VTWARN Mutual Aid for Water and Wastewater: There’s No “I” in WE

Phil Acebo, Training Specialist

Well, maybe hurricanes don’t happen in Vermont, but its close cousin, tropical storm did, and some of us were very fortunate to escape the devastation that impacted many of our communities. However, many are still trying to recover from this exclamation point of nature and will be for years to come. What was so striking about this weather event was of course the magnitude of the destruction to our neighbor’s homes and businesses, our highways and bridges, and our larger infrastructure. Communities isolated without power and without potable drinking water and the ability to provide for sewage treatment certainly aggravated the calamity.

For four years members of the steering committee have been promoting membership in The Vermont Water and Wastewater Response Network (VTWARN). The concept is simple: we, the industry help each other. We are unique when it comes to what we do. We have individuals in this state who possess knowledge, skill, experience, and resources that are essential to the well being of our state’s communities. To the best of my knowledge, no VTWARN member activated the system during and after the destruction, however, it could have been available. When destruction of this magnitude occurs, you the city/town manager, operator, or employee does not want to be searching for resources.

Your first inclination should be to go to that O & M manual, to the page with those important resources listed, and VTWARN should be one of those tools you can rely on when needed.

So where does a system thinking about membership look? First I would go to http://www.vtwarn.org/ that will get you to the website. There is an agreement that must be submitted and this will need to be reviewed by your community leader(s) and signed with important information included. Once you’re a member, we’ll give you a password and log in information for the website.

One of the most important aspects of this system is the understanding that any and all help is VOLUNTARY. We know that we had systems in our state that suffered tremendous damage to their infrastructure, not to mention loss of lives. Obviously they were in no position to assist others, however, others were. The operator from the Town of Brighton called me and asked if I knew anyone that might need assistance. I didn’t, but if the need was there we were ready to assist in the true Vermont spirit.

(Continued on page 9)
Since 1982, Vermont Rural Water Association has supported water and wastewater systems across the state. We provide many services, including training, source water protection planning, and onsite assistance.

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**Letters**

**Feedback from Recent Training Sessions:**

“Instructor was very knowledgeable. You can tell she has vast experience in what she teaches.”

“I liked the location, the small class size and opportunity to discuss issues.”

“Good info to improve our budget and gave alternatives to rate structure.”

“Very professional.”

“He answered my questions before I could ask them.”

“Gave good information that brought up questions in our own town.”

**SAVE THE DATE!** The Vermont Rural Water Association Annual Conference and Trade Show will be held May 2-3, 2012 at the Lake Morey Resort in Fairlee, VT. Come help us celebrate our 30th year of serving Vermont’s rural communities!
Nominations for Tony Torchia Award and Board of Directors

VRWA will have two seats on the Board of Directors up for election this spring. Our all-volunteer board meets quarterly to direct and oversee the association.

Directors are representatives of VRWA-member water/wastewater systems and they are elected to the board for three-year terms by the membership. Self nominations are allowed.

The Tony Torchia VRWA Special Recognition Award honors a person affiliated with the water/wastewater industry for extraordinary effort or accomplishment during the previous year or over the course of a career. All the members are invited to submit nominations.

Nominations for a board seat or the Tony Torchia Award must be received by January 31, 2012. For a nomination form, visit www.vtruralwater.org or call the office at 802-660-4988 ext 305.

End of VRWA Energy Efficiency Program

Matthew Burgess (VRWA Energy Efficiency Specialist) ended his work assignment with VRWA on 10/31. This was a result of the unanticipated and early end of the subcontract with VEIC earlier this fall. Matthew did an outstanding job in his short time with VRWA, working with a number of systems on energy efficiency improvement options. We wish Matthew the best on his future endeavors.

VRWA Needs Your Support

As federal and state funding continues to tighten, VRWA needs your support more than ever. Letters of commendation and donations are appreciated. Membership renewals are also an important part in keeping our services available. Please visit us online at www.vtruralwater.org for more information and to submit a letter of commendation.

DEC Divisions Combined

The Vermont Department of Environmental Conservation has announced the creation of a new division. The former Water Supply, Wastewater Management and Water Quality divisions have joined and are now called the “Drinking Water and Groundwater Protection Division.”
Because of costlier inputs and infrastructure replacement, rate experts predict prices will only go higher.

In the last year, the price of water in 30 U.S. metropolitan areas has increased an average of 9.4 percent for residential customers with medium consumption levels, according to data collected by Circle of Blue. The median increase for medium consumption was 8.6 percent. Water rates for high-volume consumers have increased slightly more than rates for lower consumption—an indication that utilities may be attempting to curb water use by charging higher marginal rates.

The annual survey, which Circle of Blue first conducted in April 2010, charts what residents pay per month for water in the 20 largest U.S. cities, as well as 10 regionally representative cities.

Monthly water bills were calculated for a family of four at three consumption levels:
- Low: 50 gallons per person per day (6,000 total gallons per month)
- Medium: 100 gallons per person per day (12,000 total gallons per month)
- High: 150 gallons per person per day (18,000 total gallons per month)

Since the prices depend on cost-of-service factors and revenue decisions unique to each utility, comparisons between cities are somewhat difficult at first glance. However, the broader trend is unmistakable: the price of water is going up.

Over the last year, the largest relative rate increases occurred in Indianapolis (29.3 percent increase at medium consumption), Milwaukee (25.4 percent), and Houston (24.3 percent).

Water prices in two cities—Fresno and Chicago—have not changed since last April. Both cities, however, have already seen their fair share of rate hikes in recent years. From 2007 to 2010, the cost of water doubled in Fresno, while prices increased by half in Chicago.

Residents should get used to water rate increases, says rate consultant Scott Rubin, who doesn’t see an end to rising prices. Rubin has more than 20 years of experience working with water rate design and has written studies for the National Regulatory Research Institute.

“Every trend I look at tells me that it’s likely water costs will increase more than the rate of inflation,” Rubin told Circle of Blue.

Reasons for Increase
Prices are increasing because operational inputs such as chemicals, energy, labor, and water itself are getting more expensive. That is the case in Phoenix, where over the last decade chemical costs per million gallons of treated water have increased by 493 percent, electricity costs by 68 percent, and raw-water costs by 41 percent.

The size of the increase in each of these input categories depends on local factors, such as source-water quality and electricity prices. If water quality is poor, more treatment (and thus more chemicals and energy) will be necessary; if a utility has to pump water from greater depths as aquifers decline or to greater heights, as is the case in the 915-meter (3,000-foot) lift for the Central Arizona Project, energy costs will be greater.

Cities that buy water from regional wholesale suppliers are also paying a premium. San Diego, which imports 90 percent of its water, is one example. The city is paying 66 percent more for untreated water than it did in 2006, largely because prolonged drought has reduced deliveries of cheap water from the Colorado River. This means that cities are leasing water from farmers at greater expense.

In addition to higher operating costs, decrepit infrastructure is forcing cities to invest in costly capital-replacement projects. In older cities, Rubin told Circle of Blue, many pipes were laid more than 100 years ago and are reaching the end of their designed life. Furthermore, system expansions that took place during the 1940s and 1950s often used inferior materials because the majority of supplies had been used in fighting World War II.
The result is that, due to corrosion, piped systems are not lasting as long as they were expected to, and many need to be replaced. The cost of not doing so could be frequent water main breaks and flooded homes, streets, and businesses, especially in cities where cold winters are an added stressor. Some cities—like Baltimore, which has had 5,762 water main breaks in the past five years—are already suffering this fate.

The scale of America’s hidden, underground web keeps maintenance workers busy. Houston’s water supply network includes 12,000 kilometers (7,500 miles) of pipes, and the city replaces up to two percent (240 kilometers, 150 miles) of its water lines per year, said public information officer Alvin Wright.

**Despite Cuts, No End In Sight?**

To keep rate increases minimal, deflect public ire, and meet the standards set by regulatory boards, utilities have been streamlining daily operations, merging departments, and cutting staff.

Phoenix, for instance, cut the operating budget for its water services department by $10 million. The city did so by furloughing employees and eliminating a quarter of management positions. Milwaukee Water Works cut its full-time staff by 17 percent between 2000 and 2009, and the city has stopped replacing non-critical staff members who retire.

Yet, even trimming bureaucratic fat can’t overcome rising input costs and the long-term pressures of maintaining a system that is reliant on so much hardware.

“Efficiency will help systems avoid some variable costs of production in the short run and capacity costs in the long run,” Jan Beecher, director of Michigan State University’s Institute of Public Utilities, wrote in an email to Circle of Blue. “But people will need to get used to higher rates for water that reflect the true cost of service.”

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Energy Savings Programs for Water and Wastewater Systems: How to Save Energy and Improve Cost Performance

By Matthew A. Burgess, Former VRWA Energy Efficiency Specialist

Water and wastewater systems in Vermont account for 3% to 4% percent of the State’s total energy consumed. These types of facilities in the United States add up over 45 million tons of greenhouse gases to the atmosphere annually through energy consumed. These plants are typically the largest energy consumers in Vermont municipal governments, and electricity accounts for up to 30% to 40% of total cost in Vermont cities and towns. This percentage of total operating cost for energy in Vermont is expected to increase in the next 15 years due to population growth and tightening regulations. There are programs and resources available to Vermont water and wastewater facilities that can help to control energy consumption, reduce greenhouse gas emissions, and improve cost performance.

What can managers do to control energy and improve cost performance?

1. EPA’s ENERGY STAR program The EPA has introduced expanded energy efficiency tools and resources to help eliminate energy waste and lower operating costs of water and wastewater utilities.

2. VARIABLE-FREQUENCY DRIVE A variable frequency drive controlling a pump motor that usually runs less than full speed can substantially reduce energy consumption over a motor running at constant speed.

For a 25 horsepower motor running 23 hours per day (2 hours at 100% speed; 8 hours at 75%; 8 hours at 67%; and 5 hours at 50%), a variable-frequency drive can reduce energy use by 45%. At $0.10 per kilowatt hour, this saves $5,374 annually. This savings could be greater quicker with application of incentives for replacement or retrofit.

3. HEATING, VENTILATION & AIR CONDITIONING ENHANCEMENTS Many municipal water and wastewater facilities can reduce building energy requirements by operating heating, ventilation, and air conditioning equipment more effectively or by replacing older units with new, high-efficiency systems. A computerized energy management system can manage energy use throughout a building on the basis of weather conditions, building use patterns, and a host of other variables, potentially reducing building energy use by 10-20%. Actual savings will vary from site to site depending on factors as climate, energy rates, and systems.

4. ENERGY-EFFICIENT MOTORS Energy-efficient motors can play a major role in reducing facility operating costs. Pump and blower motors account for 80 to 90% of the energy costs in water supply and wastewater treatment facilities. Energy-efficient motors are 2% to 8% more efficient than standard motors. They are frequently a cost-effective alternative to rewinding. Purchasing the energy-efficient version of a 25 horsepower, 1800-rpm, totally enclosed, fan-cooled 460-volt motor that runs 16 hours per day at 75% load will save $600 per year over a standard motor at an electrical rate of $0.10 per kilowatt hour. Energy-efficient motors should be considered for all new installations, replacement of failed motors, or as spares.

5. ENERGY SMART LIGHTING Retrofitting lighting systems with high-efficiency alternatives is a strategic approach to improve a facility’s profitability. Energy efficient lighting improves light levels, eliminates flicker, reduces glare, decreases worker eye strain and fatigue. This improves worker safety and productivity. The most cost-effective retrofit is replacing T-12 lamps and older magnetic ballasts with T-8 lamps and electronic ballasts. Higher-efficiency lamps cost more but provide higher-quality light while using 34% less energy. Retrofits and replacement will save enough electricity to provide payback in two to three years and less if financial incentives are available.

Continued on next page...
6. ELECTRICAL LOAD MANAGEMENT More water and wastewater facility managers are turning to energy management to reduce operating costs. Facilities can save money simply by choosing when and where to use electricity. Operators should investigate the variety of electrical rate schedules offered to achieve substantial savings simply by selecting a rate schedule that better fits their pattern of electricity use. Demand management strategies include conducting and energy survey, reducing peak demand, shift load to off-peak, improve power factor. These steps can significantly reduce both energy demand and cost.

7. FUEL CELLS A fuel cell uses two reacting chemicals separated by an electrolyte to produce an electric current. A fuel cell is not charged prior to use. The chemical reactants are fed continuously to the cell to provide constant power output. It produces negligible pollution. Although fuel cells are costly to install, they have distinct advantages in efficiency, reliability, and emissions over gas turbines or diesel generators. Fuel cell emissions are so clean that they are exempted from many Clean Air Act permitting requirements. Fuel cells are quiet, produce minimal noise from cooling fans and pumps, and require less upkeep.

8. ON-SITE ENERGY GENERATION Green power is electricity produced from renewable resources such as solar, wind, geothermal, biomass and low-impact hydroelectricity. Water and wastewater facilities are realizing that in addition to being a consumer of energy they can be an energy generator. Facilities are increasingly studying and applying various alternative energy sources to reduce dependence on traditional energy supply. Options include solar panels, wind turbines, fuel cells and micro turbines. Biogas from co-generation can also be used to generate reliable electricity.

9. PURCHASING GREEN ENERGY Buying green power is one of the easiest and most effective ways to improve your organization’s environmental performance. Utilities may have the option of purchasing renewable energy directly from the power grid or through the purchase of renewable energy certificates (RECs) in lieu of generating renewable energy on-site. RECs are credits sold separately from electricity. They represent an environmental, social and other positive attributes of power generated by renewable resources that enable organizations to choose renewable power.

10. FUNDING GREEN POWER U.S. Department of Agriculture, Rural Development’s Rural Energy for America Program (REAP) Guaranteed Loan Program encourages the commercial financing of renewable energy (e.g., bioenergy, geothermal, hydrogen, solar, wind and hydroelectric power) and energy efficiency projects. Under the program, project developers will work with local lenders, who in turn can apply to U.S. Department of Agriculture Rural Development for a loan guarantee up to 85 percent of the loan amount.

Happy Holidays To All
And special thanks to our newest members:

- Huntington Fire District #1
- High Ridge Condominium
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- Vermont Electric Power
- Richard Perez, PACP/MACP Master Trainer
- True Wastewater Consulting
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Statewide Tanks & Septic
In September I attended the funeral for the Garofanos. Mike Sr. & Mike Jr. gave their lives in the line of duty while checking the Rutland water plant intake. Over 500 were in attendance including Governor Shumlin, many senior state officials, as well as many from the water sector. A conversation I had with Rick Kenney of Hartford just prior to the start of the funeral service was very interesting. Rick noted, “I’ve attended many industry events over the years and how is it Mike Sr. and I didn’t know each other?” Rick further noted, “Mike was a key person in our industry and for his Rutland community, I should have had a better connection with him.” I thought about this a minute and responded to Rick. “There are hundreds of folks in our state working quietly behind the scenes to insure their water and wastewater system is functioning properly and we can’t know all of them. All of this being done with the most humble of approaches.” I had worked with Mike over the years on several industry events and was well aware he worked quietly behind the scenes. He was very unassuming but focused on the task of a properly operated and tightly managed water facility. This is typical of the approach of many overseeing water and wastewater operations in Vermont. My final comment, “Rick, it is ok you hadn’t met him before, all of us being here today shows our respect and appreciation for him and his son.” In this holiday season, please be thinking of the Garofano family and I wish you and your family the best as we enter 2012.
The river had roared through town ripping away sewer manhole covers, frames and risers leaving the manholes wide open. This allowed large rocks and stones to fill the exposed structures. Once the vactor truck was on site, we were able to clean out the manholes and jet the associated lines. At this time the pump stations were mostly repaired with bypass pumping only needed at one station. It was now time to put the water system back on line. A destroyed fire hydrant and associated line was isolated to allow the water system to be recharged. Using radios and elevation mapping, John, the water operator Chris Lavoy, Aaron Perez of VRWA and a dozen or so firemen opened a large number of hydrants and slowly filled the water distribution system, flushing and closing off hydrants as the water filled the system.

It was amazing to me how well the Wilmington Water and Wastewater Departments were prepared for this event. For years John has had bypass pumps and piping on site ready to go. Just as important, he had emergency response plans in place to deal with pump station failures. Thanks to on-site GPS/GIS equipment and programs, mapping was up to date and immediately available. I was also amazed at how well the departments in town worked together to get the job done in a very short amount of time. With John Lazelle’s advance planning, available equipment and leadership, he was able get his infrastructure back together.

Irene is gone but the aftermath will be with us into the future. It’s inevitable that something will happen again. How soon, where, to what extent, when; are all unknowns. However, we can be better prepared for the unknown with membership in VTWARN. It’s not the panacea, but it’s better to have something that may help than to be searching for resources in the time of immediate need.

If anyone has questions or if community leaders need further explanation, please contact me at 802-660-4988 ext 337 or pacebo@vtruralwater.org.
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