

360° RESILIENCE



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

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			
2. Emergency Response Planning			
3. Climate Planning—Adaptation			
4. Critical Operating—Plant			
5. Workforce Operating Resilience			
6. Cybersecurity			
7. Financial Resilience—Emergency			
8. Financial Resilience—Long Term			
9. Community-Based Water Resilience			

RESILIENCY:

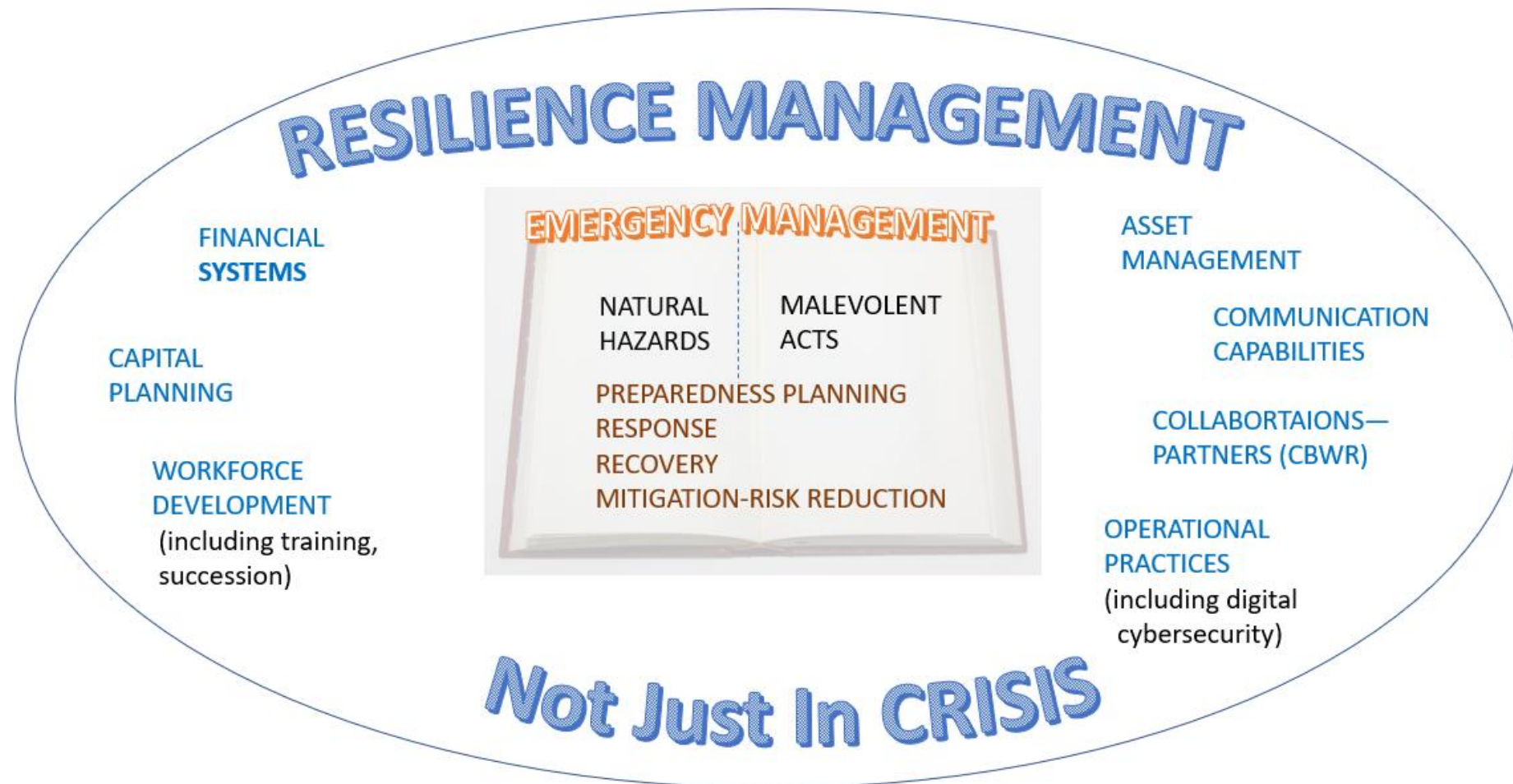
the ability of a person or organization to anticipate, prepare for, and respond to change and sudden disruptions in order to survive and prosper.



Resiliency Means Business!



360° RESILIENCE



Webinar Agenda

- **A 360 Self-Assessment**
- **Prioritizing Risk**
- **AWIA Section 2013: Risk Assessment & Emergency Planning**
- **Environmental Change**
- **Cybersecurity**
- **Workforce Resiliency**
- **Financial Resilience**
- **Community-Based Water Resilience**
- **Next Steps: Self-Assessment & Resources for You**

From soup to nuts



THANK YOU

Self-Assessment

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

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			
2. Emergency Response Planning			
3. Climate Planning—Adaptation			
4. Critical Operating—Plant			
5. Workforce Operating Resilience			
6. Cybersecurity			
7. Financial Resilience—Emergency			
8. Financial Resilience—Long Term			
9. Community-Based Water Resilience			

Water Utility Resilience Readiness Tool

Overview:

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

This resource tool gives you:

1. A quick overview of all the different aspects of resilience; Resilience means business!
2. A checklist to “map” out any areas where your utility may want to assess and improve

#5. Workforce Operating Resilience

Explanation/Rationale and Key Questions (Combined)

An industry strategy and standard for resilience 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. 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 are: 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 Small Water Systems project and also may be available from the Rural Water Association in some states. Non-traditional approach to workforce needs may be available [form](#) 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 RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
5. Workforce Operating Resilience			

tance, including the Small Water Utility
ance Centers Network (EFCN) sponsored

Resilience: The ability to return to normal function after a disruption—or as utilities know, to continue vital public services with little or no delay.

ility will need to further pursue areas of
Starting resource links are [given for](#)
your effort.

if you have some preparations, but not
eded. If your utility gives little attention to
ance is needed now. A VERY minimal level

ck on any
at if you
io would
s
oftware)
digital

Assessment Checklist

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

Tools for Utility Risk and Resilience Planning: A Guided Inventory

New England Environmental Finance Center, University of Southern Maine

Service delivery interruptions due to unforeseen events can be inconvenient or costly at best, and dangerous at worst. Luckily, there are many free tools and resources available to help you get started with basic steps towards a more resilient and prepared utility or system. Strengthening your basic business functions is the foundation for resilience—it is not just about an emergency plan. The Environmental Finance Center Network (EFCN) provides courses, training, and technical assistance in a variety of technical, managerial, and functional areas; especially in asset management, financial planning, and workforce development and selected operations-oriented technical topics. The last section of this inventory provides links to those additional training and assistance resources. This guide first reviews some basic concepts like those covered in our training and presents a guided tour of the many free tools for utility risk and resilience management available from the United States Environmental Protection Agency (EPA). Each resource has a direct hyperlink to its source on the web.

Table of Contents:

1. Set a Basic Framework for Resilience Work
2. Identify Vulnerabilities and Threats to Resilient Service and the Assets Affected
3. Prioritize Risks Based on Consequences and Likelihood
4. Special Topics:
 - a. Get a Handle on Climate
 - b. Become Cyber-Resilient for Better Security
 - c. Hook Into External and Community Partners
 - d. Don't Forget Your Financial Resilience

Self-Assessment

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

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			
2. Emergency Response Planning			
3. Climate Planning—Adaptation			
4. Critical Operating—Plant			
5. Workforce Operating Resilience			
6. Cybersecurity			
7. Financial Resilience—Emergency			
8. Financial Resilience—Long Term			
9. Community-Based Water Resilience			

Poll 1: Attendees



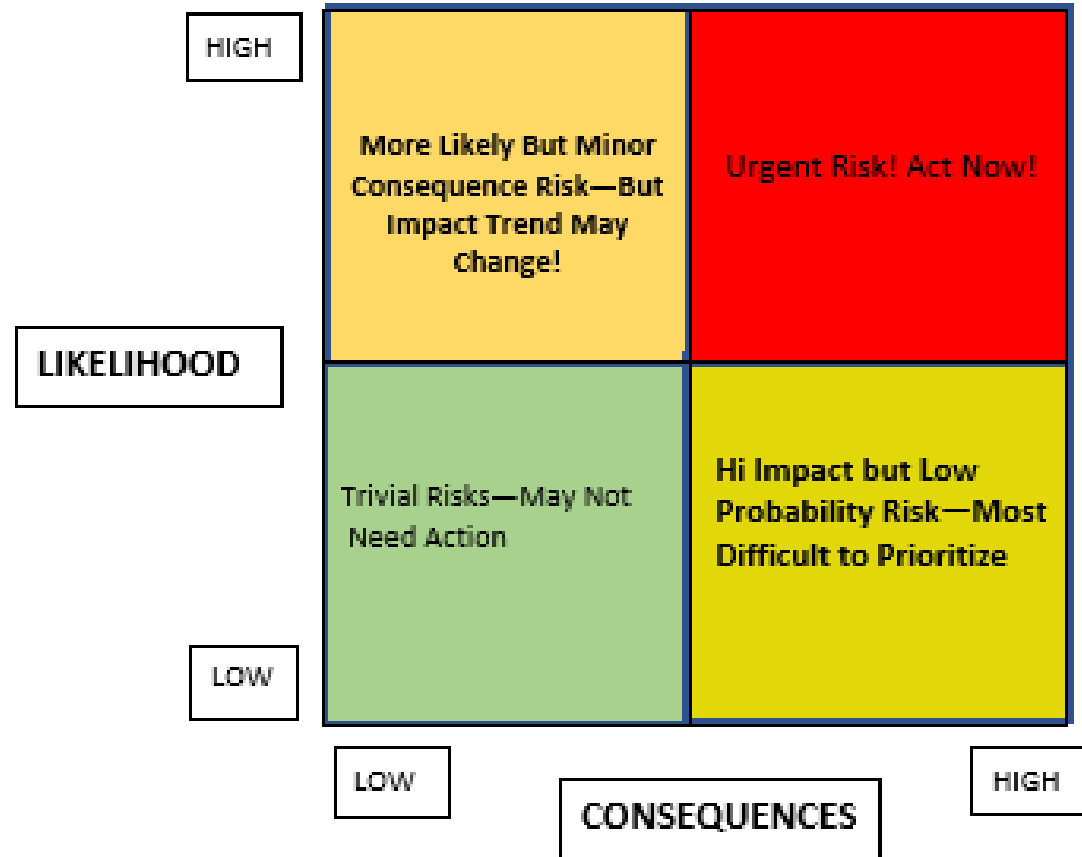
Understanding **Risk**

a deeper dive

Standard Engineering Risk (e.g., component failures)

- Overall Risk = Likelihood × Consequence

	Consequence (C)				
Likelihood (P)	$C \leq 10$	$10 < C \leq 25$	$25 < C \leq 50$	$50 < C \leq 75$	$C > 75$
$P \leq 10\%$	Very Low	Low	Low	Fair	Fair
$10\% < P \leq 30\%$	Low	Fair	Fair	Fair	Moderate
$30\% < P \leq 50\%$	Low	Fair	Fair	Moderate	Moderate
$50\% < P \leq 70\%$	Fair	Moderate	Moderate	Moderate	High
$70\% < P \leq 90\%$	Fair	Moderate	Moderate	High	Very High
$P > 90\%$	Fair	Moderate	High	Very High	Very High



A Basic Framework for Risk Prioritization

Damp Electrical Room ... for Now



Record Amount of Rain Causes Widespread Flooding in City of San Diego

JANUARY 22, 2024, 9:42 PM

It happens when heavy rainfall overwhelms an aging stormwater system with limited capacity. Monday's record rainfall revealed the fragile state of the City's stormwater infrastructure.

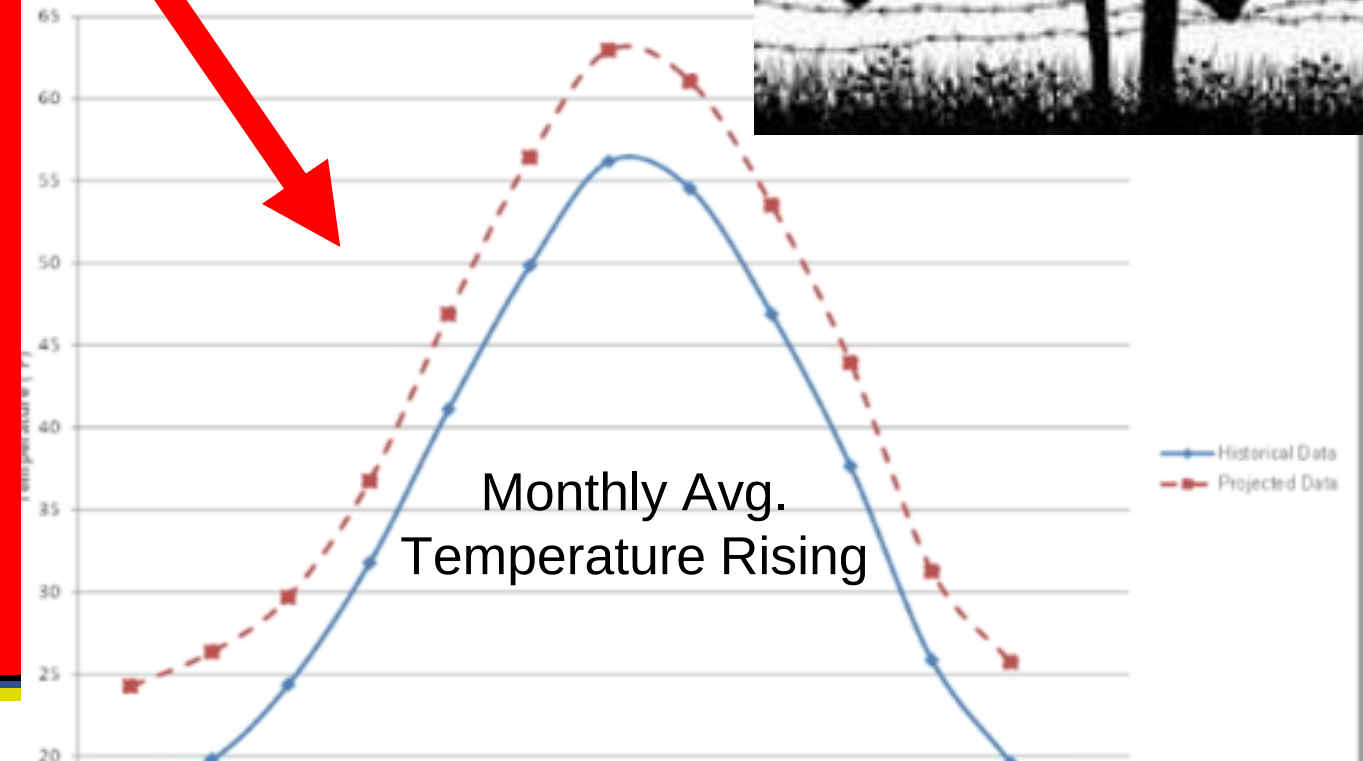


Baselines are Changing !

HIGH

More Likely But Minor
Consequence Risk—But
Impact Trend May
Change!

GOOD



INTERNAL RESILIENCE FACTORS

- Contingency Planning Quality
- Training for Incident Response
 - (Cyber & Hazards)
- Workforce Development
- Short-term Emergency Finance
- Long-term Finance Preparation



EXTERNAL RESILIENCE FACTORS

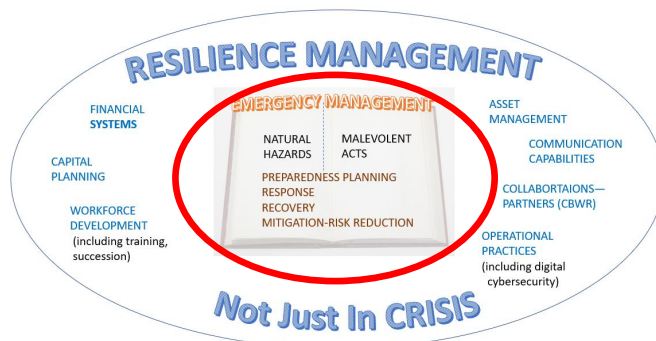
- Natural Hazards (Existing)
- Environmental Change (New Hazards)
- Cybersecurity Threats
- Physical Malevolent Acts
- Local Economy/RatePayer Base
- Nat'l Economy/Cost of Business

← Community-Based Water Resiliency →

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			
2. Emergency Response Planning			
3. Climate Planning—Adaptation			
4. Critical Operating—Plant			
5. Workforce Operating Resilience			
6. Cybersecurity			
7. Financial Resilience—Emergency			
8. Financial Resilience—Long Term			
9. Community-Based Water Resilience			

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
1. Vulnerability Assessment			

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
2. Emergency Response Planning			



AWIA Section 2013 / SDWA Section 1433 Updates

Preparing for Round 2 of AWIA

U.S. [EPA](#) has launched the second round of America's Water Infrastructure Act (AWIA) Section 2013 / Safe Drinking Water Act (SDWA) section 1433, which requires community drinking water systems (CWSs) serving more than 3,300 people to develop or update risk and resilience assessments (RRAs) and emergency response plans (ERPs) every five years.

See the upcoming certification deadlines in the table below:

CWS Population Served	RRA Certification Deadline	ERP Certification Deadline
Over 100,000	March 31, 2025	September 30, 2025
50,000 – 99,999	December 31, 2025	June 30, 2026
3,301 – 49,999	June 30, 2026	December 31, 2026

WICRD recently published updated versions of its [Small System RRA Checklist](#) and [ERP Template](#) and plans to publish an updated version of the [Vulnerability Self-Assessment Tool \(VSAT\)](#) by the end of November 2024. A *Checklist of Priority Cybersecurity Practices for Water Systems* was added to these resources to bolster a CWS's analysis of their cybersecurity practices. [EPA](#) encourages all CWSs to fill out this new cybersecurity checklist and add it to their RRA or ERP.



AWIA-Compliant Risk and Resilience Assessment

VSAT Page	Requirements for AWIA-Compliant Risk and Resilience Assessment
Utility Type	Required
Utility Information	Required
Utility Resilience Index	Required
Qualitative Risk Assessment	Required
Quantitative Risk Assessment	Optional, but recommended
Countermeasure Analysis	Optional
Report	Optional
AWIA Certification	Self-Certification Instructions Provided

Asset-Threat Pairing



Complete the *Risk and Resilience Assessment Checklist* here

EPA offers the *Risk and Resilience Assessment Checklist* in two formats. A fillable PDF format is provided on the pages that follow. This format has fixed fields and may not be changed by the user. Alternatively, a Word version may be accessed by clicking on the icon below. The Word version may be changed by the user. **The content of the PDF and Word versions is the same.** To access the Word version, the file must be downloaded to your computer.



Risk and Resilience Assessment Checklist



United States
Environmental Protection
Agency

Environmental Topics ▾

Laws & Regulations ▾

Report a Violation ▾

About EPA ▾

Water Resilience

Water Resilience Home

America's Water
Infrastructure Act Risk
Assessment and Emergency
Response Plan Requirements

Small System Risk and Resilience
Assessment Checklist

This guidance is intended for small community water systems (CWSs) serving greater than 3,300

CONTACT US

Table 2b: Source Water (Natural Hazards)

Asset Category: <i>Source Water</i>	
Examples of Assets in this Category: Encompasses all sources examples include rivers, streams, lakes, source water reservoirs, s	
Natural Hazards	Brief Description of Impacts
Select the natural hazards in the left column that pose a <u>significant risk</u> to this asset category at the CWS.	If you select a natural hazard in Water asset category, briefly de could impact this asset categor service, and public health as ap
☐ Hurricane	
☐ Flood	
☐ Earthquake	
Source: USEPA	

Comparison of Checklist and VSAT



CHECKLIST



- **Qualitative** risk assessment - **identifies** threats, vulnerabilities, and consequences but does not estimate risk value.
- **Countermeasures** may be **identified**, and the benefits described but not estimated.
- **“Paper”** analysis that requires minimal resources to complete.

VSAT



- **Quantitative** risk assessment - **estimates** threats, vulnerabilities, consequences and monetized risk.
- **Countermeasures** may be **quantified** for cost, risk reduction, and cost-benefit analysis.
- **E-tool** analysis can require significant time and informational resources to complete.

3 Key Products

- **ERP Template**
- **Incident Response Templates**
- **Vulnerability Assessment Tools**



Water Infrastructure and Cyber Resilience Division Products and Services List

The U.S. Environmental Protection Agency (EPA) Water Infrastructure and Cyber Resilience Division (WICRD) has developed a robust suite of products and services to improve the resilience of the Water and Wastewater Systems Sector to all types of hazards. WICRD resources can be found at www.epa.gov/waterresilience. Direct links to specific resources are provided below.

Products are organized by topic: America's Water Infrastructure Act (AWIA), Cybersecurity Resilience, Contamination Preparedness and Response, Emergency Preparedness and Response, Supply Chain Resilience, Federal Funding Sources, Interdependencies, and Training.

Route to Resilience (RtoR)

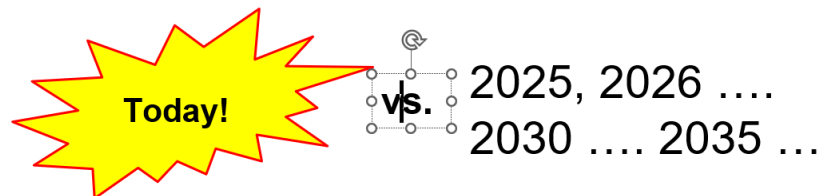
RtoR helps small and medium sized drinking water and wastewater utilities learn more about becoming resilient to all-hazards. The interactive desktop application guides utilities through five stops along the Route to Resilience – Assess, Plan, Train, Respond, and Recover – and provides users with a custom report that highlights specific products and tools.

Poll 2: Hazards



YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
4. Critical Operating—Plant			

SHORT-TERM v. LONG-TERM



Some standard ideal critical operating resiliencies

Short Term!

24-72 Hours of Backup Power

Meet Minimum Daily Demand for
24-72 Hours

Have Critical Parts & Equipment In
Reach 1-3 Days

Case study, small DW system: From CRWU—Creating Resilient Water Utilities Program (USEPA)

City of Fredericktown, MO

The city of Fredericktown, Missouri provides drinking water services to 2,000 residential and commercial connections. Fredericktown’s main source of water, City Lake, is a 93-acre reservoir formed through a dam on the Little St. Francois River and is jointly managed by the U.S. Army Corps of Engineers and the Missouri Department of Conservation. The city of Fredericktown is concerned about intense flooding and drought events which may reduce the city’s ability to provide water for essential needs within their service area. Lower water levels in City Lake also affect the quality of the water entering the plant, thus increasing water treatment costs.

Type	Resilience Strategies
Sediment Removal	Sediment Removal (City Lake)
	Additional Nims Lake release
	Stricter water use restrictions
Wastewater	Wastewater reclamation
	Additional Nims Lake release
	Stricter water use restrictions

Fredericktown pursued the **short-term strategy** of developing a contract to use water from a nearby lake during dry periods. The utility operators, recognizing that upstream water releases and short-term contract may not be sufficient under future conditions, also identified a potential **long-term adaptation** action to dredge the lake.



Case Study: Prolonged Drought Spicewood Beach, Texas



Background

- Fall 2011
- Central Texas
- Prolonged Drought
- Utilities wells went from 130 GPM to 15 GPM
- Contingency plan wasn't enough



Lessons Learned

- Bulk water – inspected and certified
 - Establish contracts
 - Coordinate with state for inspection and certification
- Bridge weight limitations
 - Hauling routes and limits need to be checked
 - Think through scenarios



Even with drought contingency plan, ran out, needed to have water trailer inspected/certified!

Lesson learned—establish. contracts in advance and coordinate with state inspectors ahead.

The WOW Cart is a Simple Solution with Impressive Results

This small, portable, mini-water treatment system can begin making a positive impact in a matter of minutes.



**WOW Cart in action at
EPA Water Security Test
Bed**

Treatment Capabilities:

- Portable (fits in a pickup truck and weighs less than 750 pounds)
- Operates on 110V AC power or dual-fuel generator (gasoline/propane)
- Multiple treatment methods (micro-filtration, GAC, UV, Chlorine gas disinfection)
 - Produces a bleach solution in parallel
 - Table salt is the only consummable
- Setup and operation time within 1-3 hours
- Produce 10,000 to 15,000 gallons per day of safe water
- [WOW Cart Intro Video](#)



15/1



Hurricane Laura Lake Charles, LA Deployment Oct 2020

The WOW Cart vs. Bottled Water

- WOW Cart was used 18 days in Lake Charles by 6 different NGOs
- ONE TIME COST = \$ 40,000
- 100,000 gallons = 800,000 bottles on 416 pallets
- 416 pallets cost \$182,600 PLUS transport via:
- Delivering 416 pallets would require
 - ✓ 20 C-130 Flights or
 - ✓ 16 Semi Trailers



[Lake Charles Response Video](#)

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS

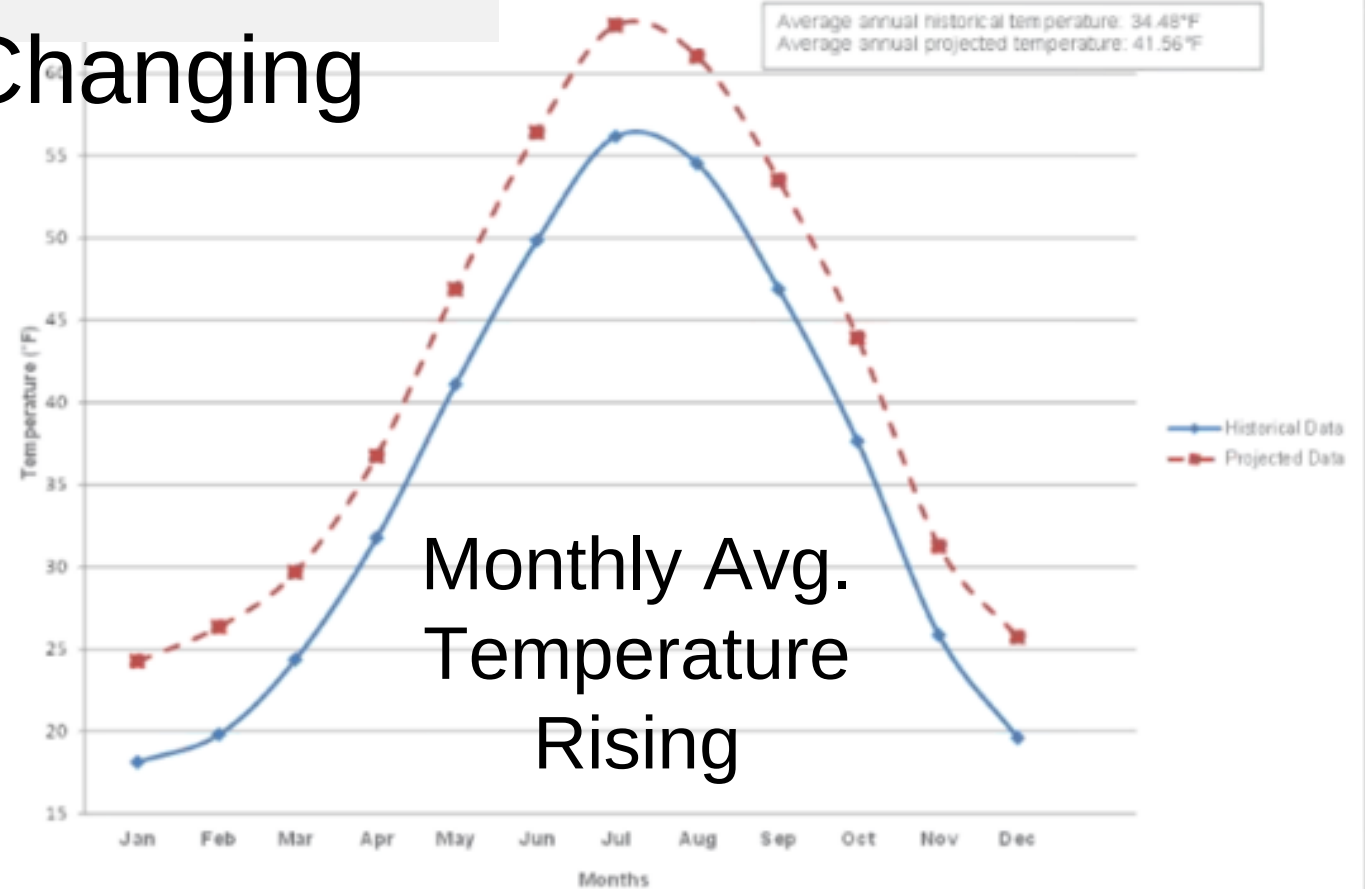
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
3. Climate Planning—Adaptation			

Baselines are Changing

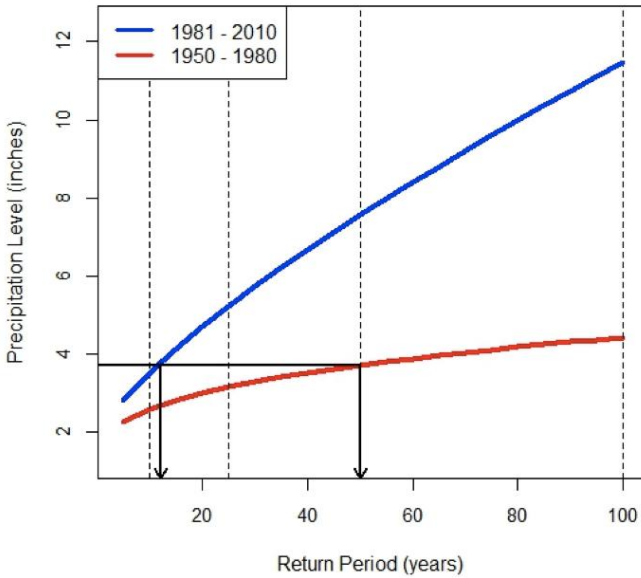
HIGH

More Likely But Minor
Consequence Risk—But
Impact Trend May
Change!

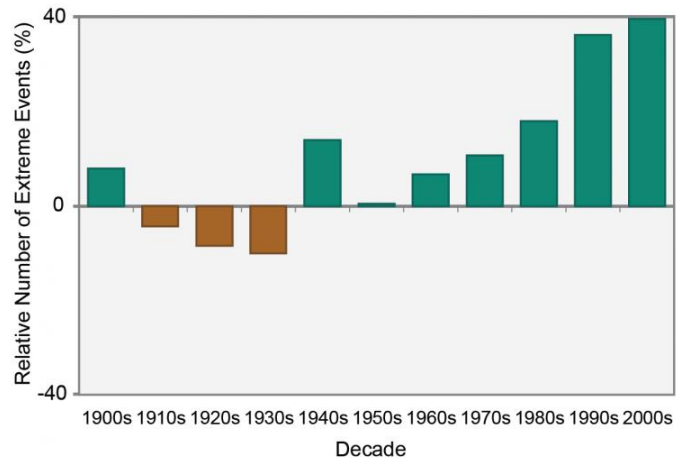
OOD



Increasing Storm Frequency



Observed U.S. Trend in Heavy Precipitation



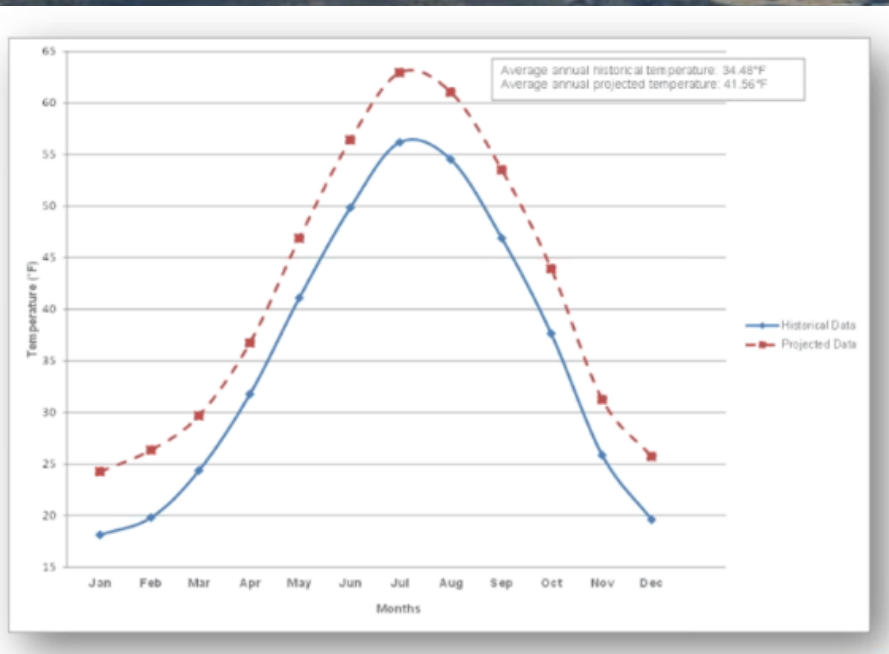
And this.....Worcester in October 2016

....while we were in the middle of our worst drought since the 1960s!



Level 4
DROUGHT
WARNING

? Non-Stationarity



EPA's Creating Resilient Water Utilities Initiative

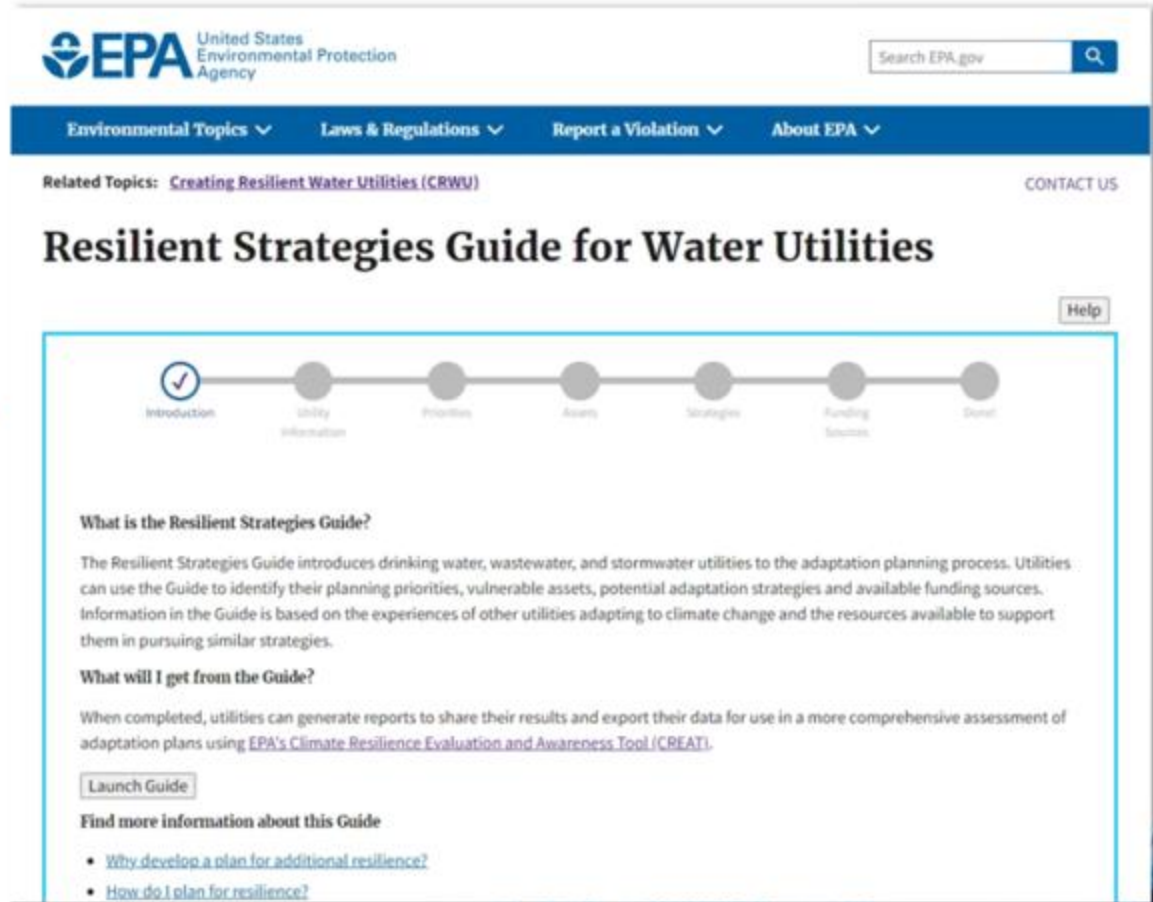
“CRWU”



Click to save a picture to your desktop.

Resilient Strategies Guide

- **Free**, online application for reviewing resilience strategies used by water utilities
- Introduction to adaptation planning for those with limited experience
- Provides **strategies** based on location, priorities, and assets
- Provides **funding options** based on selected strategies



The screenshot shows the EPA website's header with the logo and navigation links: Environmental Topics, Laws & Regulations, Report a Violation, and About EPA. A search bar is in the top right. Below the header, a blue banner contains the title 'Resilient Strategies Guide for Water Utilities' and a 'Help' button. A progress bar with seven steps (Introduction, Utility Information, Priorities, Assets, Strategies, Funding Sources, Done!) is displayed, with 'Introduction' marked as complete. The main content area includes the heading 'What is the Resilient Strategies Guide?' followed by a paragraph explaining the guide's purpose. Below this is the heading 'What will I get from the Guide?' and a paragraph about generating reports. A 'Launch Guide' button is present. At the bottom, a section titled 'Find more information about this Guide' lists two links: 'Why develop a plan for additional resilience?' and 'How do I plan for resilience?'. The EPA logo is in the bottom right corner of the page.

EPA United States Environmental Protection Agency

Search EPA.gov

Environmental Topics ▾ Laws & Regulations ▾ Report a Violation ▾ About EPA ▾

Related Topics: [Creating Resilient Water Utilities \(CRWU\)](#) CONTACT US

Resilient Strategies Guide for Water Utilities

Help

Introduction Utility Information Priorities Assets Strategies Funding Sources Done!

What is the Resilient Strategies Guide?

The Resilient Strategies Guide introduces drinking water, wastewater, and stormwater utilities to the adaptation planning process. Utilities can use the Guide to identify their planning priorities, vulnerable assets, potential adaptation strategies and available funding sources. Information in the Guide is based on the experiences of other utilities adapting to climate change and the resources available to support them in pursuing similar strategies.

What will I get from the Guide?

When completed, utilities can generate reports to share their results and export their data for use in a more comprehensive assessment of adaptation plans using [EPA's Climate Resilience Evaluation and Awareness Tool \(CREAT\)](#).

Launch Guide

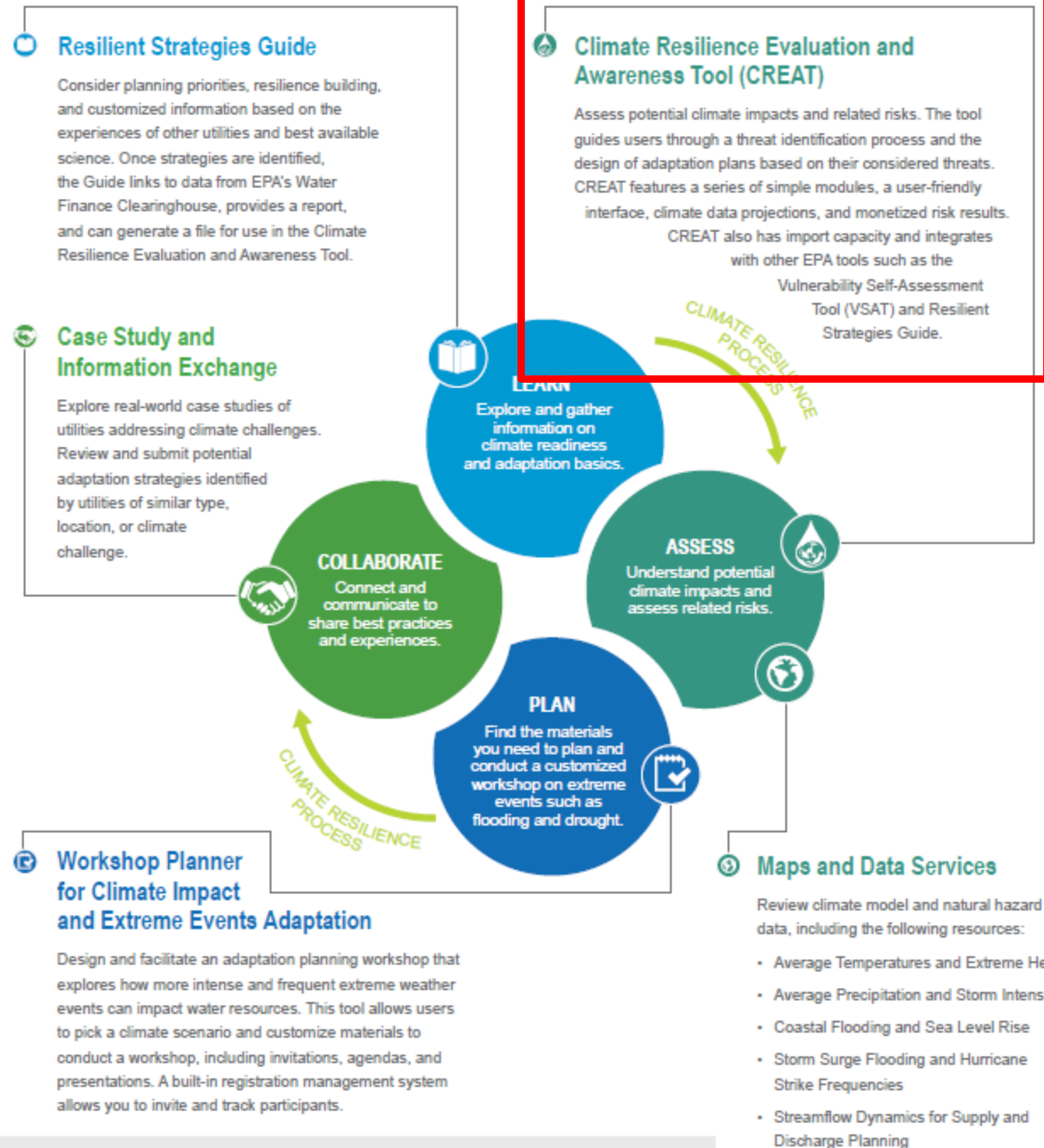
Find more information about this Guide

- [Why develop a plan for additional resilience?](#)
- [How do I plan for resilience?](#)

EPA

EPA's Creating Resilient Water Utilities Initiative

“CRWU”



Climate Resilience Evaluation & Awareness Tool

“CREAT”

CREAT Analysis Recap

Using CREAT, our risk assessment identifies:

Module 1	Our climate threat and basic utility information
Module 2	How that threat can change over time
Module 3	Types of consequences if the threat were to occur Which assets were at risk to the threat
Module 4	Existing and potential strategies to protect the asset Plans of adaptation strategies to provide further protection
Module 5	Benefits of implementing adaptation plans compared to the cost of doing nothing How likelihood can inform adaptation decision making External benefits of plan implementation

Measurement	Baseline	Hotter Drier More Stormy and Lower Future Flow
Annual Average Temperature (Fahrenheit)	40.09	--
July Average Temperature (Fahrenheit)	68.95	--
August Average Temperature (Fahrenheit)	66.97	--
Annual Degree Change in temperature (Fahrenheit)	--	7.43
July Degree Change in temperature (Fahrenheit)	--	8.14
August Degree Change in temperature (Fahrenheit)	--	7.64
Annual Number of hot days over 90 °F (Days)	7	42
Annual Number of hot days over 95 °F (Days)	2	21
Annual Number of hot days over 100 °F (Days)	0	7
June % Change in precipitation (%)	--	-8.13
July % Change in precipitation (%)	--	-17.41
August % Change in precipitation (%)	--	-15.82
Annual Average Minimum Flow (Cubic Feet/Second)	120.54	109.12

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
6. Cybersecurity			

In a first for Maine, ransomware hackers hit two public wastewater plants

Experts worry as cyber criminals target smaller utilities that play crucial roles.

BY **KATE COUGH** | AUGUST 15, 2021



Cybercrime to cost the world
\$10.5 trillion annually by 2025

U.S. an estimated **\$2 trillion/yr** by 2030

MODULE 1: [THE SUSPICIOUS EMAIL]

Scenario

[April 24, 2017: 0730 hrs]

[John is a new office clerk for the public utility in the small town of Lakewood. He receives an email from an unknown sender with the subject title "Failed Package Delivery Notice." Thinking he missed a package delivery when he was out of the office yesterday, John opens the email.]

John doesn't recognize the recipient of the email, but there is a link which he thinks may have more information.

What should John do next?

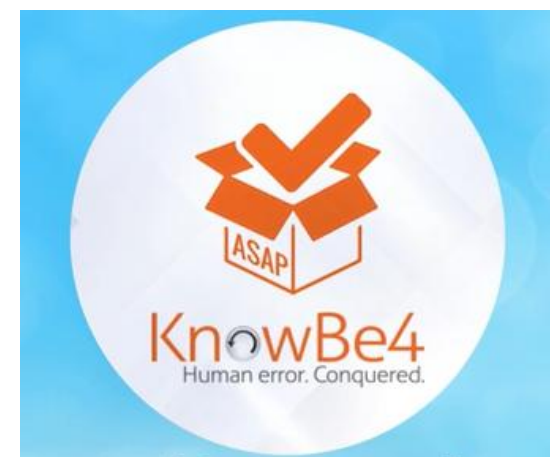


From the experts: cybersecurity-based user awareness and education practices

- Have a Cybersecurity Emergency Response Plan
- Maintain an updated inventory of hardware and software
- Perform regular cyber threat and vulnerability monitoring
- Establish complex passwords and a good password policy
- Use multifactor authentication
- Update or patch software regularly
- Utilize reputable antivirus and malware software
- Remove or disable unused features, ports, software, and devices
- Use network firewalls
- Limit remote connections to SCADA* systems
- Install independent cyber-physical safety systems (cut-outs)

There are other basic practices as well...see links in the resource document.

* Supervisory Control and Data Acquisition systems



YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
5. Workforce Operating Resilience			

Building a Water Workforce for Small Water & Wastewater Systems

Averi Davis, Program Manager

Syracuse University Environmental
Finance Center (SU-EFC)

E: adavis02@syr.edu

efc.syr.edu



**Environmental
Finance
Center**
Syracuse University



Four Pillars of Workforce Development

- Succession planning
- Retention
- Recruitment
- Messaging

FEBRUARY 2022



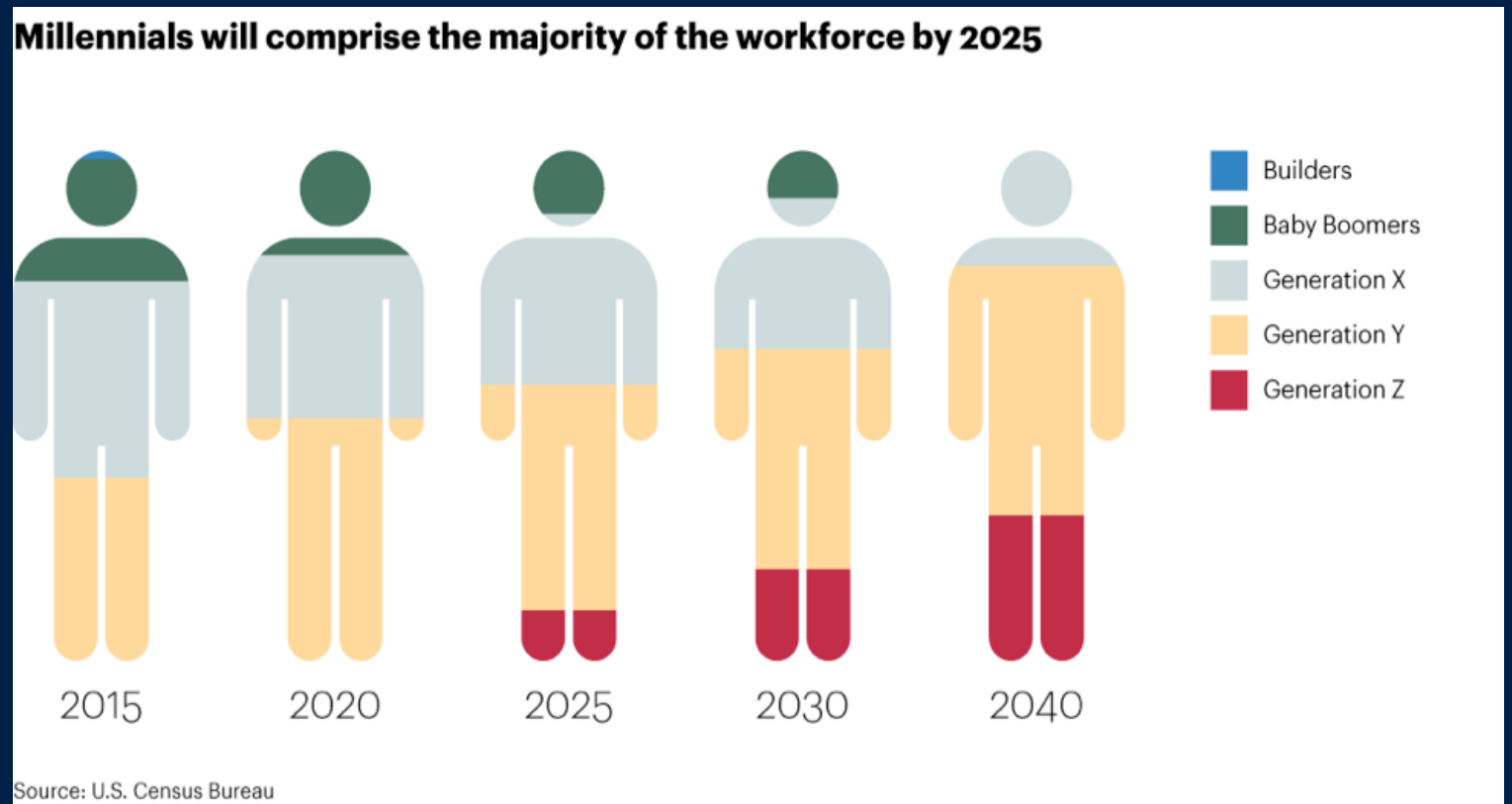
South Carolina
Rural Infrastructure Authority



What are the biggest challenges facing utilities in the next five years?

Who is Working with Us?

Millennials
and beyond
will make up
to 75% of
the global
workforce by
2025





If you look like this...

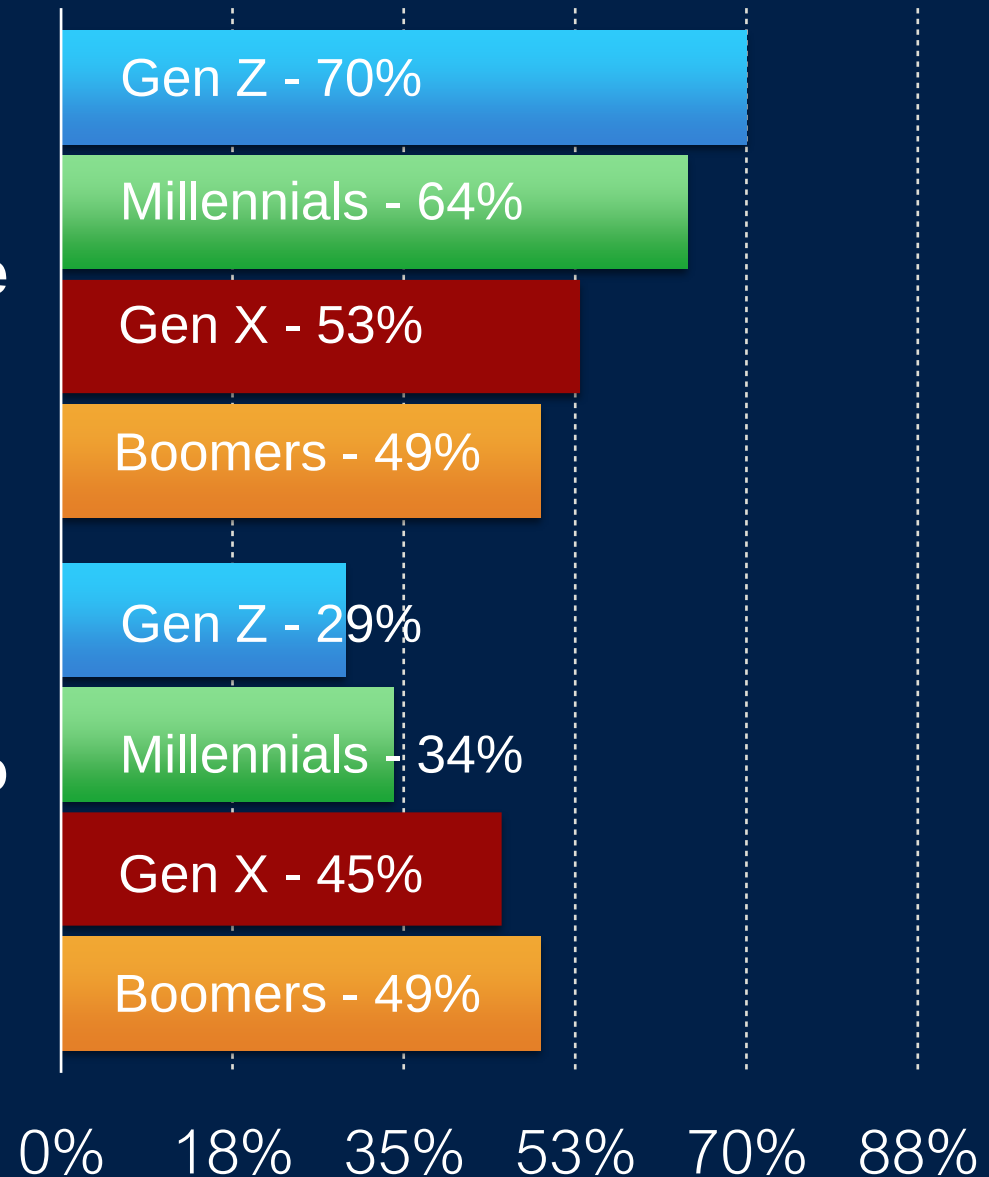


It will be hard to attract this.

Should government do more to solve our problems?

Government Should Do More

**Doing too Much: Leave it to
Business**



Looking for **Untapped** Potential?

Consider an internship program at your water/wastewater utility!

Internship funding available for a limited time in Iowa, Kansas & New York - email efc@wichita.edu for more info



**The EFCs in EPA
Regions 2 and 7**

Why Hire an Intern?



*Interns are a **cost-effective** way to handle daily tasks.*



*Internships **promote the water workforce** and foster the next generation of talent.*



*Interns can **spark community awareness** by sharing their experiences with friends, family, or local media outlets.*

Workforce Resilience: Backing Up Personnel Capacity

Short Term Workforce Resilience

- Cross-Training Among Staff
- Mutual-Aid Arrangements with Nearby Utilities
- Staffing Arrangements With Other Departments (e.g. in a Municipality) for Non-Licensed Help

Long-Term Workforce Resilience

- Work on Retention
- Work on the Succession Pipeline—Recruitment **NOT** Just When a Position Vacates!



YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
7. Financial Resilience—Emergency			

YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS			
CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
8. Financial Resilience—Long Term			

American Water Works Association definition of Reserve Funds for Utilities

- Operating
- Capital
- Debt Service
- Rate
Stabilization

Financial Resilience: Short- and Long-Term

Short-Term

- Have Letters of Credit in Place Ahead
- Call on Staffing Mutual Aid if Applicable
- Well-Maintained Vendor Relationships

Long-Term

- Demonstrate Due-Diligence to Bond Funders and Insurers (**they are now looking at this!**)
- Rate Structure
- Asset Management

Rate Studies & Asset Management Training/Assistance are 2 oldest services of the Environmental Finance Centers



Technical Assistance Request Form

The EFCN offers no cost assistance to drinking water systems serving 10,000 or fewer people and wastewater systems that treat 1 million gallons per day or less. Areas of assistance we can provide include:

- Funding & Financial Management
- Asset & Utility Management
- Regulatory Compliance
- Public Engagement & Communication
- Workforce Development & Leadership
- Resilience Planning & System Collaboration
- Technical Support (math, I/I, chlorine disinfection, etc.)



YOUR RESILIENCE SELF-ASSESSMENT CHECKLIST -- RESULTS

CATEGORY	UP-TO-DATE	NEEDS REVIEW	NEEDS MAJOR ATTENTION
9. Community-Based Water Resilience			



**American Water Works
Association**

Dedicated to the World's Most Important Resource®

[Shop](#) | [Give ▼](#) | [About Us](#) | [Career Center](#) | [Cart](#) | [My Account](#) | [Join](#)

Search awwa.org



[Membership & Volunteering ▼](#)

[Events & Education ▼](#)

[Professional Development ▼](#)

[Resources & Tools ▼](#)

[Publications ▼](#)

[Policy & Advocacy ▼](#)

WATER/WASTEWATER AGENCY RESPONSE NETWORK

[Resources & Tools](#) / [Resource Topics](#) / [Water/Wastewater Agency Response Network](#)

Share



A Water and Wastewater Agency Response Network is a network of utilities helping other utilities to respond

The gold standard
for examination
of water and
wastewater



Some Best Practices for Utilities and Local Emergency Agencies

- Share day-to-day immediate contact information
- Attend each other's training events (especially exercises)
- Connect with each others' plans (esp. the HMP and ERPs)
- Know how each can tap extra resources (e.g., WARN, local MAAs)
- Develop joint emergency/risk communication plans (such as water use notices that all will disseminate)
- Agree on and issue Worker Access Cards to facilitate utility personnel entrance to necessary areas and facilities (emergency managers may include state and National Guard personnel who don't know you!).
- Work together on any potential emergency water system interconnections.
- Don't forget law enforcement if you have threats from cyber and/or physical malevolent acts.

SOURCE: based on EPA 832-f-18-001 2018

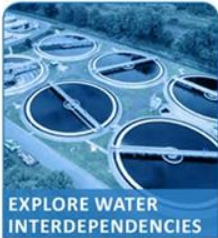
CBWR – Beyond Usual Emergency Networks

- **Connect With Major Users That Are Also Sources of Assistance in An Emergency or Longer-Term Challenge (e.g. drought)**
 - Example: Even larger DW systems have turned to area hospitals and facilities to fill shortfalls of generators.
- **Go Beyond the Billing Relationship With Customers to Seek Cooperation and Coordination**
 - Example: Periodic education with customers to have good communication on reduced water use during a critical event
- **In General, Well-Maintained Lines of Communication With Community Institutions, Facilities, Large or Small Community**



COMMUNITY-BASED WATER RESILIENCY GUIDE

Select a menu option below. New users should start with Overview.



Overview

Explore Water
Interdependencies

Water Resilience
Action Plan Kit

Tools, Resources
and Templates

EXPLORING WATER INTERDEPENDENCIES

Click on the buttons below to explore the various interdependencies in greater detail.



ENERGY
SECTOR



FOOD AND
AGRICULTURE
SECTOR



CHEMICAL
SECTOR



HEALTHCARE AND
PUBLIC HEALTH
SECTOR



EMERGENCY
SERVICES
SECTOR



TRANSPORTATION
SYSTEM
SECTOR

Next Steps:

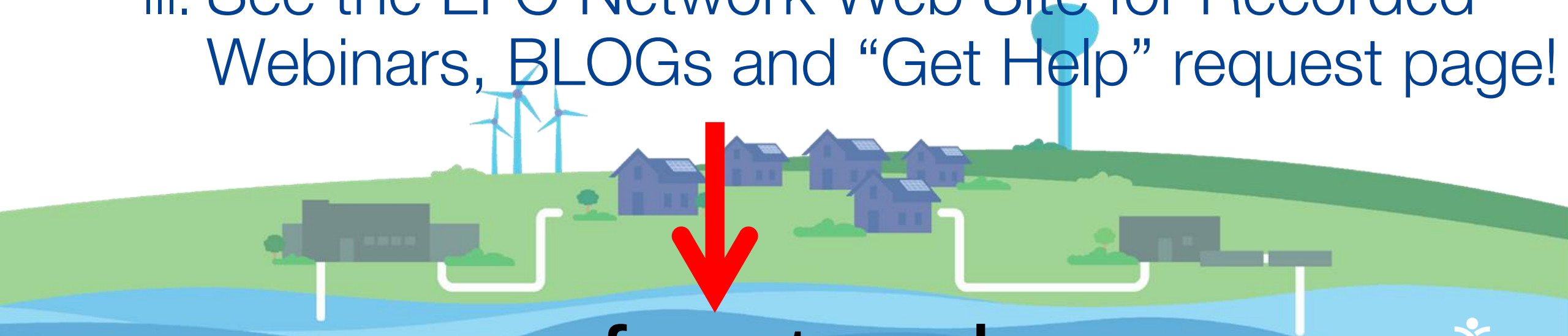
I. Use the **Resilience Readiness Tool** to do a Quick Self-Assessment

(Download from Chat; Email will also be sent.)

II. Seek Training & Assistance in Priority Areas

(***Guided Tools Inventory*** for links, info. to be emailed)

III. See the EFC Network Web Site for Recorded Webinars, BLOGs and “Get Help” request page!



A stylized illustration of a sustainable community. It features a green hill with several blue houses, some with solar panels. In the background, there are three wind turbines. A blue water tower stands on the right. White pipes connect buildings to a blue body of water at the bottom, suggesting a water recycling or treatment system. A large red arrow points down from the center of the hill towards the website URL.

www.efcnetwork.org

Thank You! Questions?

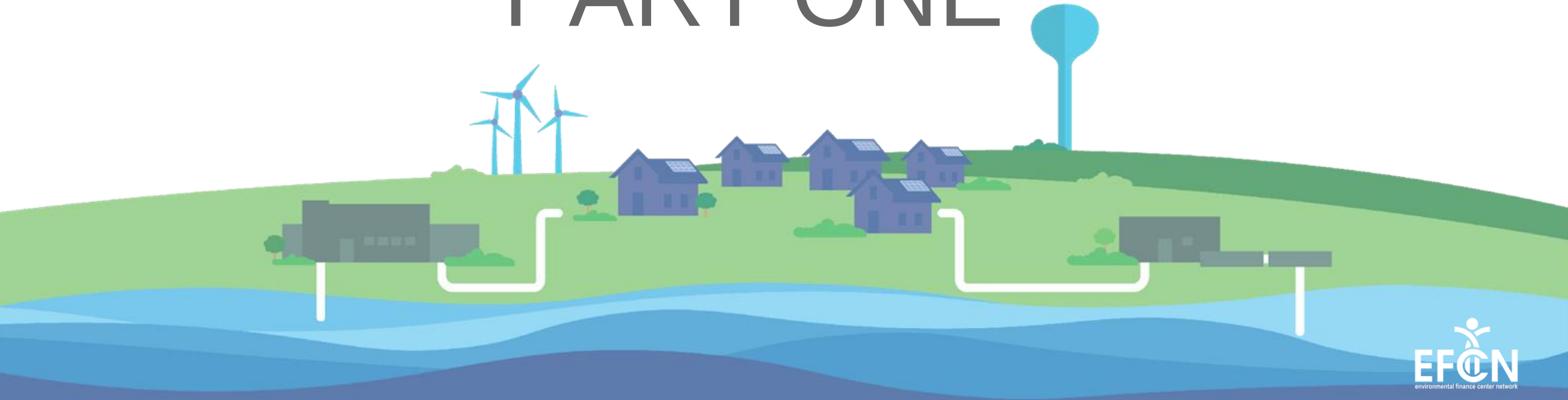
Contact Jack Kartez, Senior Advisor, New England EFC
at:

jackk@maine.edu

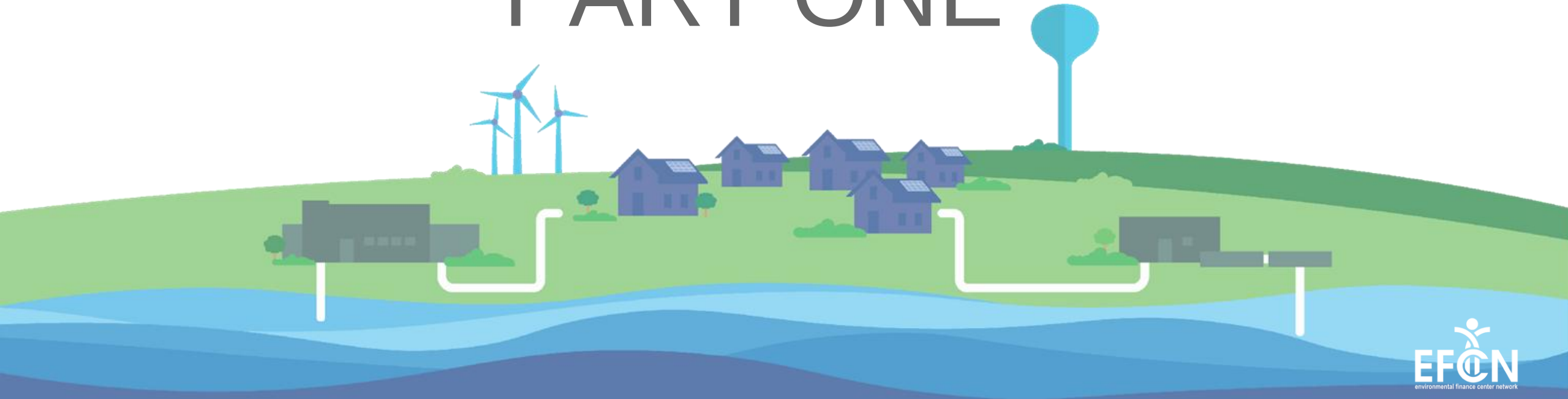
EFC Resources?: **www.EFCNetwork.org**



Poll #3: Quick Check-In on Self Assessment PART ONE



Poll #4: Quick Check-In on Self Assessment PART ONE



Thank You! Questions?

Contact Jack Kartez, Senior Advisor, New England EFC
at:

jackk@maine.edu

EFC Resources?: **www.EFCNetwork.org**

