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In the Works

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In The Works is a monthly newsletter providing Environment, Health and Safety (EH&S) news and regulatory updates. The newsletter is provided by Loureiro Engineering Associates, Inc. of Plainville, Connecticut. In this Issue you will find links to the following articles:

NATIONAL

EPA Honors 2016 Energy Star Combined Heat and Power Award Winners

In early December, 2016, the U.S. Environmental Protection Agency (EPA) has recognized four facilities with the Energy Star Combined Heat and Power (CHP) Award for the superior performance of their CHP systems. High-efficiency CHP technology reduces emissions of carbon dioxide and other air pollutants by capturing the heat produced during electricity generation, which would otherwise be wasted, and using it to provide zero-emission space heating, cooling, hot water, and steam for commercial, institutional, and industrial use.

“[These] award winners demonstrate how CHP can save money and reduce pollution; a real win-win for the bottom line and the environment,” said Janet McCabe, acting assistant administrator for EPA’s Office of Air and Radiation. “Onsite power generation, like CHP, can also strengthen our nation’s electrical infrastructure.”

Three of the award-winning CHP systems are located at medical centers where energy efficiency is a key strategy to control the cost of health care. The fourth award-winning CHP system is located at an Army National Guard facility where mission support helicopters are housed and maintained.

EPA presented the awards at the New York State Energy Research and Development (NYSERDA) On-site Power Conference & Expo in the City of New York. The following facilities were recognized:

- Maine Army National Guard; Bangor, Maine
- South Oaks Hospital; Amityville, N.Y.
- University of Maryland Upper Chesapeake Medical Center; Bel Air, Md.
- University of Massachusetts Medical School, Worcester Campus; Worcester, Mass.

These CHP systems achieved operating efficiencies of 70 to 75 percent, much higher than the efficiency of separate production of electricity and thermal energy, which is typically less than 50 percent. Based on this comparison, the CHP systems avoid pollution equal to that from the

generation of electricity used by more than 3,800 homes. The four systems together save an estimated \$4 million annually.

CHP systems designed with the ability to disconnect from the grid and operate independently enable a facility's operations to continue during power blackouts and other electric grid supply failures such as during disruptive storms. For the three medical centers recognized today, CHP means that patient care can continue uninterrupted and vital assets such as medical research facilities are safeguarded.

In addition, two of the CHP systems honored today — South Oaks Hospital and Maine Army National Guard — work together with onsite solar photovoltaic systems to further reduce the facilities' electricity bills and carbon footprint.

EPA's CHP Partnership seeks to reduce the environmental impact of power generation by promoting the cost-effective use of CHP. The partnership works closely with energy users, the CHP industry, state and local governments, and other clean energy stakeholders to facilitate the development of new CHP projects.

EPA recognizes CHP systems that have demonstrated superior performance, specifically systems that use at least 10 percent less fuel than state-of-the-art separate heat and power generation; are affiliated with one or more EPA CHP Partners; have a minimum of 12 months and 5,000 hours of measured operating data beginning within 14 months prior to the date of application; and are operating within applicable permitted emission limits. The percentage fuel savings (and emissions avoided) are different for each awardee.

More information about the CHP Partnership: <http://epa.gov/chp/>

EPA Recognizes New England Institutions for Diverting Food Waste

A Vermont-based organization, the Northeast Recycling Council, was one of 13 organizations honored nationally by EPA for their work in keeping wasted food out of landfills and incinerators. The Northeast Recycling Council (NERC) won EPA's 2016 National Food Recovery Challenge Endorser Award for their food recovery outreach and technical assistance efforts to New England businesses.

EPA is also issuing "Food Recovery Challenge Regional Achievement Certificates" to 26 organizations in Conn., Mass., N.H. and Maine, and is issuing a Regional Endorser Award to Vermont Agency of Natural Resources.

"EPA is proud to acknowledge the work and commitment shown by our New England Food Recovery Challenge awardees. These organizations are showing that protecting the environment, saving money and feeding the hungry can go hand in hand," said Curt Spalding, regional administrator of EPA's New England office. "It's true year-round, but especially important to keep in mind during the holidays when family and friends gather to enjoy celebratory meals, that our food should feed people and not landfills."

EPA is working to solve the wasted food problem and provide assistance to consumers, communities, organizations and businesses through our Sustainable Management of Food initiatives. The Food Recovery Challenge for which these organizations are being recognized is

part of EPA's Sustainable Materials Management Program, which seeks to reduce the environmental impact of materials throughout its entire lifecycle. Organizations setting food waste reduction goals under the Food Recovery Challenge are helping to achieve the United States' first-ever National wasted food reduction goal of 50 percent reduction by 2030.

EPA is working with many partners to reduce wasted food and in 2015 EPA's Food Recovery Challenge participants diverted over 691,000 tons of wasted food from entering landfills or incinerators. Of this National total, almost 302,000 tons of food was donated to feed people in need. Since 2011, Food Recovery Challenge participants have reported diverting nearly 2.2 million tons of food through a variety of activities on the food recovery hierarchy.

EPA is also awarding a Regional Endorser Award to the Vermont Agency of Natural Resources for their creative partnerships and outreach to continue building awareness in Vermont residents, businesses, institutions and K-12 schools on the value of food. The collaboration between the Vermont Agency of Natural Resources and the Vermont Foodbank increased food rescue in 2016 by 40 percent while reducing the amount of wholesome food headed for disposal.

In New England, 54 Food Recovery Challenge participants diverted over 52,000 tons of food to donation and/or composting in 2015. EPA's Food Recovery Hierarchy is a tiered approach highlighting reduce wasted food first, then feed the people, feed the animals, followed by industrial uses for energy recovery and composting discouraging disposal to landfills or incinerators.

The following 26 New England organizations are receiving a "Regional Food Recovery Achievement Certificate" for their work reducing food waste:

Connecticut:

- Wesleyan University, Middletown
- Whole Foods Market: Danbury, Fairfield and Darien

Massachusetts:

- Beth Israel Deaconess Medical Center, Boston
- Big Y, headquarters in Springfield
- Boston College, Chestnut Hill
- Boston Red Sox in Boston
- Boston Medical Center in Boston
- BJs Wholesale Club, headquarters in Westborough
- Framingham State University, Framingham
- Gillette Stadium, Foxborough
- Lesley University, Cambridge
- Massachusetts Institute of Technology, Cambridge
- Massachusetts Maritime Academy, Buzzards Bay
- Northeastern University, Boston
- Salem State University, Salem
- Saunders Hotel Group: The Lenox, Boston
- Saunders Hotel Group: Comfort Inn & Suites, Revere
- University of Massachusetts, Lowell
- University of Massachusetts, Amherst

- Wellesley College, Wellesley
- Whole Foods Market: North Atlantic Region, Cambridge

Maine:

- Hannaford Supermarkets, headquarters in Scarborough
- University of Southern Maine, Portland

New Hampshire:

- Keene State College, Keene

Americans throw out more food than any other type of waste, accounting for 21 percent of the American waste stream. In 2013, 37 million tons of food waste were generated, of which only 1.84 million tons (5 percent) were recovered, resulting in 35 million tons going into the nation's landfills. Diverting food waste from landfills also reduces the generation of harmful gases that contribute to climate change. When food is disposed of in a landfill, it decomposes rapidly and become a significant source of methane, a potent greenhouse gas that contributes to climate change. Food and food scraps not fit for consumption can be used to feed the soil by composting or added to anaerobic digestion facilities, which produce biogas that can be used for energy.

According to the U.S. Department of Agriculture, 12.7 percent of American households were uncertain of having or unable to acquire enough food to meet the needs of all of their members at some time during 2015. In many cases, the food tossed into our nation's landfills is wholesome, edible food.

More information:

- EPA's Food Recovery Challenge (www.epa.gov/sustainable-management-food)

New Hampshire

Significant New Hampshire Mapping Project Completed- New Enhanced Data Layers Now Available

New airborne mapping technology known as light detection and ranging (LiDAR) has been used to accurately map land surface elevations across more than half of New Hampshire, from Massachusetts to Quebec. This major data collection project represents a partnership between the State of New Hampshire, US Geological Survey (USGS), USDA Natural Resources Conservation Service, Federal Emergency Management Agency, and the White Mountain National Forest. Data collected during fall 2015 have now been fully processed and reviewed and are ready for release to the public. The project footprint adjoins several areas of the state where LiDAR data already exist with an additional 5,200 square miles along the Connecticut River and around Lake Winnepesaukee. As a result of this project, enhanced elevation data are now available for 84 percent of the state and can be obtained from the NH GRANIT spatial data clearinghouse at <http://lidar.unh.edu>. A contract is currently in place to acquire LiDAR data for the remaining area and complete statewide coverage.

Accurate, high-resolution data on land surface elevations and contours (topography) are critical for mapping the extent of areas impacted by river flooding as well as numerous other economic development and natural resource applications. Before LiDAR, topographic maps produced decades ago by the USGS were the most commonly used source of elevation data for engineers

and other resource professionals. However, at best, the elevation contour lines on these maps have a vertical accuracy of +/- 5 feet for much of the state and +/- 20 feet in more mountainous areas, too inaccurate to support modern computerized mapping methods. LiDAR technology has been proven to provide a vertical accuracy of +/- 6 inches, and has become the widely accepted standard for acquiring elevation data over large geographic areas.

The mapping is performed using a rapidly pulsing laser that is directed toward the ground from an airplane flying 180 miles per hour in a straight line at an altitude of over a mile. As the laser sweeps back and forth along the flight path, a highly sensitive detector measures exactly how long it takes for each beam of light to travel to the ground and reflect back to the plane. One half of the round-trip travel time is then converted into a distance based on the speed of light, resulting in millions of closely spaced ground elevation data points. Data are collected along parallel, overlapping flight lines to achieve complete coverage, much like mowing the lawn. Because LiDAR can “see” the ground even when it is covered by trees, the method is ideal for mapping in heavily forested areas like much of New Hampshire. Even details as subtle as old stone walls and cellar holes can be detected.

For more information, please contact New Hampshire State Geologist Rick Chormann at 603-271-1975 or Frederick.Chormann@des.nh.gov