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Preparing for Extreme Weather Events: Workshop Planner for the Water Sector

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US EPA Office of Water

February 27, 2013

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Presentation Overview

- CRWU Background
- Extreme Events Workshop Planner overview
- Workshop Planning Steps

Climate Ready Water Utilities (CRWU)

CRWU Mission Statement

To provide the water sector (drinking water, wastewater, and stormwater utilities) with the practical tools, training, and technical assistance needed to adapt to climate change by promoting a clear understanding of climate science and adaptation options.




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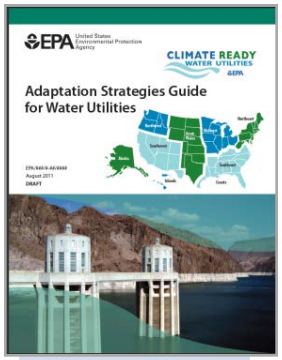
Climate Ready Tools & Resources

Climate Ready Process

Adaptive Response Framework

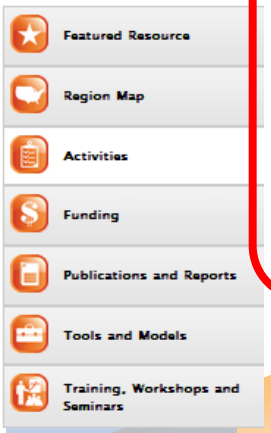
Explore Elements of Climate Readiness

Adaptation Strategies Guide



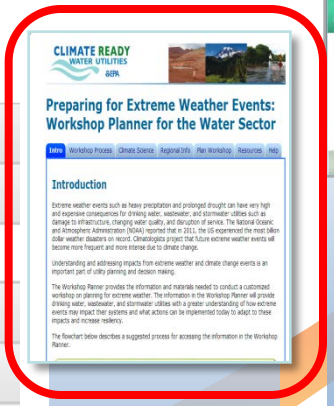
Learn Climate and Adaptation Basics

Toolbox



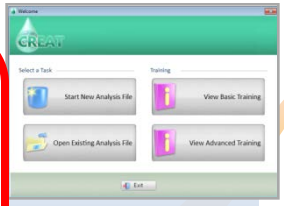
Research and Gather Information

Extreme Events Workshop Planner



Collaborate with Partners

Climate Resilience Evaluation and Awareness Tool



Assess Risks and Evaluate Opportunities

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CRWU Webinar Series

Topic	Next Event
Introduction to CREAT	*February 27, 2013*
Extreme Events Workshop Planner	*March 6, 2013*
Adaptation Strategies Guide	*March 13, 2013*
Workshop Planner/ Adaptation Strategies Guide	*April 10, 2013*
Using CREAT for Planning and Decision Support	*TBD*
Introduction to CRWU Initiative	*TBD*
Climate Change and the Water Sector	*TBD*

Register at epa.gov/climatereadyutilities

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Preparing for Extreme Weather Events: Workshop Planner for the Water Sector

Learn how to organize an adaptation planning workshop.

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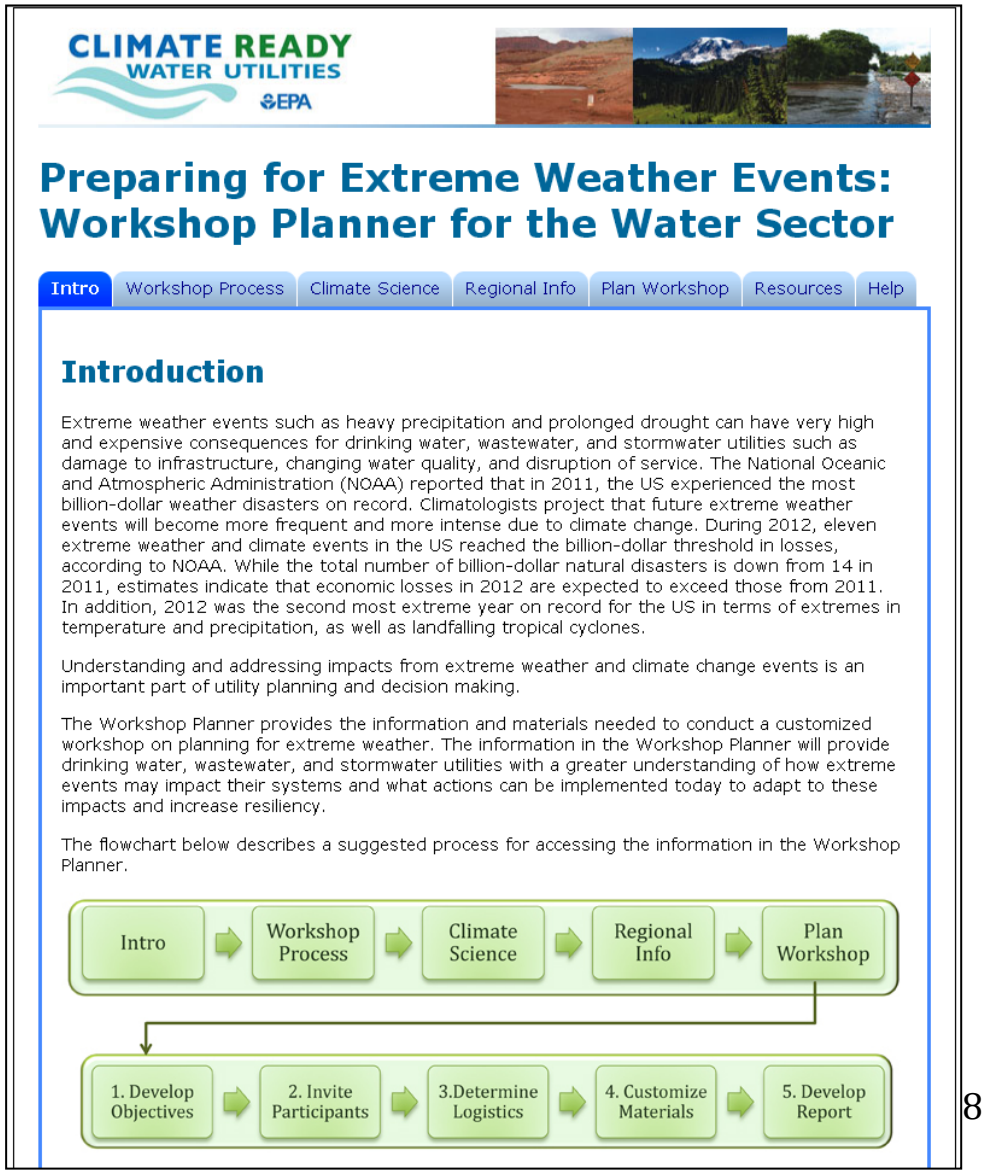
Overview

- Provides users with the materials to plan, facilitate, and conduct an adaptation planning workshop.
- Opportunity to connect utility and community partners
- By the end of the workshop, all participants will have an actionable path forward of next steps.

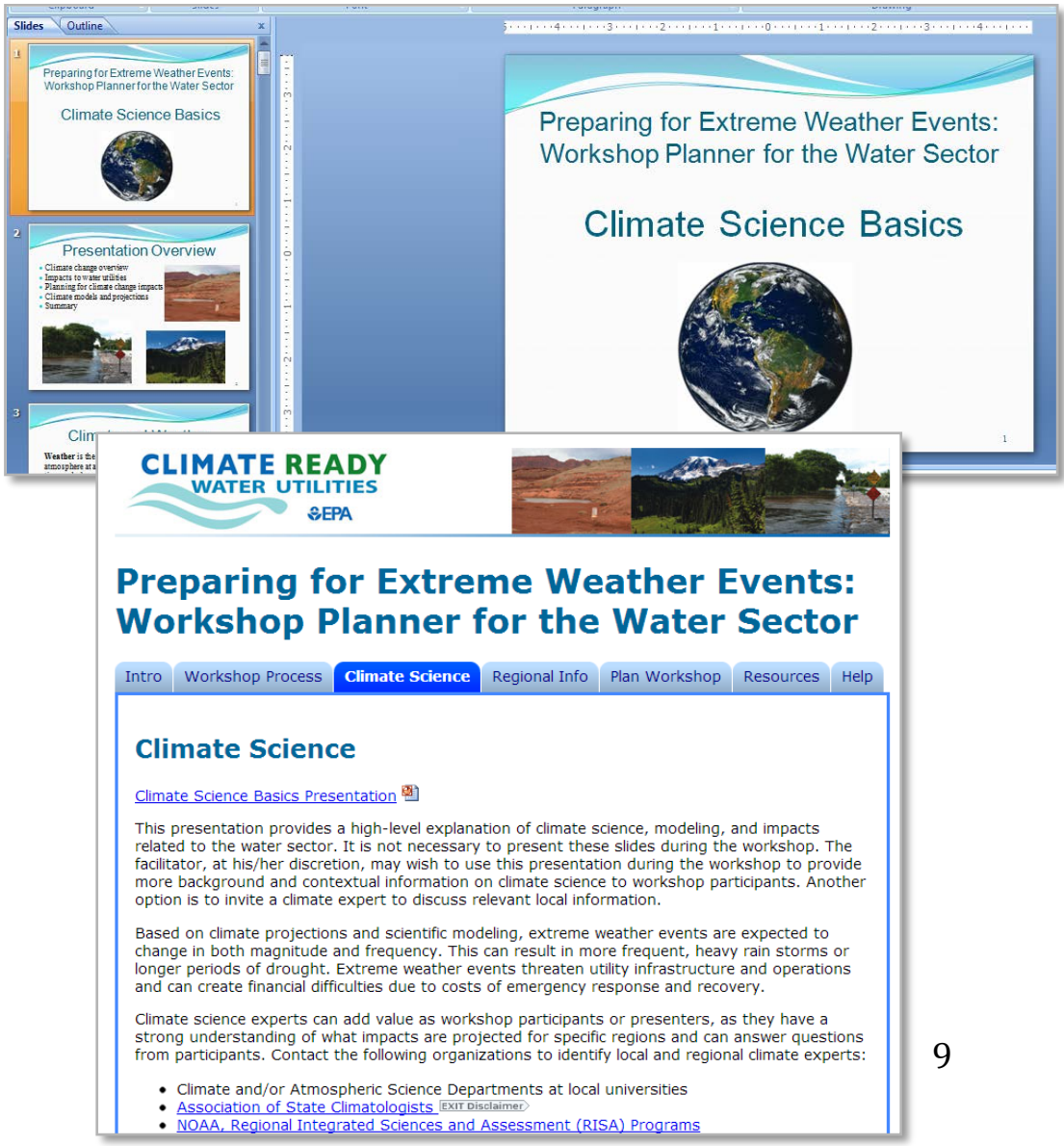
Intro Tab

- Why conduct a workshop
- Overview of planning process



Climate Science Tab

- Links to climate experts
- Presentation on climate science, modeling, and impacts to the water sector



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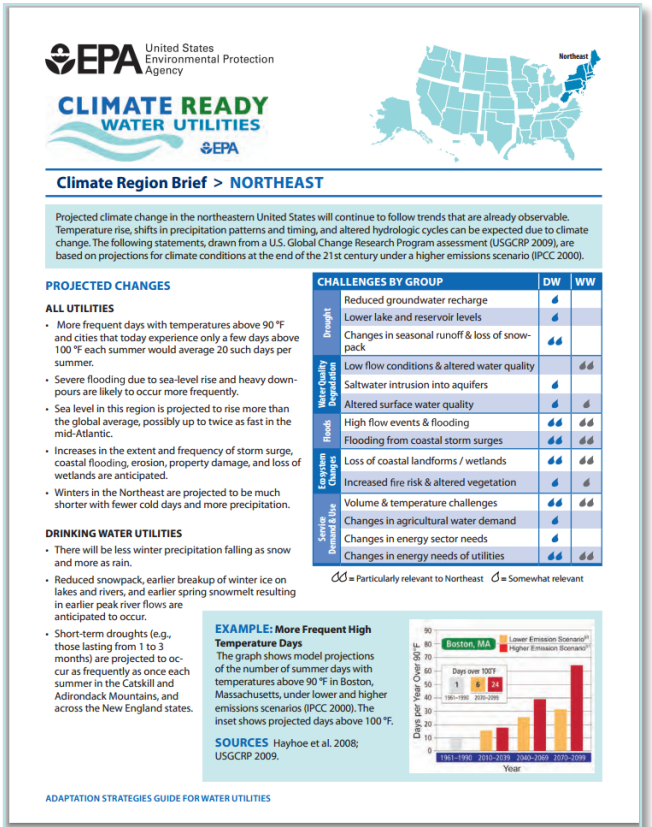
Regional Climate Information

Click on the map to open climate information by USGCRP region.



EPA United States Environmental Protection Agency

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Northeast

Climate Region Brief > NORTHEAST

Projected climate change in the northeastern United States will continue to follow trends that are already observable. Temperature rise, shifts in precipitation patterns and timing, and altered hydrologic cycles can be expected due to climate change. The following statements, drawn from a U.S. Global Change Research Program assessment (USGCRP 2009), are based on projections for climate conditions at the end of the 21st century under a higher emissions scenario (IPCC 2000).

PROJECTED CHANGES

ALL UTILITIES

- More frequent days with temperatures above 90 °F and cities that today experience only a few days above 100 °F each summer would average 20 such days per summer.
- Severe flooding due to sea-level rise and heavy downpours are likely to occur more frequently.
- Sea level in this region is projected to rise more than the global average, possibly up to twice as fast in the mid-Atlantic.
- Increases in the extent and frequency of storm surge, coastal flooding, erosion, property damage, and loss of wetlands are anticipated.
- Winters in the Northeast are projected to be much shorter with fewer cold days and more precipitation.

DRINKING WATER UTILITIES

- There will be less winter precipitation falling as snow and more as rain.
- Reduced snowpack, earlier breakup of winter ice on lakes and rivers, and earlier spring snowmelt resulting in earlier peak river flows are anticipated to occur.
- Short-term droughts (e.g., those lasting from 1 to 3 months) are projected to occur as frequently as once each summer in the Catskill and Adirondack Mountains, and across the New England states.

CHALLENGES BY GROUP		DW	WW
Drought	Reduced groundwater recharge	💧	
	Lower lake and reservoir levels	💧	
	Changes in seasonal runoff & loss of snowpack	💧💧	
Water Quality Degradation	Low flow conditions & altered water quality		💧💧
	Saltwater intrusion into aquifers	💧	
	Altered surface water quality	💧	💧
Floods	High flow events & flooding	💧💧	💧💧
	Flooding from coastal storm surges	💧💧	💧💧
Ecosystem Changes	Loss of coastal landforms / wetlands	💧💧	💧💧
	Increased fire risk & altered vegetation	💧	💧
Service Demand & Use	Volume & temperature challenges	💧💧	💧💧
	Changes in agricultural water demand	💧	
	Changes in energy sector needs	💧	
	Changes in energy needs of utilities	💧💧	💧💧

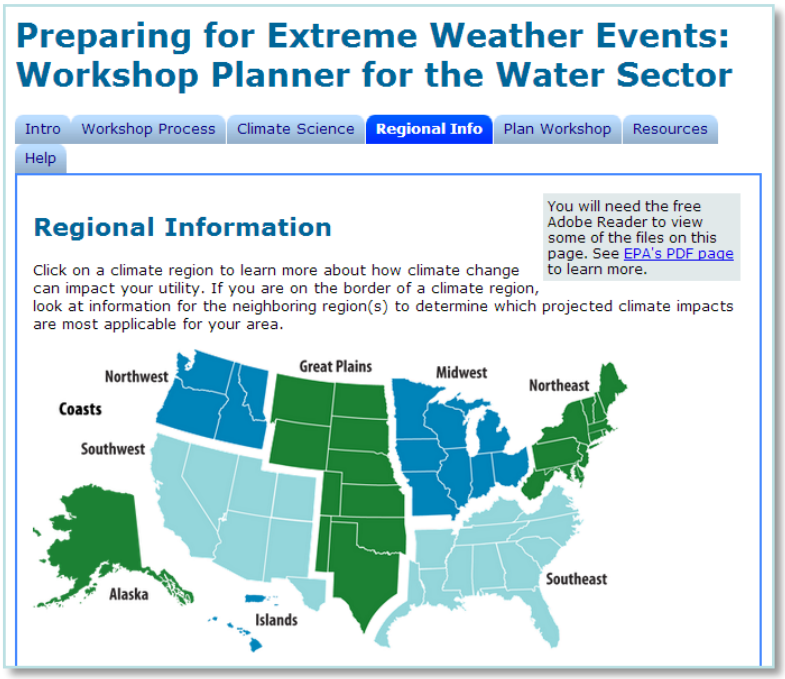
💧💧 = Particularly relevant to Northeast 💧 = Somewhat relevant

EXAMPLE: More Frequent High Temperature Days

The graph shows model projections of the number of summer days with temperatures above 90 °F in Boston, Massachusetts, under lower and higher emissions scenarios (IPCC 2000). The inset shows projected days above 100 °F.

SOURCES Hayhoe et al. 2008; USGCRP 2009.

ADAPTATION STRATEGIES GUIDE FOR WATER UTILITIES



Preparing for Extreme Weather Events: Workshop Planner for the Water Sector

Intro | Workshop Process | Climate Science | **Regional Info** | Plan Workshop | Resources | Help

Regional Information

You will need the free Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

Click on a climate region to learn more about how climate change can impact your utility. If you are on the border of a climate region, look at information for the neighboring region(s) to determine which projected climate impacts are most applicable for your area.

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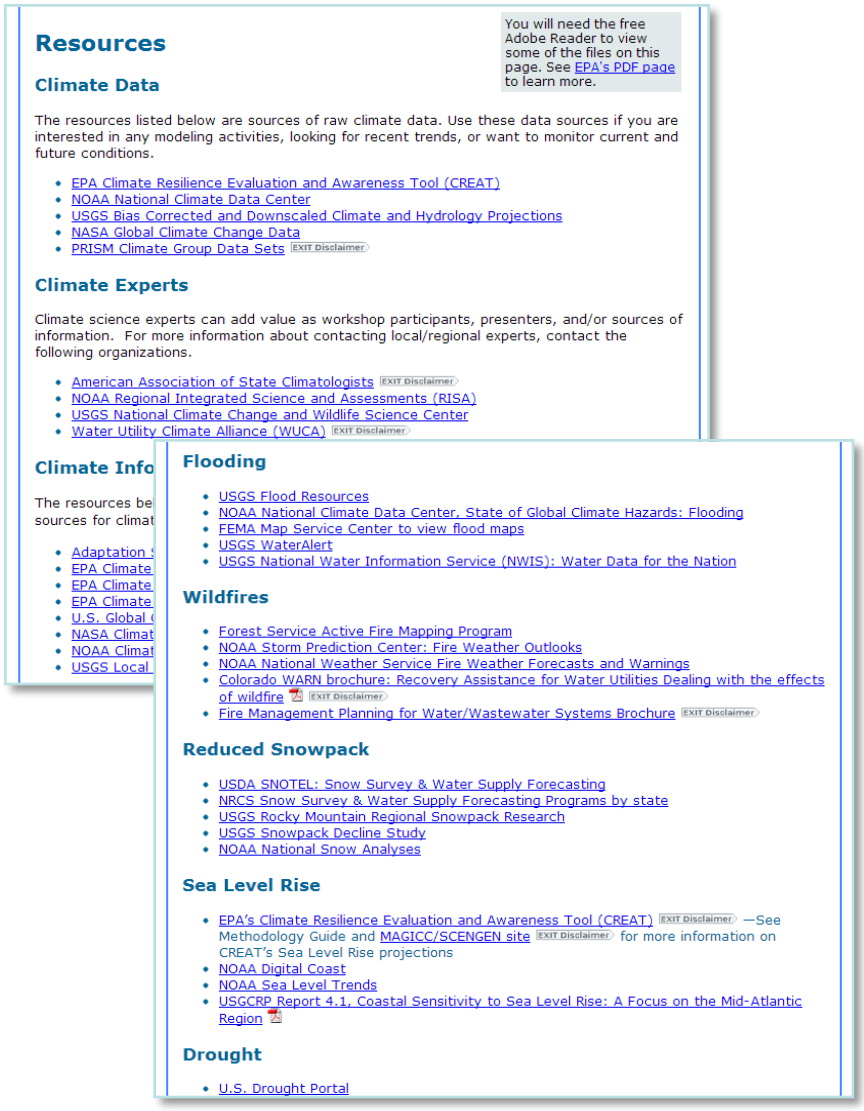
Other Resources

Includes outside resources such as:

- Climate data sources
- Scenario-specific information and tools
- Funding sources



Resources

You will need the free Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

Climate Data

The resources listed below are sources of raw climate data. Use these data sources if you are interested in any modeling activities, looking for recent trends, or want to monitor current and future conditions.

- EPA Climate Resilience Evaluation and Awareness Tool (CREAT)
- NOAA National Climate Data Center
- USGS Bias Corrected and Downscaled Climate and Hydrology Projections
- NASA Global Climate Change Data
- PRISM Climate Group Data Sets EXIT Disclaimer

Climate Experts

Climate science experts can add value as workshop participants, presenters, and/or sources of information. For more information about contacting local/regional experts, contact the following organizations.

- American Association of State Climatologists EXIT Disclaimer
- NOAA Regional Integrated Science and Assessments (RISA)
- USGS National Climate Change and Wildlife Science Center
- Water Utility Climate Alliance (WUCA) EXIT Disclaimer

Climate Info

The resources be
sources for climat

- Adaptation
- EPA Climate
- EPA Climate
- EPA Climate
- U.S. Global
- NASA Climat
- NOAA Climat
- USGS Local

Flooding

- USGS Flood Resources
- NOAA National Climate Data Center, State of Global Climate Hazards: Flooding
- FEMA Map Service Center to view flood maps
- USGS WaterAlert
- USGS National Water Information Service (NWIS): Water Data for the Nation

Wildfires

- Forest Service Active Fire Mapping Program
- NOAA Storm Prediction Center: Fire Weather Outlooks
- NOAA National Weather Service Fire Weather Forecasts and Warnings
- Colorado WARN brochure: Recovery Assistance for Water Utilities Dealing with the effects of wildfire EXIT Disclaimer
- Fire Management Planning for Water/Wastewater Systems Brochure EXIT Disclaimer

Reduced Snowpack

- USDA SNOTEL: Snow Survey & Water Supply Forecasting
- NRCS Snow Survey & Water Supply Forecasting Programs by state
- USGS Rocky Mountain Regional Snowpack Research
- USGS Snowpack Decline Study
- NOAA National Snow Analyses

Sea Level Rise

- EPA's Climate Resilience Evaluation and Awareness Tool (CREAT) EXIT Disclaimer —See Methodology Guide and MAGICC/SCENGEN site EXIT Disclaimer for more information on CREAT's Sea Level Rise projections
- NOAA Digital Coast
- NOAA Sea Level Trends
- USGCRP Report 4.1, Coastal Sensitivity to Sea Level Rise: A Focus on the Mid-Atlantic Region

Drought

- U.S. Drought Portal

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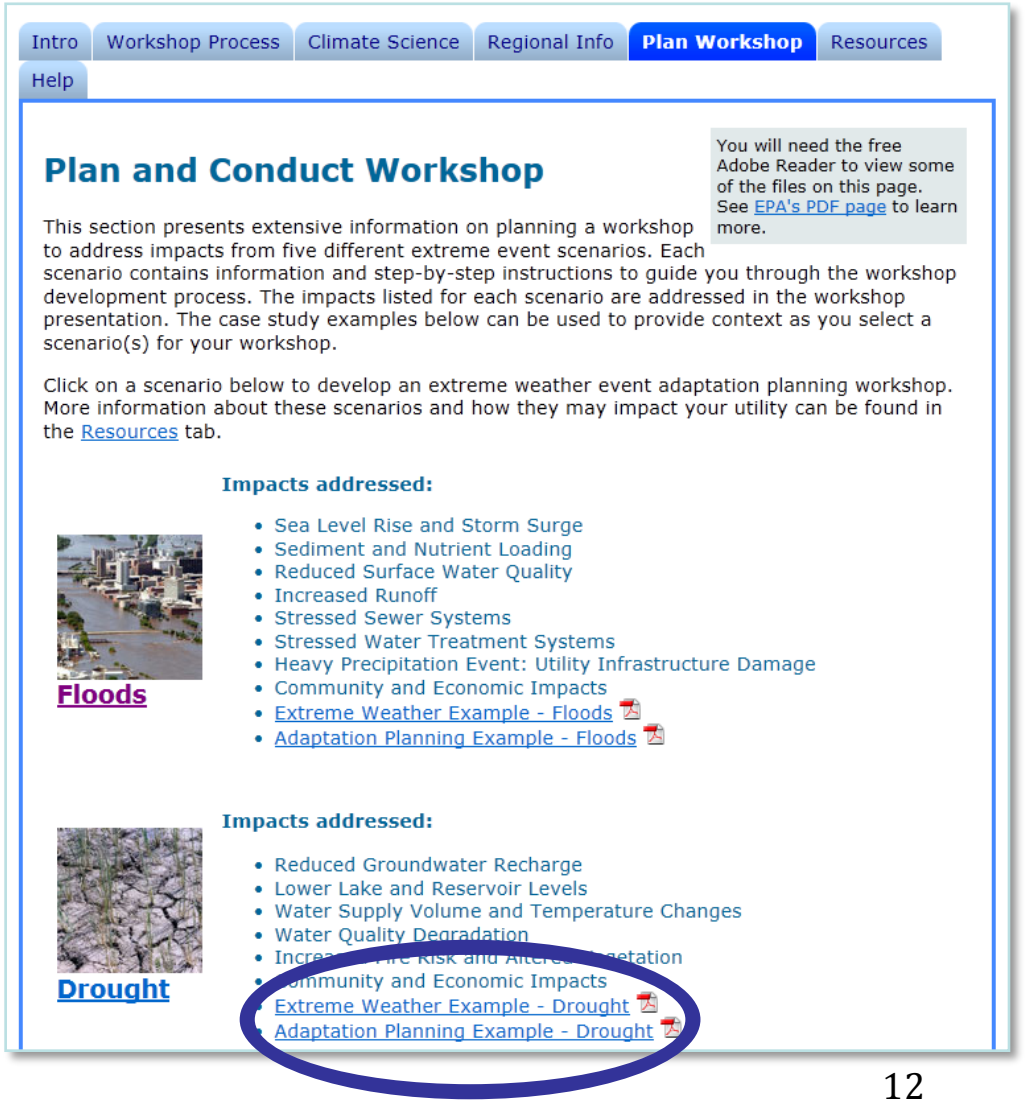
Choosing a scenario

- Five scenarios included:
  - Flood
  - Drought
  - Wildfire
  - Sea Level Rise
  - Reduced Snowpack
- Impacts & Case Studies



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Floods

Drought

Sea Level Rise

Wildfires

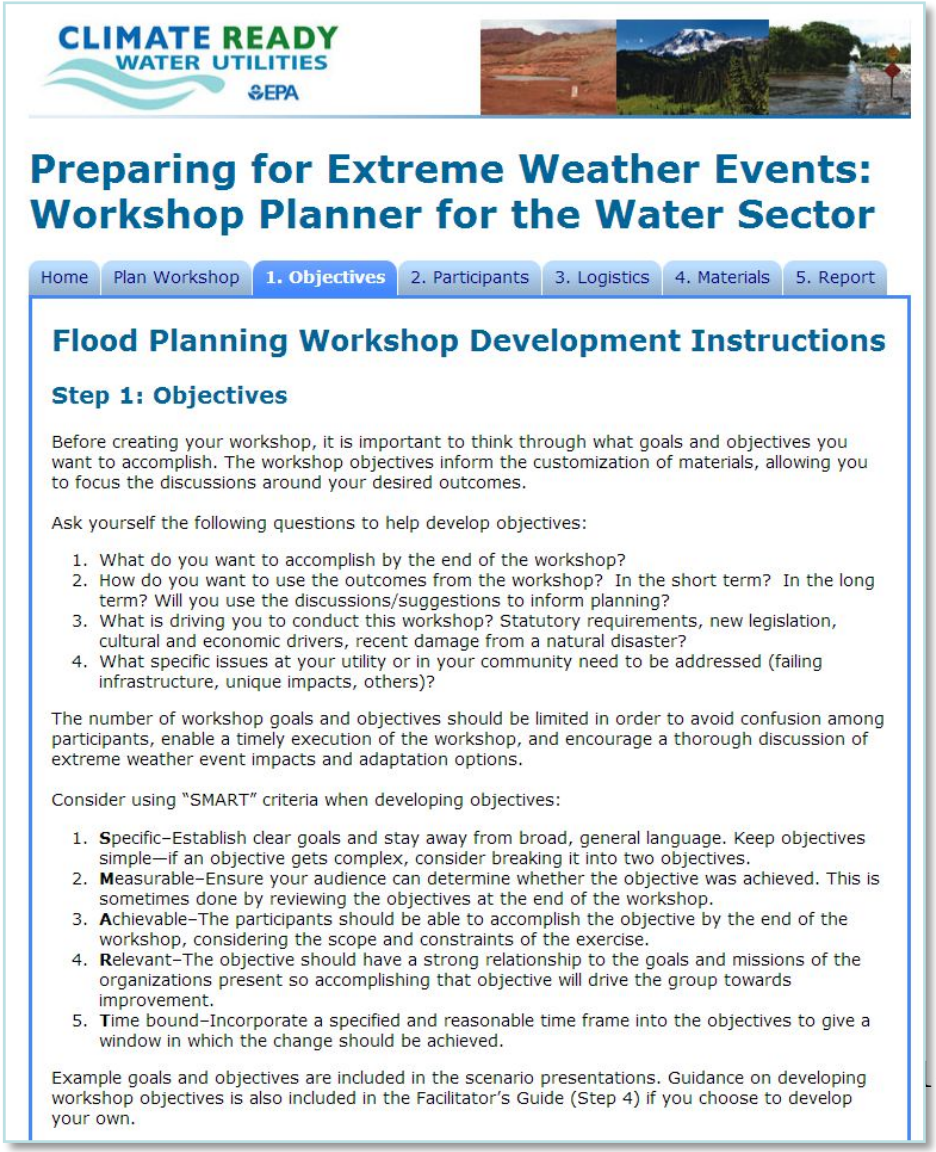
Reduced Snowpack

Planning A Workshop

1. Develop Objectives → 2. Invite Participants → 3.Determine Logistics → 4. Customize Materials → 5. Develop Report

Step 1. Develop Workshop Objectives

Guidance for developing achievable and targeted "SMART" objectives.



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Preparing for Extreme Weather Events: Workshop Planner for the Water Sector

Home | Plan Workshop | **1. Objectives** | 2. Participants | 3. Logistics | 4. Materials | 5. Report

Flood Planning Workshop Development Instructions

Step 1: Objectives

Before creating your workshop, it is important to think through what goals and objectives you want to accomplish. The workshop objectives inform the customization of materials, allowing you to focus the discussions around your desired outcomes.

Ask yourself the following questions to help develop objectives:

1. What do you want to accomplish by the end of the workshop?
2. How do you want to use the outcomes from the workshop? In the short term? In the long term? Will you use the discussions/suggestions to inform planning?
3. What is driving you to conduct this workshop? Statutory requirements, new legislation, cultural and economic drivers, recent damage from a natural disaster?
4. What specific issues at your utility or in your community need to be addressed (failing infrastructure, unique impacts, others)?

The number of workshop goals and objectives should be limited in order to avoid confusion among participants, enable a timely execution of the workshop, and encourage a thorough discussion of extreme weather event impacts and adaptation options.

Consider using "SMART" criteria when developing objectives:

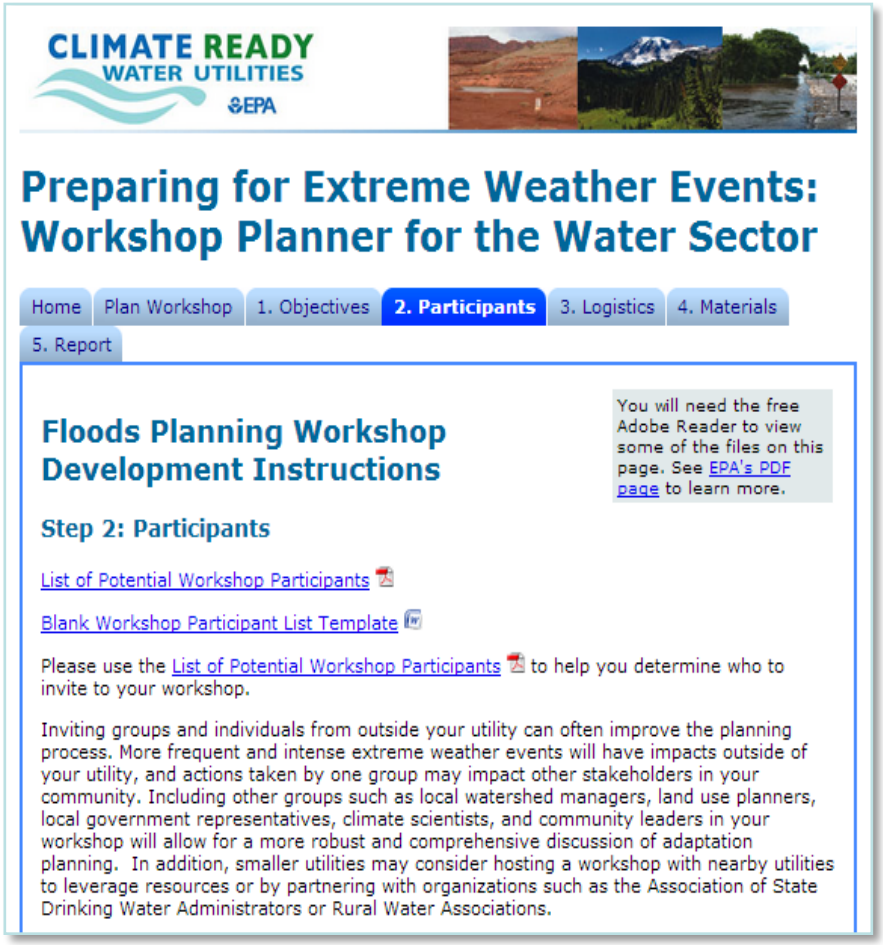
1. **S**pecific–Establish clear goals and stay away from broad, general language. Keep objectives simple—if an objective gets complex, consider breaking it into two objectives.
2. **M**easurable–Ensure your audience can determine whether the objective was achieved. This is sometimes done by reviewing the objectives at the end of the workshop.
3. **A**chievable–The participants should be able to accomplish the objective by the end of the workshop, considering the scope and constraints of the exercise.
4. **R**elevant–The objective should have a strong relationship to the goals and missions of the organizations present so accomplishing that objective will drive the group towards improvement.
5. **T**ime bound–Incorporate a specified and reasonable time frame into the objectives to give a window in which the change should be achieved.

Example goals and objectives are included in the scenario presentations. Guidance on developing workshop objectives is also included in the Facilitator's Guide (Step 4) if you choose to develop your own.

Step 2. Identify and Invite Participants

List of potential workshop participants, including non-utility personnel:

- Municipal planners
- Watershed managers
- State climatologist
- Local government
- Key water users



Step 3. Workshop Logistics

- Workshop development timeline
- Agenda template
- Invitation template
- Registration confirmation letter template
- Notetaker tips
- Facilitation tips
- Sign-in sheet template

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Step 3. Workshop Logistics

Workshop Development Timeline

Note: Adjust the suggested timeframes to fit your schedule. Some of these items may take longer than expected, depending on the amount of time you can devote to planning the workshop.

✓	***Workshop Development Tasks***	***Timeframe*** *(suggested)*
	1. Meet with workshop organizers to develop objectives and goals and to set the workshop date.	*3 months before workshop*
	2. Apply for and/or ensure adequate funding for the workshop. Funding may cover costs for refreshments, supplies, and room rental fee, if applicable.	*3 months before workshop*
	3. Reserve workshop location/meeting room and secure AV equipment (e.g., laptop, projector) if necessary.	*3 months before workshop*
	4. Develop workshop agenda (See	
	5. Identify key workshop staff: • Facilitator • Note taker (See "Notetal	
	6. Invite participants: • Send invitation (See "Inv with attached agenda to p • See List of Suggested Inv	

The **[Insert utility or community name]** invites you to an Extreme Weather Events Planning Workshop on **[Insert date]** in **[Insert location]**.

During the workshop, participants will discuss potential utility and community impacts associated with more frequent and more intense extreme events, such as **[Insert impacts relevant to your location such as wildfires, floods, drought, sea level rise, reduced snowpack, etc.]**. In addition, participants will identify potential adaptation options to better prepare **[Insert utility or community name]** for these impacts, as well as identify next steps to make these options actionable in the near and longer term.

Benefits to attending in this workshop include:

- Participating in critical discussions to increase the resiliency of **[Insert utility or community name]**;
- Learning more about regional climate change and extreme weather;
- Collaborating with individuals from multiple sectors (e.g., public health, emergency management, academia, environmental groups) to discuss the potential implementation of adaptation options that provide cross-sector benefits; and
- Identifying feasible next steps to implement adaptation options and reduce the vulnerability of **[Insert utility or community name]**.

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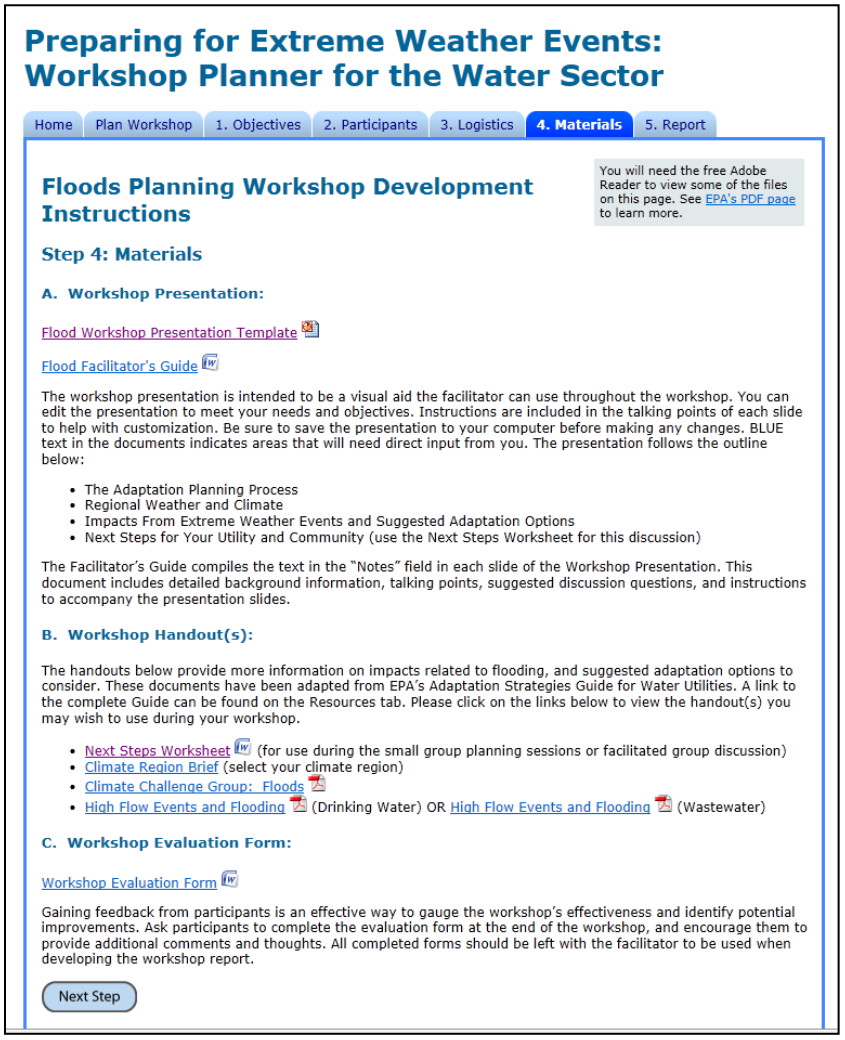
Step 4. Customize Workshop Materials

- Presentation with talking points
- Facilitator's guide
- Climate challenge handouts
- Next Steps worksheet
- Workshop evaluation form



Preparing for Extreme Weather Events: Workshop Planner for the Water Sector

Home | Plan Workshop | 1. Objectives | 2. Participants | 3. Logistics | **4. Materials** | 5. Report

Floods Planning Workshop Development Instructions

You will need the free Adobe Reader to view some of the files on this page. See EPA's PDF page to learn more.

Step 4: Materials

A. Workshop Presentation:

Flood Workshop Presentation Template

Flood Facilitator's Guide

The workshop presentation is intended to be a visual aid the facilitator can use throughout the workshop. You can edit the presentation to meet your needs and objectives. Instructions are included in the talking points of each slide to help with customization. Be sure to save the presentation to your computer before making any changes. BLUE text in the documents indicates areas that will need direct input from you. The presentation follows the outline below:

- The Adaptation Planning Process
- Regional Weather and Climate
- Impacts From Extreme Weather Events and Suggested Adaptation Options
- Next Steps for Your Utility and Community (use the Next Steps Worksheet for this discussion)

The Facilitator's Guide compiles the text in the "Notes" field in each slide of the Workshop Presentation. This document includes detailed background information, talking points, suggested discussion questions, and instructions to accompany the presentation slides.

B. Workshop Handout(s):

The handouts below provide more information on impacts related to flooding, and suggested adaptation options to consider. These documents have been adapted from EPA's Adaptation Strategies Guide for Water Utilities. A link to the complete Guide can be found on the Resources tab. Please click on the links below to view the handout(s) you may wish to use during your workshop.

- Next Steps Worksheet (for use during the small group planning sessions or facilitated group discussion)
- Climate Region Brief (select your climate region)
- Climate Challenge Group: Floods
- High Flow Events and Flooding (Drinking Water) OR High Flow Events and Flooding (Wastewater)

C. Workshop Evaluation Form:

Workshop Evaluation Form

Gaining feedback from participants is an effective way to gauge the workshop's effectiveness and identify potential improvements. Ask participants to complete the evaluation form at the end of the workshop, and encourage them to provide additional comments and thoughts. All completed forms should be left with the facilitator to be used when developing the workshop report.

Next Step

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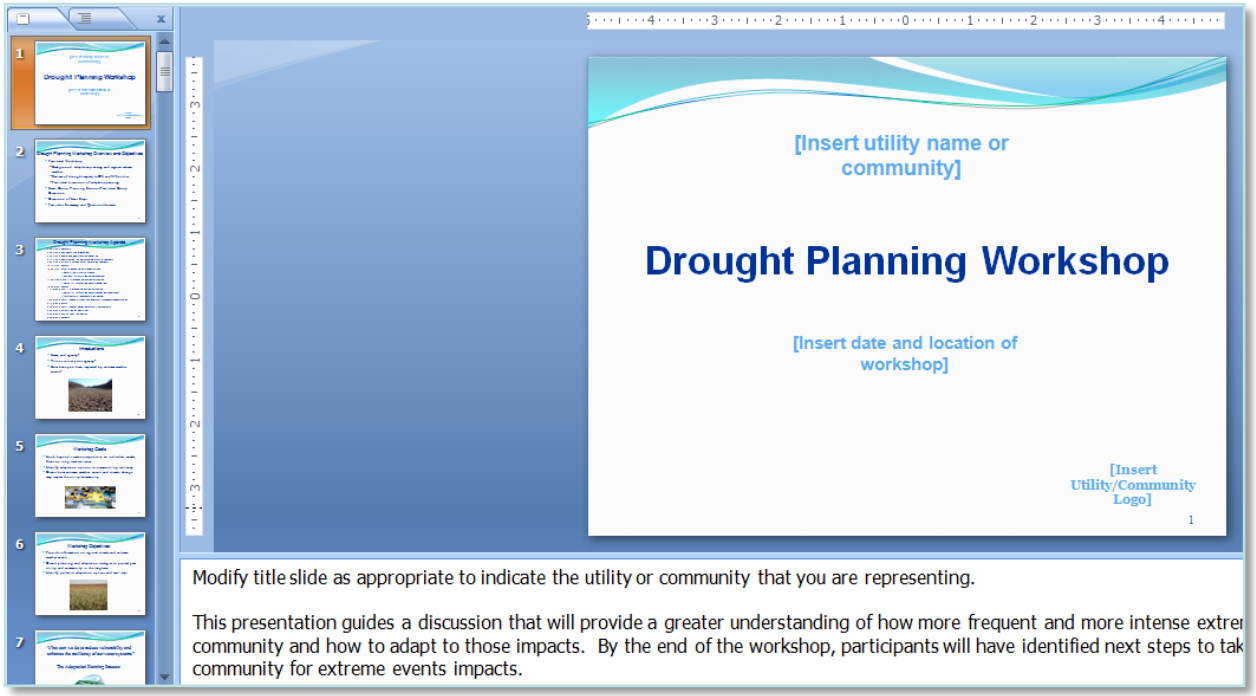
Step 4. Customize Workshop Materials



Preparing for Extreme Weather Events –
EPA's Workshop Planner for the Water Sector

Facilitator's Guide to PowerPoint Presentation: DROUGHT

Preface

This workshop presentation enables you to ask participants to think critically about the challenges facing drinking water, wastewater, and stormwater utilities in your region. In particular, the presentation and discussion questions focus on impacts from extreme drought and potential steps that your utility/community can take to ensure that water systems are resilient to more frequent and more intense drought in the future. The content below should be used with the Drought PowerPoint presentation to help you facilitate your workshop. If you have any questions about the materials below, email: CRWUhelp@epa.gov.

The workshop presentation is arranged by the following topics:

- Regional weather and climate
- The adaptation planning process
- Impacts from extreme drought and suggested adaptation options
- Discussion of next steps for your utility/community

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Scenario Presentation

- Facilitated Workshop
  - Background: adaptation planning and regional extreme weather
  - Review of drought impacts to DW and WW utilities
  - Facilitated discussion of adaptation planning
- Small Group Planning Sessions/Facilitated Group Discussion
- Discussion of Next Steps

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Next Steps Worksheet

Next Steps Worksheet

Instructions:
Fill out the table below during the Small Group Planning Session, Facilitated Group Discussion, or at any time during the workshop to catalog next steps.

Questions to consider when completing the table:

- What planning activities is our utility or organization currently engaged in? Can adaptation planning be integrated into these efforts?
- What adaptation options are most important to implement?
- What steps are needed to implement those options? Are any of these next steps No Regrets or Low Cost options?
- What are our data/research gaps in understanding projected impacts? What additional data or information do we need?
- How can we incorporate monitoring into our asset management or capital improvement planning efforts?
- Should other stakeholders, who are not present today, be consulted?
- Should we approach funding agencies? Which agencies?

Next steps will range in complexity. In the table below, list actions such as researching a new topic or contacting stakeholders not present at the workshop. Also include larger infrastructure or operational changes.

Action/Task/Follow-up	Responsible person(s)	Other stakeholders to involve	Priority High, Medium, or Low?	Timeframe for implementation

Step 5. Prepare the Report

- Use the final report to:
  - Catalog adaptation options, implementation timeline, and responsible person(s)
  - Brief management or other stakeholders
  - Support funding requests for adaptation projects

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Summary

- Download the Workshop Planner at epa.gov/climatereadyutilities
- Register for the March 6th webinar
- Questions? Feedback? Email CRWUhelp@epa.gov

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Thank you

Any questions?

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