

## COMMISSIONER'S COLUMN

### 2016 – A historic year for climate change

The year 2016 will be remembered as historic in the context of global warming and climate change, primarily due to three significant events. First, average global temperatures in 2016 are on track to surpass all previous years as the hottest year on record – the third consecutive hottest year and with nine of the top ten hottest years occurring since 2005. Second, it appears that 2016 also will be the first year in which the atmospheric concentration of carbon dioxide (CO<sub>2</sub>), a primary greenhouse gas (GHG), will exceed 400 parts per million (ppm) during every month of the year, as measured at the Mauna Loa Observatory in Hawaii, the world's benchmark location for monitoring CO<sub>2</sub>. This is alarming news, as the more CO<sub>2</sub> in the atmosphere, the warmer Earth becomes. Fortunately, the third historic event in 2016 will combat these trends. On October 5, 2016, the Paris Agreement, an international accord that deals with global GHG emissions mitigation, achieved its threshold for implementation when 55 countries, representing over 55% of the world's GHG emissions, ratified the agreement. The agreement will go into effect November 4, 2016, meaning that for the first time since climate change was identified as a significant global threat, nations that collectively represent the majority of the world's GHG emissions, including the U.S., China, the European Union and India, have committed to combat global warming by reducing those emissions.

Climate change is real, serious and primarily caused by human actions. This fact is supported by the overwhelming majority – 99.9% – of the world's climate scientists, based on a review of over 24,000 peer-reviewed articles on global warming. New Hampshire residents are already experiencing its effects as our environment changes: more intense rainstorms that wash out roads and culverts, and damage



*Peabody River in Gorham after Tropical Storm Irene (2011)..*

*Commissioner's Column, cont. page 2*

### How much energy is your town's wastewater treatment plant using?

Why do we care how much energy is used at wastewater treatment plants (WWTPs)? Well, WWTPs are typically the highest energy user in most communities. Just 66 WWTPs in New Hampshire use over 66,103,313 kilowatt-hours (kWh) of electricity every year. For perspective, that is enough to power over 25,000 homes. This equates to a lot of greenhouse gases (over 90 million pounds of CO<sub>2</sub>) being emitted and a lot of money being spent (based on \$0.12/kWh, the annual cost is over \$7.9 million) to treat our wastewater.

Just to drive this point home, the Town of Hanover put together a graphic (figure 1, page 3) that shows the impact of WWTP energy use relative to other town buildings.

(Please note that Hanover's WWTP is one of the more energy-efficient WWTPs of its type in New Hampshire, so for a WWTP that is not operating efficiently, the energy use may be even more dramatic.)

We cannot stop treating wastewater, but there is much we can do to improve the energy efficiency of that treatment. Most of the WWTPs in New Hampshire were built 20 to 45 years ago and were sized to meet very large predicted increases in population and flow over 20 years that, for the most part, never materialized. Subsequently, these WWTPs

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## Commissioner's Column *continued from page 1*

homes, businesses and wastewater and drinking water facilities; and gradual warming that supports larger tick populations that infect people and wildlife with disease, and that negatively affects our cold-weather industries, such as skiing, snowmobiling, logging and maple-syrup production.



*Bellamy Reservoir, Madbury, NH (2016).*

CO<sub>2</sub> released by the burning of fossil fuels is the primary GHG causing our planet to warm and our local climate to change. Based on scientific analyses of ice cores, scientists have determined that concentrations of CO<sub>2</sub> remained at or below about 280 ppm for over 650,000 years. With the start of industrialized societies and the burning of fossil fuels in the 1800s, the level of CO<sub>2</sub> in the atmosphere has steadily increased, and risen very rapidly over the past 100 years. As CO<sub>2</sub> has risen, so too have worldwide average temperatures, which is exactly as expected given that CO<sub>2</sub> and other GHGs act as heat-trapping substances in the atmosphere. In September of this year – the month when the amount of CO<sub>2</sub> in the atmosphere is typically lowest due to plants absorbing it as they grow over the summer – the atmospheric concentration of CO<sub>2</sub> remained above 400 ppm. As CO<sub>2</sub> and other GHGs that cause climate change continue to increase in the atmosphere, further changes to our climate and environment are expected, including an increase in the frequency and severity of extreme weather events, such as flooding and drought.

The historic ratification of the Paris Agreement provides a path forward to reducing global GHG emissions and limiting further warming. The Paris Agreement is effectively a formal statement by nations that says, “Yes, we are sure climate change is real and is man-made, and yes, our nation will do its part to reduce greenhouse gas emissions.” In scientific terms, GHG emissions need to fall globally by 50% by 2050 and to near zero by 2100 in order to avoid catastrophic climate changes. Under the Paris Agreement, the U.S. and other developed nations essentially agreed that their GHG emissions will fall to nearly 80% below 1990 levels by 2050.

The United States has much work to do to reach its commitment under the Paris Agreement. Here in New Hampshire, we must also do our part. We have been and will continue to collaborate with various partners toward that end, including working with the other New England states and the Eastern Canadian Provinces to develop a Regional Climate Change Action Plan by the summer of 2017. This regional collaboration has considerable potential for broad influence, as this region’s combined gross domestic product in 2014 was \$1.4 trillion, which is larger than the 13<sup>th</sup> largest national economy, ahead of that of South Korea and just behind that of Australia. At the same time, we have been working since 2009 to implement recommendations included in the New Hampshire Climate Action Plan.

While the climate will continue to change in the coming years, the efforts begun in 2016 at the global, regional and state levels will begin to bend the curve so that we can transition to a decarbonized economy and reduce GHG emissions sufficiently to achieve our mid- and end-of-century goals and to ensure a healthy Earth for many millennia to come. ■



## ENVIRONMENTAL NEWS

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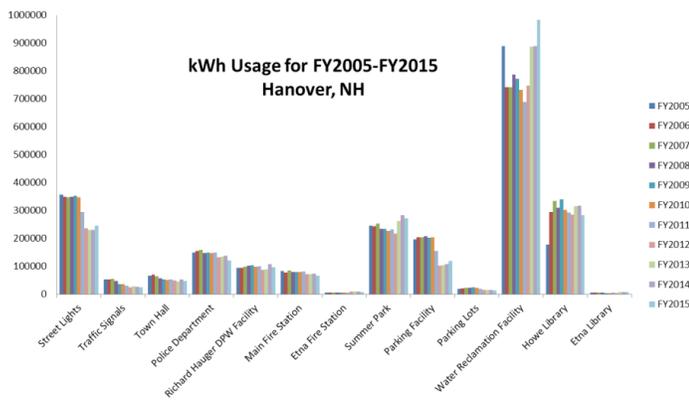


Figure 1

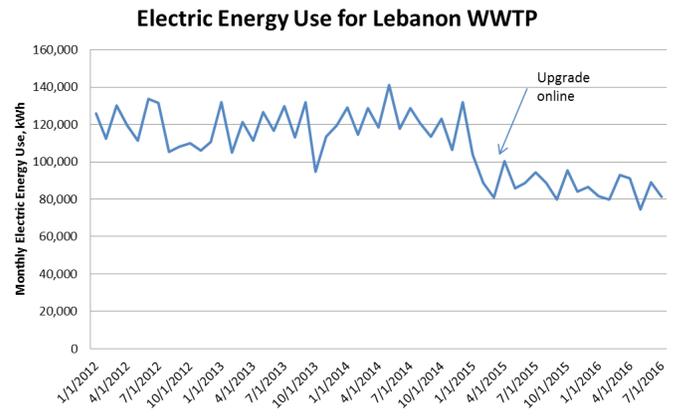
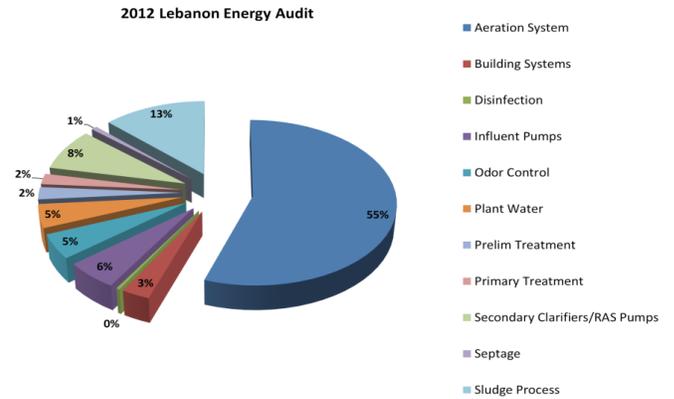
have been operating inefficiently since they originally went online and now these inefficiencies are compounded in many cases by old, obsolete and worn-out equipment. Liken this to choosing your first car. Most of us “right-size” the car we need when we make the purchase, knowing that we can later “right-size” a new car as our needs change. NHDES now requires that select equipment installed in WWTPs be “right-sized,” too.

In addition to the “right-sizing” approach, NHDES has been implementing a grant from the U.S. Department of Energy ([Energy.gov](http://Energy.gov)) to help lead New Hampshire’s WWTPs to energy efficiency. The ultimate goal of the Energy.gov grant is to identify measures that, on average, will produce 33% energy savings upon implementation at up to 26 of the state’s municipally-owned WWTPs. The energy savings will not only significantly reduce greenhouse gas emissions but will also save money for the participating municipalities; money that could potentially fund additional energy projects for additional savings.

Of the 72 municipally-owned WWTPs in New Hampshire, 66 are participating in this Energy.gov grant program at various levels. NHDES has just completed benchmarking their electric energy use and conducted five workshops. The next phase of the project takes us through detailed energy audits at selected WWTPs.

Recent upgrade work completed at the City of Lebanon’s WWTP proves that significant energy savings are achievable. By implementing findings from a comprehensive energy audit and making energy efficiency a design priority throughout the project,

the city was able to reduce the WWTP’s energy use from an average of 119,263 kWh/month to 86,247 kWh/month. That’s a 28% reduction! The pie chart below shows the energy breakdown created from the audit before the upgrade, and the next chart shows the energy use before and after the upgrade.



Energy efficiency does not need to be a stand-alone project, but it should be part of good WWTP management, operation and maintenance. Energy efficiency and energy use should be key components included in any asset management program as well. Understanding the true cost of a piece of equipment (capital+operating+maintenance) is necessary to determine the best time to replace that piece of equipment.

For additional information on this Energy.gov grant program, please contact Sharon Rivard at [sharon.rivard@des.nh.gov](mailto:sharon.rivard@des.nh.gov) or (603) 271-2508. ■



[twitter.com/NHDES](https://twitter.com/NHDES)

## City of Dover breaks ground on drinking water infrastructure improvement project

The City of Dover broke ground on a multiphase project to upgrade aging drinking water supply and treatment facilities on Tuesday, October 18. Phase I of the project will include replacement of a water treatment facility originally built in 1957, along with improvements to water treatment processes for iron and manganese. The city received a Drinking Water State Revolving Fund Loan (DWSRF) from NHDES in the amount of \$8.5 million for Phase I. In addition to the low-interest loan, the City is eligible for 15% principal forgiveness on the amount borrowed. Construction of Phase 1 is expected to be completed in the spring of 2018.

“NHDES commends the City of Dover for understanding the importance of investing in and upgrading their drinking water infrastructure,” said Tom Burack, NHDES commissioner. “NHDES strongly encourages all municipalities to take the actions and make the investments necessary to ensure clean, safe drinking water for this generation of residents and the next.”

Phase II of the project, scheduled for 2017 to 2019, will include upgrades to pump stations and storage tank facilities, at an estimated cost of \$9 million. Dover has applied to borrow additional funding from the DWSRF to finance Phase II. NHDES is also working with Dover to resolve the MtBE contamination problem affecting Dover’s Griffin water supply

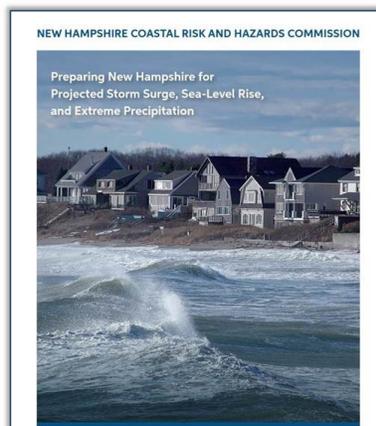


well. The replacement of the well, to be funded by the State’s MtBE Settlement Funds, is estimated to cost \$1.4 million, which is in addition to the \$468,000 already provided from the MtBE Settlement Funds for pump tests, permitting and construction design of the replacement well.

For more information on the project, contact the City of Dover’s consultant, Keith Pratt, Underwood Engineers, at (603) 436-6192, or Rick Skarinka, NHDES Drinking Water and Groundwater Bureau, at (603) 271-2948. For more information on the NHDES Drinking Water State Revolving Fund loan program, please visit <http://des.nh.gov/organization/commissioner/pip/categories/grants.htm>. ■

## Coastal Risk and Hazards Commission final report release event

The New Hampshire Coastal Risk and Hazards Commission will release its final report on November 30, 2016. The release event will be at 11 AM at the Legislative Office Building. For more information about this event, contact Sherry Godlewski at [sherry.godlewski@des.nh.gov](mailto:sherry.godlewski@des.nh.gov) or (603) 271-6801. ■



## How will the Volkswagen settlement impact New Hampshire?

In response to a draft settlement agreement with Volkswagen and its related companies regarding tampering with emissions controls, a stakeholder meeting to present the details of the settlement, and to discuss its impact on New Hampshire, is scheduled for Tuesday, November 29 at 1 PM at NHDES’ Concord location. At that meeting, we will also be looking for public input on a draft plan for use of the funds. The draft plan for use of the funds will be posted at <http://des.nh.gov> by November 14. For more information on the VW settlement, visit <http://doj.nh.gov/media-center/press-releases/2016/20160628-vw-must-pay.htm>. ■

## Federal Storm Water Program Citizen Suits

Section 505 of the Clean Water Act (see also 40 CFR 135) allows citizens, non-profits and other interested parties to file suit against persons or businesses discharging stormwater in violation of, or without authorization under, a federal permit. In New Hampshire, these permits are issued by the U.S. Environmental Protection Agency (EPA) Region 1 in Boston. New Hampshire does not have delegation of the stormwater program. Under the Federal Stormwater Program, there are three types of stormwater discharges permits: the Construction General Permit, the Municipal Separate Sewer System General Permit, and the Multi-Sector (Industrial) General Permit.

Over the past few years, some industrial sectors (motor vehicle salvage yards, marinas and gravel pits ) have had citizen suits filed by a non-profit against some owners and operators who may have failed to obtain coverage under, or comply with the conditions of, the Multi-Sector General Permit, which was reissued on June 16, 2015 (For the 2015MSGP see <https://www.epa.gov/npdes/stormwater-discharges-industrial-activities#msgp>). In 2016, the suits were filed

against the lumber yards/sawmill sector. Appendix D of the 2015MSGP lists other industrial sectors by Standard Industrial Classification (SIC) Codes that could also be the targets of citizen suits. Based on past history, it is the discharges of stormwater associated with industrial activity at smaller businesses that are targeted. A look at Appendix D shows that other smaller businesses might include Scrap Recycling (Sector N), Furniture and Fixtures (Sector W), Printing and Publishing (Sector X) and Fabricated Metal Products (Sector AA).

Since citizen suits may cost companies tens of thousands of dollars in fines, settlements, legal fees, plus the costs of developing, designing, installing and implementing both non-structural and structural stormwater management practices in a more limited time period, it is important for facilities that need coverage under the 2015MSGP to obtain that coverage.

For more information on the Federal Storm Water Program and the 2015MSGP, contact EPA Region 1. ■

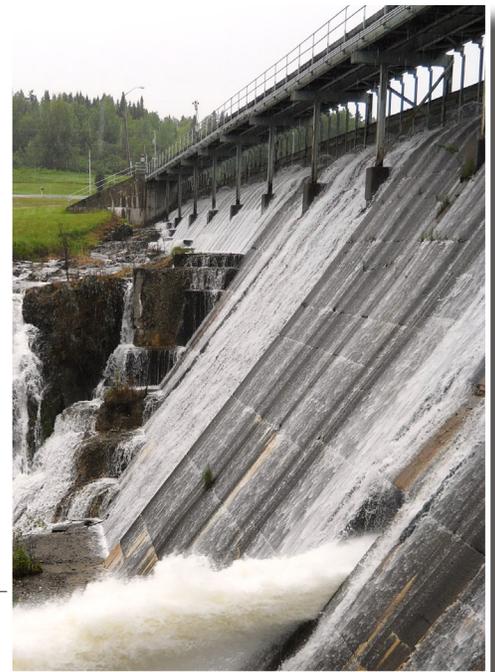
## New NHDES guidance for dam owners one of the first of its kind in the nation

Assessing and managing sediment can be one of the most challenging, time consuming and costly aspects of a dam/barrier removal project. To help dam owners and their consultants, NHDES developed the “Guidance for Assessing and Managing Sediment Behind Dams/Barriers” publication. The goal is to provide consistency, increase permitting efficiencies and minimize project costs. New Hampshire is one of the first states in the nation to have this kind of guidance.

The published work is the result of a five-year department-wide effort led by the NHDES Coastal Program and the

Dam Removal and River Restoration Program. NHDES was well positioned to coordinate on all of the aspects needed to complete the guidance, including eco-risk analysis, input from dam removal experience, and contributions and expertise from the Water Quality Certification Program. NHDES staff also engaged federal and state partners and other stakeholders during the development process for their feedback.

View the guidance at <http://des.nh.gov/organization/commissioner/pip/publications/documents/wd-16-04.pdf>. ■



## NHDES creates model for New England

In a recent report from the US Institute for Environmental Conflict Resolution – Udall Foundation, a small independent federal agency, NHDES’ long-standing wetlands pre-application process was cited as a 404 coordination model. During these pre-application meetings, applicants and state and fed-

eral participants provide substantial communication that allows agencies to work out questions together before the start of the official Army Corps permit review clock. This allows wetlands permit applications to be processed more quickly as a high level of knowledge and ability to anticipate and respond

to issues raised during pre-application meetings has been developed.

Check out the NHDES Wetlands Bureau pre-application webpage at <http://des.nh.gov/organization/divisions/water/wetlands/pre-app.htm>.

## New emission regulations for wood stoves now in effect

On February 3, 2015 the U.S. Environmental Protection Agency adopted a new rule to reduce the emission level of harmful pollutants, including particulate matter (or PM), from new wood stoves and other wood-burning heaters. These rules cover the manufacturing and sale of new residential wood heaters. NHDES will conduct inspections of residential wood-heater retailers to ensure compliance with the rule as part of our cooperation with the EPA.

As of January 1, 2016, only EPA-Certified hydronic heaters, wood stoves and pellet stoves that meet the requirement of this rule can be legally sold in the United States. Forced-air furnaces must also meet requirements based on their size by either March 2016 (small units) or March 2017 (large units). In addition, all wood heaters must have a permanent label indicating they are EPA-certified to meet emission limits in the rule. This label will signal to consumers that the heater meets EPA standards. Additional information on these rules is available on the EPA web page at <https://www.epa.gov/residential-wood-heaters>.

The rules are detailed in 40 CFR 60 Subpart AAA, Standards



of Performance for New Residential Wood Heaters, and Subpart QQQQ, Standards of Performance for New Hydronic Heaters and Forced-Air Furnaces. ■

## 2016 Salt Shaker awards

Three professionals, Patrick Santoso of Axiomatic, Jay Devini of the City of Manchester, and Kyle Greenlaw of Outdoor Pride Landscaping, were presented with Salt Shaker Awards on September 13, 2016 in recognition of their contributions to salt reduction and the snow management industry. The awards were presented by Senate President Chuck Morse and representatives from NHDES at the third annual *New Hampshire Salt Symposium: Where Commercial Salt Applicators Come to Learn about Winter Property Management*. ■



(L to R) Senator Chuck Morse; Patrick Woodbrey, NHDES; Patrick Santoso, Axiomatic; Jay Devini, City of Manchester; Kevin Skarupa, WMUR9; Commissioner Thomas Burack, NHDES.

## NH Green Hospitality

The New Hampshire Pollution Prevention Program (NHPPP) is on a mission to make the New Hampshire hospitality industry even “greener.” NHPPP has been awarded a grant from the U.S. Environmental Protection Agency to expand its work with hospitality facilities by encouraging participation in a newly redesigned recognition program. NHPPP, building on a previous program started by the New Hampshire Lodging and Restaurant Association, has developed the “New Hampshire Green Hospitality Program”

to recognize facilities doing their part to reduce energy use, conserve water and reduce waste. There are many environmental and economic benefits to participating in the program, as well as the ability for facilities to market themselves as “green or sustainable” to environmentally conscious consumers.

This program is free and open to all restaurants and lodging facilities in New Hampshire. Recognition in the program requires the completion of an application and a site visit by NHPPP staff for verification. This visit also gives NHPPP staff the opportunity to offer suggestions for further reduc-

tions. For more information, contact Cynthia Walthour at [cynthia.walthour@des.nh.gov](mailto:cynthia.walthour@des.nh.gov) or (603) 271-2956.

Keep an eye out for the new logo when you are staying or dining at your favorite local spot. Let people know that you support their efforts to reduce their environmental impact in our state. ■

**New  
Hampshire  
Green  
Hospitality  
Program**



## Monitoring fine particle pollution in Laconia and Plymouth



The NHDES Air Monitoring Program is establishing two temporary air monitoring stations this winter, one in Laconia and one in Plymouth, to determine if people in those municipalities are being exposed to fine particle pollution. In valley communities, heating devices and wood-burning stoves can result in higher pollution levels on cold and calm winter nights. These communi-

ties can experience wintertime “temperature inversions” where warm air rises above the cold ground and traps the cold air in the valley along with particle pollution emitted from heating devices. Previous studies have demonstrated that valley communities are at particular risk from these unhealthy air quality events during winter temperature inversions. Because of this, winter-time particle pollution is something NHDES is continuing to research.

Utilizing additional funding from EPA, the NHDES Air Monitoring Program intends to locate Temporary Stationary Units (TSUs) at Wyatt Park in Laconia and on Green Street in Plymouth. The TSUs provide a climate-controlled platform for the air monitoring infrastructure. The monitoring equipment will include: a beta attenuation particulate monitor

that collects hourly fine particle pollution (PM<sub>2.5</sub>) information, a data acquisition computer, a wireless modem to transmit hourly data to the NHDES office in Concord and a meteorological tower to collect wind speed, wind direction and temperature data. Air Monitoring Program personnel plan to operate these two stations from November 1, 2016 through March 2017.

Once under way, NHDES will make data from this study publicly available via the NHDES website. NHDES will use the information collected during this study to better forecast local air quality and to issue protective warnings, if needed, to protect public health. Please see NHDES’ Air Quality Forecasting webpage for more information on air quality forecasting at [http://www2.des.state.nh.us/airdata/air\\_quality\\_forecast.asp](http://www2.des.state.nh.us/airdata/air_quality_forecast.asp).

In addition to these special temporary projects, NHDES’ Air Monitoring Program personnel operate 12 permanent air monitoring stations throughout the state. Please see NHDES’ Air Quality Monitoring and Data webpage for more detailed information about the Air Monitoring Program at <http://des.nh.gov/organization/divisions/air/tsb/ams/aqmdp/index.htm>. ■





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## King Tide photo contest

The New Hampshire Coastal Adaptation Workgroup called on all residents to grab their cameras and help “catch a king” by snapping photos of the New Hampshire coastline October 17-19 and submitting them in the King Tide Photo Contest. A King Tide, by definition, is an especially high tide that occurs when the gravitational pulls of the Sun and Moon reinforce one another. This extra-high tide happens a few times per year when the Moon is closest to Earth. This annual photo contest helps local leaders, planners and communities identify coastal areas vulnerable to tidal flooding, visualize projected impacts from rising sea levels and plan for the future.

To see the winning photos, visit the New Hampshire Coastal Adaptation Workgroup’s website at <http://nh-blog.stormsmart.org/king-tide-2016/>. ■



*King Tide 2015 by Kirsten Howard*