

Water Utility Service Continuity Readiness Tool

Overview:

The U.S. EPA and others have developed resources to assist water and wastewater utilities with preparation for dealing with risks to drinking water service continuity. Achieving such readiness and stability is more than a matter of natural hazards and sudden emergencies alone.

This resource document gives you:

1. A quick overview of all the different aspects of business continuity.
2. A checklist to “map” out any areas where your utility may want to assess and improve readiness for specific functions and topics;
3. A few initial suggestions for free training and assistance, including the Small Water Utility assistance available from the Environmental Finance Centers Network (EFCN) sponsored by the US EPA;

How to Use This Tool

This document only asks a few key questions about your current preparation for and attention to each area of resilience. **You make a preliminary judgment** about whether the area needs a minor check-up or greater attention. This is a quick starting point. You and likely others at your utility will need to follow up on areas of need. The point is to get an agenda, an initial punch-list.

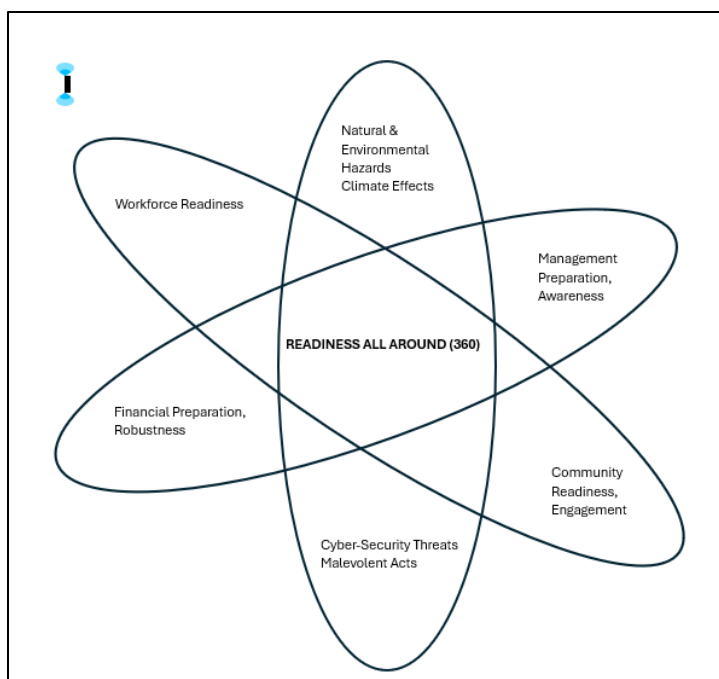
Starting resource links are given for information about best practices and sources of help, to support your effort.

CASE EXAMPLE: For example, consider cybersecurity as one type of need. If you have some preparations to protect against attacks, but they are not based on current knowledge, an update check may be needed. If your utility gives little attention to cyber threat preparation, training and/or technical assistance is needed immediately. A VERY minimal level of preparation would be staff trained not to click on unverified or otherwise suspicious posts or attachments in an email or text. This mistake happens all the time and can have great costs in service disruption and expense. But what if you DO have an incident? Is there a response procedure? Who would you contact for help? Are any of your critical data such as customer records (or worse, SCADA control systems or PLCs or other software or equipment) open to the internet? Do you have an inventory of all your digital resources and know which may be vulnerable? Strengthening your critical lifeline service defense depends on answering such questions in the cyber-threat area and in other utility functions as well.

Business Continuity (BC): The ability to return to normal function after a disruption and to also avoid such disruptions—or as utilities know, to continue vital public services with little or no delay. BC is also referred to as **service continuity**.

Assessment Checklist

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST – RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	MAJOR ATTENTION
1.			
2.			
3.			
4.			
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10.			



This quick readiness assessment covers the following:

1. Vulnerability Assessment
2. Emergency Response Planning and Basic Mutual Aid
3. Extreme Weather Events Planning
4. Critical Operating—Plant Readiness
5. Workforce Operating Readiness
6. Cybersecurity Risk Reduction and Incident Response
7. Financial Readiness—Emergency
8. Financial Readiness—Long-Term
9. Community-Based Water Preparedness—Beyond Mutual Aid

Emergency Management is the beginning point but developing service continuity must happen before and after any incident as an ongoing business practice.

#1. Vulnerability Assessment

Explanation and Rationale

AWIA—the American Water Infrastructure Act of 2018, requires risk and Resiliency Assessments and Emergency Response Plans (ERPs) by utilities serving more than 3300 persons. US EPA provides several tools for making assessments of both natural hazards and malevolent human act threats, which include cybersecurity threats. The online-only Vulnerability Self-Assessment Tool (VSAT) is appropriate for any utility, but a pencil-and-paper small utility vulnerability checklist is very adequate for smaller utilities and those rural utilities not required under AWIA.

Key Questions for Your Assessment**

Have you recently identified your threats to service continuity—physical and human? If you have not recently identified, do you have the assessment you can review and update? If not assessed, consider beginning a vulnerability assessment now. Consider that insurers, as well as liability claimants, are increasingly looking for this evidence of basic due diligence.

***Key questions in this quick assessment are not exhaustive, only a starting point and suggestive, to help you judge if you need to follow-up.*

Action Resources

The AWIA-based Small System Assessment Checklist is available at:

<https://www.epa.gov/waterresilience/small-system-risk-and-resilience-assessment-checklist>

The online Vulnerability Self-Assessment Tool can be found at:

<https://vsat.epa.gov/vsat/>

Limited training guidance is available from EPA for VSAT, but there are some videos on use.

EPA also provides a Strategies Guide (RSG) that ties specific threats to risk-reduction actions. This is very useful and accessible and can help you understand what threats should be considered at your facility. It is included under climate planning resources in section 3. The RSG is an online program that gives you a printed report:

<https://www.epa.gov/crwu/resilient-strategies-guide-water-utilities#/?region=101&utilityType=4&utilitySize=1315&assets=&priorities=&strategies=&fundingSources=>

The EFCN can also provide training and technical assistance for small systems.

Now, for this first topic, give a quick judgment of how much follow-up may be needed for your facility based on information you have now:

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			

#2. Emergency Response Planning (ERP) and Basic Mutual Aid

Explanation and Rationale

AWIA requires Emergency Response Plans (ERPs) by utilities serving more than 3300 people. US EPA provides multiple tools and templates for developing the ERP as well as for aiding in emergency response, such as incident SOP checklists. Plans are to be updated every five years for utilities serving more than 3300 people, but all utilities need such preparations. Also vital is that emergency planning today (and under AWIA) includes readiness to deal with human-caused threats, especially cybersecurity. Effective emergency preparedness also includes arrangements for mutual aid.

This includes with neighboring water utilities for personnel and equipment and in some cases interoperability, and participation in your state's WARN network, the Water/Wastewater Agency Response Network. Later in this tool mutual aid from other kinds of community arrangements is discussed. Finally, certification deadlines for five-year updates under AWIA most recently began in 2025 for large utilities and in 2026 for small utilities.

Key Questions for Your Assessment

Do you have an ERP? Have you reviewed your ERP in the last few years with staff? With your governing body for due diligence? Does your ERP preparedness cover new or heightened hazards you may have experienced more recently? Do you have mutual aid agreements? Do you participate in WARN? Have all staff participated in exercises or other work to keep emergency procedures effective? As with any of these readiness indicators, there are further layers to think about, beyond this overall scan. As an example, and one that has been important to other utilities in a disruption, are your administrative and office staff prepared to provide important support services that will be important to the speedier resumption of service?

Action Resources

US EPA provides incident checklists for a wide range of natural hazards, operational incidents such as algal blooms in source water, and cybersecurity incidents. These checklists themselves are a good review of what preparation you may need:

<https://www.epa.gov/waterutilityresponse/incident-action-checklists-water-utilities>

Every water utility should make sure they have developed contact with their county level emergency management agency (EMA) and that your ERP is integrated into your area's emergency operations plan. The local EMA is a vital partner in areawide emergencies and disasters during and after immediate response, and for pursuing disaster financial assistance from state and federal agencies.

The Environmental Finance Center Network (EFCN) can assist with reviewing these options and developing an action work plan.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
2. Emergency Response Planning			

#3. Extreme Weather Event Planning

Explanation and Rationale

Traditionally emergency planning has focused on looking back at known and experienced hazards. But changing natural conditions and climate demand new efforts to look ahead at how impacts may grow in size, location, and behavior. Altered preparations are required. New impacts affect not only water systems, but also stormwater management, areawide fire hazards and other infrastructure water and wastewater systems rely on.

Atmospheric science and forecasting is the basis for the added layer of vulnerability analysis needed to look at trends in future conditions of temperature, precipitation and storm behavior.

This helps to alert your utility to more intense or even formerly unseen conditions that may occur. That is the basis for any new preparedness or hazard reduction actions.

What does this mean in practice? For example, water systems in some regions with warmer and wetter trends are already experiencing new flooding of infrastructure where it had been none or a seasonal nuisance, both on coasts and inland. Elsewhere, wildfire patterns have grown where rainfall has become more variable. Changes in temperature in some cases are affecting stream flows and water chemistry, which may affect source water needs for filtration and other treatment adjustments.

Key Questions

Has your water system used any information on regional trends to identify new or changing vulnerabilities? Are these considerations part of your AWIA Risk and Resilience Assessment and Emergency Response Plan? Have you acknowledged attention to such planning at the utility's governing body level for recognition by insurers and capital fund sources, who are increasingly using this as another criterion for insurance or bonding? These are just the beginning questions to ask.

Action Resources

The Resilient Strategies Guide (RSG) provides a programmed tool for identifying threats, possible risk reduction actions and an introductory level look at possible costs, benefits, and funding options.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
3. Extreme Weather Event Planning			

#4. Critical Operating/Plant Readiness

Explanation and Rationale

Water and wastewater utilities strive to be prepared to maintain services in the face of operational problems or external impacts. Each system must identify where their operational and plant vulnerable points may exist, but a few are fundamental to any system. These key questions are a good starting point on plant resilience:

Key Questions

There are many different physical plant and operations features and functions that merit preparatory attention. Different solutions depend on specific situations. Critical parts and equipment will vary, but does your system have provisions for them? Two critical benchmarks for drinking water resilience are emergency power and minimum daily demand (MDD). Do you have robust provisions for at least 24 hours of backup electrical power and ability to meet your minimum daily demand for at least 24 and desirably 48 hours in the face of disruptions you may expect in your situation? Thinking more broadly, do you engage in asset management, a key tool for monitoring and acting on plant and operational vulnerabilities and maintenance?

Resources

The Environmental Finance Center Network can provide free training and some technical assistance in asset management and selected technical process subjects (e.g., multiple barrier strategies, nutrient removal improvement, etc.). A list of assistance areas is at:

<https://efcnetwork.org/get-help/>

Your state water resources and/or state health agencies as well as RCAP and RWA are also sources of technical support.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
4. Critical Operating—Plant			

#5. Workforce Operating Readiness

Explanation/Rationale and Key Questions

An industry strategy and standard for business continuity readiness is cross-training (XT) of enough personnel to provide critical backups in the face of emergencies, illness, and other disruptions. Each system must decide where XT opportunities are possible and useful. Limited staff and resources are a challenge. In fact, among small and rural systems in many states, succession due to retirements in the experienced and long-term workforce is a major issue. Consider what your shorter-term and long-term actions may be. Have you:

(Short-term): Cross-trained personnel for the most critical operations? Arranged mutual aid with nearby systems to backstop short-term personnel needs?

(Long-term): Connected with workforce development programs at your regional planning/economic development district, or council of governments, and/or with community college and high school programs, to “fill the pipeline” with potential operating staff?

Action Resources

Workforce development training is available from the EFCN and also may be available from the Rural Water Association in some states. Non-traditional approach to workforce needs may be available from your regional economic development district (EDDs) or council of governments (COGs). Regional organizations often work with programs and partners, such as community colleges, which can create opportunities for growing the pipeline for your workforce.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
5. Workforce Operating Resilience			

#6. Cybersecurity-Risk Reduction and Incident Response

Explanation and Rationale

Even some of the most rural and small water utilities around the nation have now been subjected to cyber-attacks such as ransomware-based denials of service and hacking. Not only is this a hassle for anyone, but for water utilities it could threaten health and life. It is not just a water system problem. To protect service continuity, every water utility should take steps to both prevent and prepare to act in response to such cyber threats.

Key Questions:

Has your system adopted any best practices for cybersecurity? That can include procedures every employee with digital access should follow; providing training for employees as well as conducting tabletop exercise rehearsals for how to respond to cyber threats; identifying and securing any interconnection vulnerabilities (especially if your system uses SCADA-controls and/or has programmable logic controllers (PCLs) open to the internet and creating backups for critical records if digital access is lost to an incident. Asset management, a best practice for any size water system, can also include the vital inventory of all digital resources you use, and the crucial internal and external connections involved.

Action Resources:

The EFCN Small Systems TMF program can assist with basic information and education to improve cybersecurity. The US EPA Office of Water Emergency provides additional technical assistance and can assist with access to other federal resources such as the Cyber and Infrastructure Security Agency (CISA) within the Department of Homeland Security. Other private and nonprofit organizations include WaterISAC and the Water Security Alliance.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
6. Cybersecurity			

#7. Financial Readiness – Emergency

Explanation and Rationale

An extensive set of best practices for preparation and response to short-term emergency disruptions of your utility's financial operations is included in the NIMS/ICS national incident management system framework sections on Core Short-Term Financial Practices. These are steps to protect your supply chains with vendors and payroll operations, document the use of personnel and monetary resources necessary to receive future reimbursements and perhaps most important, maintain a clear organizational structure for those needed tasks. The aim is to avoid an inability to make payments just at a time when time is of the essence and support of your personnel is essential. Waiting until the disruption happens is too late to prepare.

Key Questions

As a first assessment, do you have procedures and provisions to rapidly make expenditures in a disruption? Are necessary emergency contracts in place for use? Are critical records backed

up? Can you maintain a payroll on a short-term emergency basis? Do you have any funds available for short-term emergencies?

Action Resources

US EPA provides useful information on best practices, start with this site:

<https://www.epa.gov/fedfunds/prepare-funding-maintain-your-water-or-wastewater-utilities-financial-business-operations>

The EFCN Small Water Systems TMF Program can assist with reviewing financial health in general and as it relates to emergency needs, as well providing education on financial emergency preparedness.

It is vital to recognize your cybersecurity preparedness efforts as part of financial resilience.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
7. Financial Resilience—Emergency			

#8. Financial Resilience – Long-Term

Explanation and Rationale

All drinking water systems should build long-term financial resilience by setting rates that support operating, maintenance, and longer-term investment needs. Most water systems will need capital funds at some point in a long life to improve or expand infrastructure. Both aspects are part of long-term business readiness. On the capital side, one new trend is that bond funders and raters, as well as insurers, are now looking at whether a system has paid attention to the multiple aspects of robust readiness including those covered in #1-7 here. The rating agencies for bonds will pay attention to whether plans and procedures appear in place for vulnerabilities from natural hazards to cybersecurity. Some will look for evidence of management or governing body commitments, such as annual attention reflected in board minutes. All of this can make a difference to acquiring the funds needed at the best terms.

Key Questions

Rate studies to maintain sustainable revenues for both O&M and future capital needs are the oldest assistance provided by the Environmental Finance Centers. Today, when seeking bond funding, rating agencies are as noted above paying more attention to multiple aspects of readiness. Providing visible evidence of investment in readiness can materially improve ratings and hence financial capacity for capital investment.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
8. Financial Resilience—Long Term			

#9. Community-Based Water Preparedness – Beyond Mutual Aid

Explanation and Rationale

The water sector is paying more attention to relationships with the wider community as key components of readiness to maintain service continuity in emergencies. Every water utility should have mutual aid agreements with emergency response resources appropriate to their needs. This is readily accomplished by joining their state WARN ([Water and Wastewater Agency Response Network](#)). Increasingly complex and multi-faceted hazards and risks have led to recognition that a water utility needs to go “beyond the billing relationship” and beyond traditional incident-focused mutual aid arrangements to engage both those that depend on them (e.g., customers and institutions like hospitals) and those they depend on for critical resources (e.g., electric power providers, key vendors, and other public agencies) on a regular basis.

Interdependency is the vital idea here. One example is how safe drinking water utilities must engage cooperation from their customers to manage demand during both short-term supply shortfalls and extended ones due to drought or other impacts. More than just one-way communication, this requires an ongoing relationship that cannot be created overnight. Some utilities have begun to meet annually with key community organizations as well as the providers and vendors the utility itself will depend on in some situations. This builds understanding and robust lines of communication.

Key Questions

Community partners for communications to water users and key facilities, emergency response partners for mounting short-term alternative water supply and distribution; relationships with partners your own system must depend on (power, manpower, supplies).

Action Resources

The EFC Network can assist with initiating such efforts.

YOUR READINESS SELF-ASSESSMENT CHECKLIST – RESULTS (Fill Out)			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
9. Community-Based Water Preparedness			

Check Your Own System's Readiness & Plan to Follow-Up

YOUR READINESS SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			
2. Emergency Response Planning			
3. Extreme Weather Event Planning			
4. Critical Operating/Plant Readiness			
5. Workforce Operating Readiness			
6. Cybersecurity			
7. Financial Readiness—Emergency			
8. Financial Readiness—Long Term			
9. Community-Based Water Preparedness			