United States Environmental Protection Agency

Key Features of an Active and Effective Protective Program: Tools and Resources to Assist Utilities

Drinking water and wastewater systems are critical to the livelihood and sustainability of our communities. Drinking water systems provide drinking water and water for fire suppression, hospitals, manufacturing and other critical infrastructure. Wastewater systems protect public health, source waters and the environment. Any compromise of these systems would have significant public health, economic and environmental impact.

Water utilities are vulnerable to a range of threats from aging infrastructure, and natural and man-made disasters. Examples of adverse events that could interrupt utility operation include major pipe breaks, widespread power loss, a cyber intrusion and intentional introduction of an outside substance into the system. The U.S. Environmental Protection Agency (EPA), in collaboration with the Water Sector, developed the Key Features of an Active and Effective Protective Program to assist owners and operators of drinking water and wastewater utilities in improving resiliency and continuity of operations, enhance overall preparedness, and mitigate consequences should an adverse event occur. Tools and guidance have been developed to optimize prevention, detection, mitigation, response and recovery.

The Key Features offer basic guidelines for developing water utility protective programs and are flexible enough for use by all utilities, regardless of size or location, and are consistent with a management philosophy of continuous improvement.

The following pages provide a list of tools and resources utilities can use to implement each of the Key Features. To access these resources, please view the electronic version of this document at: http://water.epa.gov/infrastructure/watersecurity/features/upload/epa817k12004.pdf

THE KEY FEATURES

1. Integrate protective concepts into organizational culture, leadership and daily operations
2. Identify and support protective program priorities, resources and utility-specific measures
3. Employ protocols for detection of contamination
4. Assess risks and review vulnerability assessments (VAs)
5. Establish facility and information access control
6. Incorporate resiliency concepts into physical infrastructure
7. Prepare, test, and update emergency response and business continuity plans
8. Develop partnerships with first responders, managers of critical interdependent infrastructure, other utilities and response organizations
9. Develop and implement internal and external communication strategies
10. Monitor incidents and threat-level information

1 Integrate Security into Operations

- Key Features in Action Case Studies document how several drinking water and wastewater utilities have implemented the Key Features
- Seattle-King County Community Case Study identifies and documents examples of security practices implemented in the Seattle-King County, WA area
- ANSI/AWWA G440 Standard (AWWA)[1] provides emergency preparedness requirements for water, wastewater or reuse facilities
- ANSI/AWWA G430 Standard (AWWA)[1] covers security practices for operations and management

2 Identify Priorities and Resources Needed

- Fed FUNDS provides detailed information on Federal Disaster Funding Programs from FEMA, USDA, EPA, HUD and SBA and includes templates and tips from utilities that have used the programs
- Reimbursement Tips for Water Sector Emergency Response and Recovery presents tips drinking water and wastewater utilities can use to maximize their ability to receive reimbursement
- AWWA Report: Security Funding Opportunities; Lessons and Observations from Successful Water and Wastewater Utilities (AWWA)[1]
- National Performance Measures are metrics to help utilities gauge progress on preparedness and security

3 Employ Contamination Detection Protocols

- Water Security Initiative (WSI) addresses the risk of distribution system contamination, whether intentional or from an accidental or natural source. WSI includes a systematic process and supporting tools for enhancing early detection and response capabilities
- Water Laboratory Alliance (WLA) offers the Water Sector an integrated network of laboratories with the capacity to respond to contamination events
- Water Contaminant Information Tool (WCIT) is a secure, online database that provides information on contaminants of concern for water security
- A Water Security Handbook: Planning for and Responding to Drinking Water Contamination Threats and Incidents provides a short version of the Response Protocol Toolbox (RPTB) and companion to the Response Guidelines

4 Conduct Vulnerability Assessments

- Vulnerability Self Assessment Tool (VSAT) assists utilities in performing risk assessments for security threats and natural hazards
- Water Health and Economic Analysis Tool (WHEAT) helps utilities quantify public health impacts, regional economic impacts and utility financial costs of adverse events
- Climate Resilience Evaluation and Awareness Tool (CREAT) is a risk assessment tool that allows utilities to understand potential impacts from climate change and address those impacts with adaptive measures
- J100-10: Risk Analysis and Management for Critical Asset Protection (RAMCAP®) Standard for Risk and Resilience Management of Water and Wastewater Systems (ANSI/ASME-ITI/AWWA)[1]

5 Establish Access Controls

- Cyber Security 101 for Water Utilities provides an overview of cyber security and available resources
- Water Security Roadmap to Secure Control Systems in the Water Sector (AWWA)[1] provides a framework for mitigating cyber security risks across the Water Sector
- Commissioning Security Systems for Drinking Water Utilities discusses the importance of commissioning security systems and provides a step-wise commissioning process and commissioning forms for different security systems

6 Incorporate Protection into Physical Infrastructure

- Guidelines for the Physical Security of Water Utilities (ASCE/AWWA/WEF 2006)[1] provides information on voluntary physical security standards for water utilities, including physical and electronic security measures
- Guidelines for the Physical Security of Wastewater/Stormwater Utilities (ASCE/AWWA/WEF 2006)[1] provides information on voluntary physical security standards for wastewater/stormwater utilities, including physical and electronic security measures
- Water/Wastewater System Generator Preparedness provides information tools and prompts utilities to better prepare for emergency generator needs; provides tips on running and maintaining generators

7 Prepare, Test and Review Emergency Response Plans

- Tabletop Exercise Tool for Water Systems: Emergency Preparedness, Response and Climate Resiliency (TTX Tool) contains materials that assist those interested in planning and facilitating tabletop exercises that focus on Water Sector-related issues
- Incident Command System (ICS) and National Incident Management System (NIMS) Training (FEMA) enables responders from a variety of jurisdictions and disciplines to work together effectively when responding to an emergency
- Emergency Response Plan Guidance for Small and Medium Community Water Systems
- All-Hazard Consequence Management Planning for the Water Sector (AWWA)[1] helps drinking water and wastewater utilities incorporate all-hazard consequence management concepts into their existing emergency preparedness, response and recovery planning
- Response Protocol Toolbox: Response Guidelines is a compilation of forms from the Response Protocol Toolbox that may be helpful during an incident response
- Planning for an Emergency Drinking Water Supply (EPA/AWWA)
- Emergency Water Supply Planning Guide for Hospitals and Health Care Facilities (CDC/AWWA)
- Business Continuity Plan Toolkit (WRF/AWWA/EPA)[1] provides guidance on business continuity/continuity of operations planning in the Water Sector

8 Develop Partnerships

- Water and Wastewater Agency Response Networks (WARNs) are intrastate mutual aid and assistance agreements for utilities to share resources, personnel and equipment during emergencies
- Community-Based Water Resiliency (CBWR) Tool enables utilities and communities to self-assess resiliency and offers over 400 resources to increase resiliency to Water Sector emergencies
- Coordination of the Water Sector and Emergency Services Sectors: An Important Step to Better Response describes the relationship of the water sector and emergency services sector, how the relationship is mutually beneficial, and how to improve coordination
- The Chicagoland Water and Wastewater Preparedness and Business Resiliency Pilot combined the concepts of water preparedness and business resiliency
- Collaborative State-Level Water Sector Emergency Response Exercises 2009-2011: Lessons Learned

- Water Emergency Roundtable: Outline for Discussion (ASDWA/EPA/City of Evanston, Illinois) provides a step-by-step process for hosting a water emergency roundtable

9 Implement Communication Strategies

- Need to Know: Anticipating the Public's Questions During a Water Emergency provides practical information that crisis communicators can directly apply to planning and response
- Effective Risk and Crisis Communication During Water Security Emergencies provides information on message mapping, a science-based risk communication tool
- Drinking Water Advisory Communication Toolbox (CDC/AWWA) provides protocol and guidance for communicating with stakeholders and the public about water advisories

10 Monitor Incidents and Threats

- Water Information Sharing and Analysis Center (WaterISAC) is a secure website for Water Sector professionals, law enforcement officers, emergency managers, and public health officials to share information and resources that helps them identify risks and prepare for water emergencies
- The Homeland Security Information Network (HSIN) is a national secure and trusted Web-based portal developed by the U.S. Department of Homeland Security for information sharing and collaboration between federal, state, local, tribal, territorial, private sector and international partners engaged in the homeland security mission
- Infragard is an information sharing and analysis association comprised of businesses, academic institutions and state and local law enforcement agencies
- CDC Health Alert Network provides information to state and local public health practitioners, clinicians and public health laboratories about urgent health events

Benefits of Implementing the Key Features

Utilities that adopt a strong security culture—exemplified by the Key Features—can reduce adverse public health, economic and environmental consequences of a drinking water or wastewater service interruption, regardless of its cause.

The many benefits of implementing the Key Features into daily operations include:

- Increased protection of public health
- Ability to more quickly detect, respond to and recover from any adverse event
- Increased access to resources during an emergency through mutual aid and assistance
- Better coordination between all levels of government and emergency responders
- Improved public confidence in drinking water and wastewater systems
- Better understanding of the interdependencies between the Water Sector and other critical infrastructure sectors
- Enhanced water security capabilities and infrastructure protection

Many utilities have been able to demonstrate dual- or multi-benefit outcomes from adopting one or more of the Key Features, including security-related benefits as well as more generalized operational benefits or cost savings.

[1] EPA does not endorse any non-government websites, companies or applications.

FOR MORE INFORMATION: For more detailed information on the Key Features of an Active and Effective Protective Program, visit **http://water.epa.gov/infrastructure/watersecurity/features/index.cfm** or email **WSD-Outreach@epa.gov**

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