt containers, The Orchards created a program to collect them and one staff member has volunteered to deliver them to Whole Foods so they can be recycled through a program called **Gimmie 5**. Food scraps are collected and composted; the compost is then used on-site in the Serenity Garden and offered to local garden and civic clubs.

Not your garden-variety place. The Orchards is committed to keeping the environment beautiful for future generations and has embraced land stewardship. The Serenity Garden is a tranquil water garden retreat that consists of native plants and uses The Orchards' compost. It has been certified as a Natural Habitat for butterflies, honey bees, bumble bees and other pollinators.

Staff and residents have shown that there are many things that can be done inside and out, beginning with what gets purchased and ending with what gets thrown away. Other businesses, not just senior housing and campus settings, can implement these projects. The Orchards has made Connecticut cleaner and greener.

Additional Projects Ongoing at The Orchards:

- Using only phosphate-free, low pH laundry detergent;
- Occupancy sensors in public restrooms and laundry rooms;
- CFLs throughout, including individual apartments;
- Energy Star appliances;
- All paper products purchased have recycled content, including facial and toilet tissue, paper towels and white paper;
- Using Ecofont – a printing font that uses 20% less ink;
- Phasing out polystyrene and replacing with biodegradable containers made of sugar cane or corn starch.

Fuel Cells ~ Instate Success for the Future of Clean Energy



UTC Fuel Cell provides electricity for the Connecticut Science Center

Two Connecticut companies – FuelCell Energy and UTC Power – are world leaders in the production of power with the use of fuel cells. Both produce stationary fuel cells that provide reliable power 24 hours a day, with high efficiency and virtually no pollution. Unlike more traditional power sources that use fossil fuels less efficiently, the by-products from an operating fuel cell are heat and water with next to no pollutants and minimal carbon emissions.

With a corporate headquarters in Danbury, FuelCell Energy's markets include electric utilities, universities, municipal water treatment plants, food processors, manufacturers or any

energy user that needs a steady source of power. Its focus is on the stationary fuel cell market that requires 300 kw or more of power (much more than for your home or car). FuelCell Energy has more than 180 megawatts of power generation capacity installed or in backlog, including over 80 installations at more than 50 different locations around the world. Installations in Connecticut include a commercial bakery in Bloomfield, Central Connecticut State University, a food processor in South Windsor, a commercial customer in Hartford and a pending installation at the U.S. Navy submarine base in New London.

UTC Power is a subsidiary of Hartford-based United Technologies Corporation and has fuel cells installed at more than 300 locations worldwide. Customers include the New Haven schools, Connecticut Science Center, Whole Foods in Glastonbury, Stop & Shop in Torrington, and Coca-Cola in East Hartford. Installations are planned for spring 2012 at the University of Connecticut and at Eastern Connecticut State University. Worldwide installations include a South Korean utility, the Freedom Tower at the World Trade Center in New York, as well as customers in California and Wisconsin. UTC fuel cells are also utilized on hybrid-electric buses.

How does a fuel cell work? A fuel cell is an **electrochemical energy conversion device**. It converts the chemicals hydrogen and oxygen into water, and in the process produces electricity and heat.

A battery is an electrochemical device with which we are all familiar. A battery converts the chemicals stored inside into electricity. However a battery eventually "goes dead" and you either throw it away or recharge it.

With a fuel cell, chemicals constantly flow into the cell so it never goes dead – as long as there is a flow of chemicals into the cell from a fuel source, electricity flows out of the cell. Most fuel cells in use today use hydrogen and oxygen as the chemicals, and can last many years before they need to be serviced by the manufacturer.

Continued on page 5

Different Forms of Energy Can Be Used

Fuel cell technology is capable of running on various fuel inputs. Various fuels such as propane, coal gas, natural gas, biogas and anaerobic digester gas can be internally reformed into hydrogen required to power the fuel cells. For example, FuelCell Energy's Direct FuelCell® power plant at the Orange County Sanitation District in California converts biogas generated from the wastewater treatment process into electricity to run both the sanitation plant and the vehicle fueling station. The fuel cell generates 250 kilowatts, enough to power about 200 average-size homes and enough hydrogen to fuel some 25 vehicles daily.

Reducing Emissions from Coal

Both UTC Power and FuelCell Energy are participating in the U.S. Department of Energy-funded Solid State Energy Conversion Alliance Program (SECA). SECA's overall objective is to design a megawatt-class, low-emission fuel cell system fueled by gasified coal. Since more than 50% of the electricity generated in the U.S. is derived from coal, conversion efficiency improvements would result in significant reductions in domestic airborne pollutant emissions from coal sources (e.g., particulates, mercury, sulfur and greenhouse gases).

Cleaner Buses

In 2010 UTC Power was chosen to continue into the next phase of the Federal Transit Administration's (FTA) National Fuel Cell Bus Technology Development competitive program. After a successful demonstration of its PureMotion® fuel cell power plants for hybrid-electric transit buses – one bus has run more than 10,000 hours in public commercial service with no fuel cell component replacement, exceeding traditional diesel bus reliability – UTC Power will now develop a lower-cost version with increased power and longer life.

Buses powered by the PureMotion® system are more than two times more fuel-efficient than a diesel-powered bus and are emission-free, generating no soot or smog-forming pollutants. Compared to a diesel version, every bus equipped with a PureMotion® system reduces nitrogen oxide emissions equivalent to removing 77 cars from the road per year. Four new fuel-cell powered hybrid electric transit buses hit the road in Hartford in 2010. The new buses, part of the FTA's national Fuel Cell Bus Program, establish Hartford as a leader in adopting fuel cell technology to power transit buses. Only the Greater Oakland/San Francisco area will have a larger fuel cell bus fleet, also equipped with UTC Power fuel cell systems.

Connecticut Benefits with Progressive Energy Policies

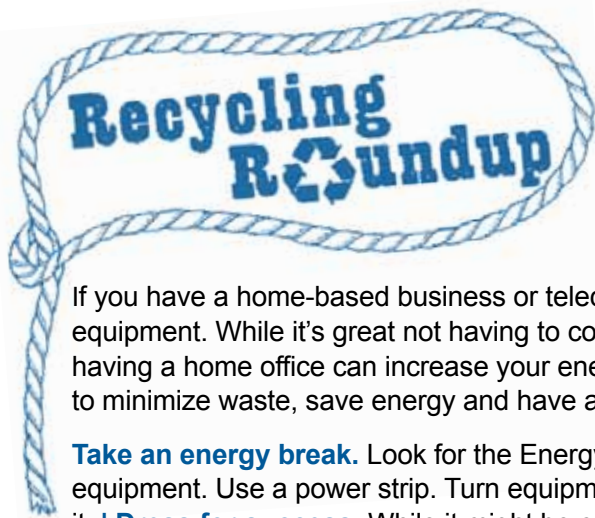
The business environment in Connecticut encourages green jobs initiatives and the state has approved several projects that will include FuelCell Energy and UTC Power fuel cells.

FuelCell Energy employs approximately 500 people in Danbury and Torrington. While many companies were downsizing in 2011, they hired 50 people – mostly for green manufacturing positions in Torrington.

UTC Power is currently staffed with about 430 people. The company continuously seeks exceptional talent to advance its technology and maintain Connecticut's leadership in the fuel cell industry. For more information on these companies, go to www.fuelcellenergy.com and www.utcpower.com.



A FuelCell Energy installation at a commercial bakery in Bloomfield.



Sustainability Works at Home

If you have a home-based business or telecommute, you probably have a space set up for your computer equipment. While it's great not having to commute in bad weather and being just a few feet from the refrigerator, having a home office can increase your energy use and generate a lot of trash. Here are some steps you can take to minimize waste, save energy and have a healthier office:

Take an energy break. Look for the Energy Star logo when purchasing equipment. Use a power strip. Turn equipment off when you're not using it. **| Dress for success.** While it might be comfy to answer e-mails in your PJs and bunny slippers, you may save on your heating and air conditioning bills if you dress for the temperature. **| Multi-task.** Select equipment that serves more than one purpose – like a printer that can fax, copy and scan. **| Watch the bottom line.** Remember to recycle toner and ink cartridges or recharge refillable ones. **| Inkcorporate.** Save money and ink by selecting smaller fonts like the Century Gothic font that uses 30% less ink. Times New Roman Calibri, Verdana, Arial and Sans Serif are also ink-miserly fonts. **| Don't just push paper.** Recycle it and reuse it. Instead of printing, go paperless by saving files to your computer or uploading them to a site like Google docs or Picasa. If you must print, use the double-sided and the draft print options. **| Go after low hanging "loot."** Buying recycled-content office products like paper, refillable pens, and pencils, is easier than ever. **| Keep down the sick days** by improving your indoor air quality. Buy **EPPEAT** certified electronics. Use plants to reduce indoor pollutants. Buy green furniture and carpeting made from environmentally friendly materials and use low VOC paint. **| Give yourself a bonus** for telecommuting. Learn about **NuRide**. **| Are you ready to retire yet?** Your computer, that is! Make sure to recycle all your electronics and cell phones.

Did you get a new computer, printer or TV recently? Enjoy those new devices even more by knowing you recycled the old ones. For information on drop-off locations for unwanted electronics (along with options for reuse), go to www.ct.gov/dep/e-waste.

What's **NEW** in P2?

Aquifer Protection Municipal Manual is Green

Many Connecticut residents rely on the State's aquifers for drinking water, whether their water comes from private wells or public water supply. To assist town officials with protecting these aquifers, DEEP recently published **Connecticut's Aquifer Protection Area Program: Municipal Manual**. It provides guidance on adopting and regulating aquifer protection areas – ensuring a plentiful supply of public drinking water for present and future generations.

The Manual itself was produced with the intention of minimizing environmental impacts and conserving natural resources. DEEP put together specifications and worked closely with Creative Services Group LLC of Madison, CT, to produce an environmentally-friendly document that results in the equivalent of more than 3,000 gallons of wastewater flow avoided or planting 60 trees. The paper used was recycled from 100% post-consumer waste, Forest Stewardship Council (FSC) certified, and was manufactured using 100% wind power. The Manual was printed locally on an Indigo digital press, which consumes 25% less energy than previous press models and reduces oil waste and consumption by 50% through a built-in recycling system. For their efforts, Creative Services Group LLC received a **DEEP GreenCircle Award**.

To learn more about aquifer protection areas, visit www.ct.gov/deep/aquiferprotection.



Ask Eartha

My kids have too many crayons! They get them as gifts, with kid's meals at restaurants and from their school at the end of year. I don't want to just throw them out. Any suggestions?

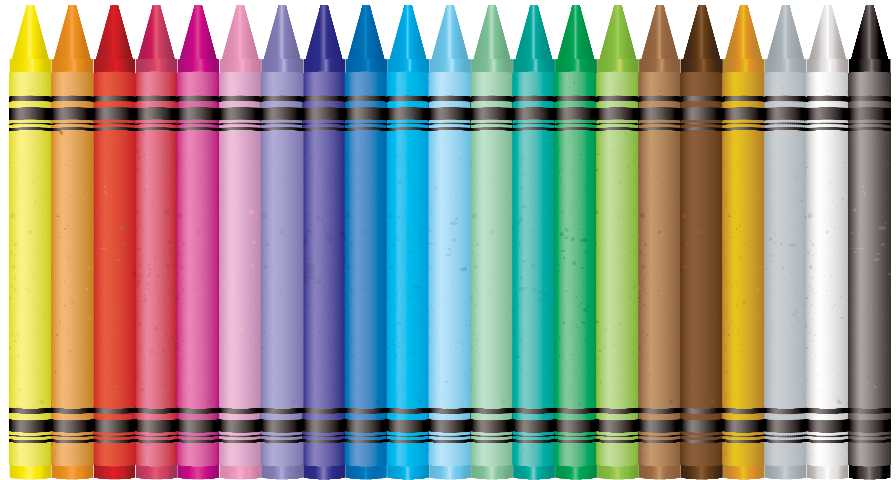
— Phoebe B., Naugatuck, CT



Ah, the smell of a new box of crayons; all of the beautiful colors, the freshly sharpened tips, the possibilities of endless hours of coloring. Crayons have come a long way since they were first introduced by Binney and Smith in 1903. They now have exotic names (mango tango), interesting smells (leather jacket), or are sparkly, or twistable.

Although many colorful drawings are created with simple crayons, the environmental impact isn't so pretty. Crayons are made of paraffin, a petroleum-based wax, pigment, and sometimes fragrance and sparkles for the fancier ones. Picture this – more than 12 million of them are made in the U.S. every day. 100 new crayons weigh about 1 pound, so that's about 60 tons per day! And that's just on the production side. Crayola estimates that the average child wears down 730 crayons by age ten. So what can an environmentally conscious parent or teacher do about this waste? A little creative recycling!

Crazy Crayons and the National Crayon Recycling Program have been recycling crayons – more than 75,000 pounds of them – for 18 years. The crayons are sorted by people with developmental



disabilities and then recycled into new crayons shaped like stars, and earth worms, sticks and the soon-to-be earthling crayon. The new crayons are packed in environmentally preferable packaging. You can purchase the crayons online from them or other sources.

So how can you get involved in minimizing this waste and keep the refrigerator art going? You can:

- Check the Crazy Crayons website http://crazycrayons.com/recycle_program.html for information about how to ship your old crayons to them.
- Purchase recycled crayons or crayons that have less impact on the planet. Soy and beeswax are good alternatives. Some brands

are Prang, Clementine, Crayon Rocks and Stockmar Beeswax Crayons.

- Feeling crafty? You can make recycled crayons or, if you are feeling very adventurous, you could create your own soybean oil ones. There are many sites on the web that provide clear instructions.
- Use those crayons at your favorite restaurants, but leave them at the table for someone else to enjoy.
- For extra credit, you can bring this program to the attention of your child's school. Have the kids collect the crayons for an Earth Day project. (It will be here sooner than you think!) Remember to tell us about it. Apply for a **GreenCircle Award!**

Eartha answers selected environmental questions. Email your question to judith.prill@ct.gov and watch future issues for your answer.

P 2 C A L E N D A R

A SELECTION OF ENVIRONMENTAL EVENTS

Winter and Spring Garden Master Classes

Various locations throughout CT

Topics such as good bug/bad bug, landscape design, eating your weeds, offered through the UConn Cooperative Extension System Master Gardener Program. More info:

www.ladybug.uconn.edu

Saturday, January 28

Getting Started in Organic Farming Conference

Connecticut Forest & Park Association, Rockfall

Are you a new farmer who's just starting out, or an established farmer who wants to go organic? This conference is sponsored by CT NOFA, UConn and RMA. More info: www.ctnofa.org

Saturday, February 4

No Child Left Inside® Winter Festival

Black Rock State Park, Watertown

Join DEEP for our free annual Winter Festival – ice fishing, fish stocking, snowshoeing, marshmallow roasting and more. More info: www.ct.gov/deep/calendar

Friday, February 10

Legal Solutions to Coastal Climate Change Adaptation

UConn School of Law, Hartford

Cutting-edge policy and legal approaches to climate change adaptation in coastal areas. Register at <http://seagrant.uconn.edu/climatelaw>

February 15, 16, 17, 21 and 22

Organic Land Care Accreditation Course

CT Agricultural Experiment Station, New Haven

Principles of organic land care design and maintenance at this 30-hour course. More info: www.organiclandcare.net

Saturday, March 3

CT NOFA's 30th Annual Winter Conference

Manchester Community College, Manchester

Conference features a wide variety of workshops and vendors. Speaker: Jeffrey M. Smith, leading spokesperson on the health dangers of Genetically Modified Organisms (GMOs). More info: www.ctnofa.org

Sunday, March 4

Maple Sugaring in Your Own Backyard

Roaring Brook Nature Center, Canton

How to make maple syrup the easy way. The entire process will be covered, from identifying the tree to tasting the final product. More info: www.roaringbrook.org

Homeowner Gardening Workshops

Common Ground Environmental Education Center, New Haven

Presented in partnership with CT NOFA. Registration: 203-888-5146 or www.ctnofa.org.

Saturday, March 10 – Starting Seedlings Workshop

Saturday, March 17 – Soils and Compost Workshop

Saturday, March 24

Water Conservation for the Entire Family

SmartLiving Center, Orange

Free family science seminar on water conservation, which includes making a project with the children. More info: 203-799-0460.

Saturday, April 14

Annual Earth Day Celebration

SmartLiving Center, Orange

Free family event has workshops for children presented by Little Scientists and for adults, vendors to answer questions on energy conservation in your home. More info: 203-799-0460.

Saturday, April 21

Geothermal for the Home

SmartLiving Center, Orange

Martin Orio from Water Energy Distributors will present a seminar on how geothermal works in your home for heating, ventilation and A/C. More info: 203-799-0460.

Saturday, April 21 – Sunday, April 22

Global Health & Innovation Conference

Yale University, New Haven

Leaders, change-makers, and participants from all fields of global health, international development, and social entrepreneurship. More info: www.uniteforsight.org/conference.

Check DEEP's Recycling Bulletin Board for upcoming webinars and meetings – www.ct.gov/recycle



STATE OF CONNECTICUT
DEPARTMENT OF ENERGY &
ENVIRONMENTAL PROTECTION
79 Elm Street
Hartford, CT 06106-5127
www.ct.gov/deep
Daniel C. Esty, Commissioner

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For a free subscription, please contact Judy Prill at 860-424-3694 or judith.prill@ct.gov. Save postage and paper by signing up to receive P2 View electronically at www.ct.gov/deep/p2view.

P2 View is published by the Connecticut Department of Energy & Environmental Protection, Office of Pollution Prevention. Editor: Judy Prill. Contributors: Connie Mendolia, Nan Peckham, Mary Sherwin, Kim Trella, Kim Czaplak.

Publication of this newsletter is funded by a grant from the U.S. EPA. The listing of websites in this publication is provided as a public service and does not constitute an endorsement by DEEP.

Please consider the environment before printing out this newsletter.