

Water Infrastructure Resiliency

Low cost solutions for water utilities.

By Matthew Everett

As drinking water and wastewater utilities are met with increasing challenges—security, aging infrastructure, enhanced public health and environmental protection, workforce succession—there is a growing need for low-cost solutions to build resiliency and increase preparedness. The EPA has recognized that need, and has developed several new programs and tools to address these challenges—Community-Based Water Resiliency (CBWR); Climate Ready Water Utilities (CRWU); and, the *Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency*. Along with enhancing preparedness, these resources allow utilities to build partnerships with critical stakeholders within the community, and can be customized to the individual needs of a utility and its community. This flexibility also helps ensure that other critical infrastructure sectors and community services address the consequences of water service disruptions in their individual Emergency Response Plans (ERPs).

Community-Based Water Resiliency

Recent efforts to enhance water sector resiliency have highlighted the need to ensure that all critical infrastructure sectors are aware of the importance water plays in their operations. The CBWR initiative helps raise awareness of water sector interdependencies—the implications of a water service interruption—and provides recommendations for increasing preparedness and resiliency. For example, the tool provides methods to engage healthcare and public health professionals in water resiliency activi-

ties to ensure that hospitals can continue providing medical services and caring for patients, even in the event of a service interruption. Emergency management services such as fire and rescue are also featured in the tool because of their reliance on water. The tool also provides a means to ensure that these sectors, as well as other interested stakeholders, have considered water service interruptions in their ERPs.

The CBWR tool, available on a self-launching CD-ROM, consists of three main components: a self-assessment, summary report, and resource toolbox. Stakeholders can use the CBWR electronic tool to log basic community demographics and current preparedness and resiliency efforts being conducted in their localities. To date, modules have been developed for the following five stakeholder groups: drinking water and wastewater utility owners and operators; healthcare and public health sector; emergency services sector; state and tribal drinking water primacy agencies; and concerned community members including elected officials, critical water users, public affairs specialists, and other non-water sector entities. Each module contains questions and resources specific to the respective user groups, with questions aimed at increasing resiliency and understanding of water sector interdependencies.

Upon completion of the self-assessment, the tool produces a summary report that highlights successful preparedness measures already taking place within the community and recommends other tools and resources that could help enhance resiliency. Many of these resources are available at low to no-cost, such as EPA's Key Features of an Active and Effective Protective Program. This

recommended resource, as well as many others, can be found in one central location in the tool's Resource Toolbox.

This tool enables critical infrastructure sectors and critical community service providers to form lasting partnerships and identify gaps in water emergency preparedness. For more information regarding the CBWR program or tool, please email WSD-Outreach@epa.gov.

Tabletop Exercise

Tabletop exercises provide opportunities for drinking water utilities, wastewater utilities, and other critical community service providers to practice and improve upon their ERPs. The EPA has developed an updated *Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate Resiliency* (TTX Tool) to assist those interested in planning and facilitating tabletop exercises that focus on water sector-related issues. The TTX Tool expands on the capabilities of the first version of the tool, published in 2005. The updated tool includes fully-customizable materials that users can modify, allowing them to conduct a tabletop exercise to meet their specific needs.

The updated TTX Tool, released in June 2010, includes 15 scenarios that reflect an all-hazards approach to emergency preparedness and response, including natural hazards, intentional attacks, as well as the potential impacts of climate change on the water sector. The natural and manmade hazards address short-term emergency response activities, whereas the climate change scenarios encourage users to consider long-term planning measures by exposing users to the potential impacts climate change may have on their opera-

tions. Each scenario has accompanying customizable materials, such as moderator presentations and discussion questions, as well as built in scenario flexibility that allows the exercise planner to tailor the exercise to their utility's size, location, and type.

The tool simplifies the process of planning, conducting, and evaluating a tabletop exercise by providing customizable materials as well as training resources that assist even the most novice exercise planners. The tool also contains informational presentations and links that address current water sector-related initiatives, such as the Incident Command System (ICS) and Water/Wastewater Agency Response Networks. To request copies of the TTX Tool or for more information, please email txttool@epa.gov.

Climate Ready Water Utilities

Climate change is an emerging threat to the water sector and its impacts are not entirely predictable. These threats include sea level rise, shifting precipitation and runoff patterns, and changing temperatures. The water sector will need to consider these potential impacts and account for them in long-range plan-

ning at water utilities. EPA's Climate Ready Water Utilities (CRWU) program was developed to help utilities with this task in mind.

Water utilities can use the Climate Resilience Evaluation and Awareness Tool (CREAT) to assess regional and local projections of climate threats, use known information about utility assets to calculate potential consequences of those threats, assess climate-related risks, and evaluate adaptation options to reduce the risks. Using CREAT in conjunction with other risk and consequence assessment tools (e.g., Vulnerability Self Assessment Tool and Water Health and Economic Assessment Tool) allows utilities to account for all-hazards threats.

The CRWU Toolbox, a searchable web-based toolbox of links to on-line resources, is a valuable resource to help water utilities assess climate change impacts and support decisions. These resources include publications, grant programs, current government and utility activities, seminars and workshops, and other tools.

Additionally, the *Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response, and Climate*

Resiliency, contains scenarios related to climate change impacts that encourage utilities to consider long-term planning measures. These scenarios include sea level rise, extreme drought, intense wild fire, extreme flood, and freeze/thaw shift on main breaks.

As climate change impacts become more evident and pervasive, the CRWU program can help water utilities begin to prepare for these potentially disruptive impacts.

The new EPA programs and tools featured here will provide water utilities, water sector partners, and other interested stakeholders with low to no-cost solutions for addressing existing and emerging threats to their local water systems which, in turn, helps to improve the resiliency across communities. To obtain a free copy of these tools, or for more information about these or other WSD programs, please visit www.epa.gov/watersecurity or send an e-mail to WSD-Outreach@epa.gov.

Mr. Everett is an ORISE Fellow, Active & Effective Security Team, U.S. Environmental Protection Agency, Water Security Division, Washington, DC. He can be reached at everett.matthew@epa.gov.

GE

Ten Tips: Fighting Graffiti

We're all worn down by graffiti, kindly referred to as "art without permission," but in reality, acts of vandalism. Municipalities are at wits' end as to not only how to get rid of graffiti (or what some call tagging), but how to reduce or limit it entirely. Seicoat Corporation (www.seicoat.com) offers these useful, effective, and money-saving tips:

1. Photograph graffiti before removing it (video or still) and report the incident to local officials with the evidence "in hand."

2. Remove the graffiti as quickly as possible—this is the best deterrent since taggers do it to show off their talents. Removing their "art" quickly discourages them.

3. After you remove graffiti, apply an anti-graffiti coating that is permanent yet easy to repair if damaged. This is both a prudent and a cost-saving move if vandals strike again and you must remove the graffiti a second, third, or more times.

4. Use anti-graffiti coatings that do not allow graffiti to stick. These coatings must allow one to remove graffiti without the use of chemicals. New technology has seen some leading edge coatings introduced to the market that provide ten year performance warranties. This is important.

5. Establish "free graffiti walls," in one or more sections of town, or even graffiti events where local taggers can freely demonstrate their talents.

6. Establish a community watch for citizens to report graffiti while it is happening or when new graffiti is first spotted.

7. Organize community or neighborhood paint-overs to conceal graffiti, using recycled paint.

8. Restrict access to surfaces most likely to be tagged with thorny shrubs, plants, vines, or even fences.

9. Restrict access to the roof—taggers like high places for all to see their work.

10. Install video surveillance cameras (real or fake) and post warning signs to previously targeted areas or areas where you suspect targeting might take place.

Seicoat officials further note that allowing graffiti to remain is not a viable option, economically or environmentally. They cite leaving graffiti on any surface spurs more graffiti to be put up elsewhere, contributing to increased theft (stealing of materials used to tag), which in turn attracts littering and loitering that generates an unsafe environment.