EPA's Climate Resilience Evaluation & Awareness Tool: Supporting Utilities Adapting to the Impacts of Climate Change

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Introduction

- Intro video
- Mission statement/purpose of CRWU
- Process
- Intro to the tool
- Quick run-though
- Other tools for Water Security/Resilience

CLIMATE READY WATER UTILITIES

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Intro video on CRWU

https://www.youtube.com/watch?v=fa0oK_jE8Zw

Climate Ready Water Utilities (CRWU) Mission Statement

To provide the water sector with the practical tools and training to adapt to climate change by promoting a clear understanding of climate science and adaptation options.

CLIMATE READY PROCESS

The Climate Ready Water Utilities initiative offers practical tools and resources to help the water utility sector understand and adapt to climate change impacts.

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epa.gov/climatereadyutilities

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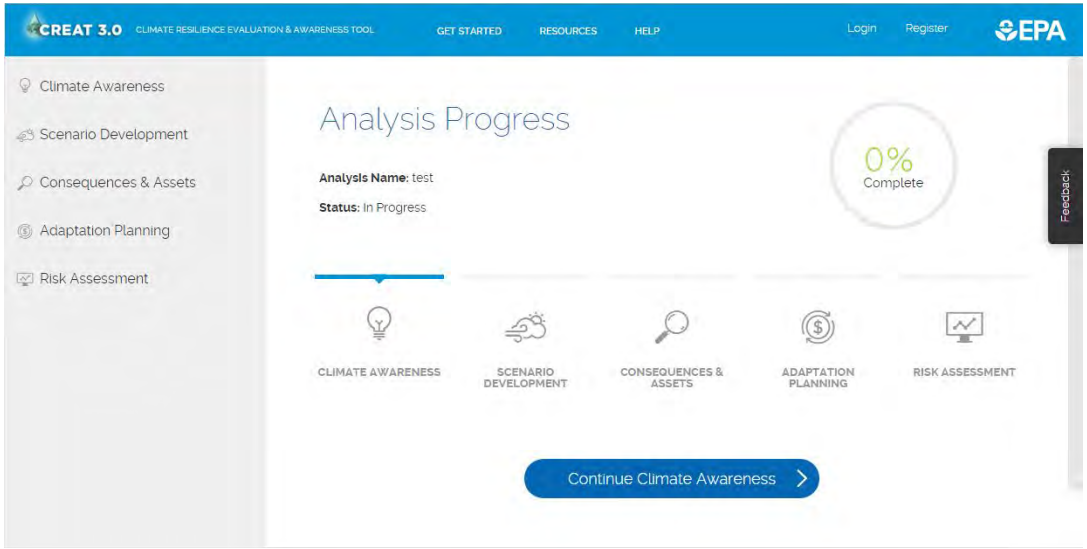
Climate Resilience Evaluation & Awareness Tool (CREAT)

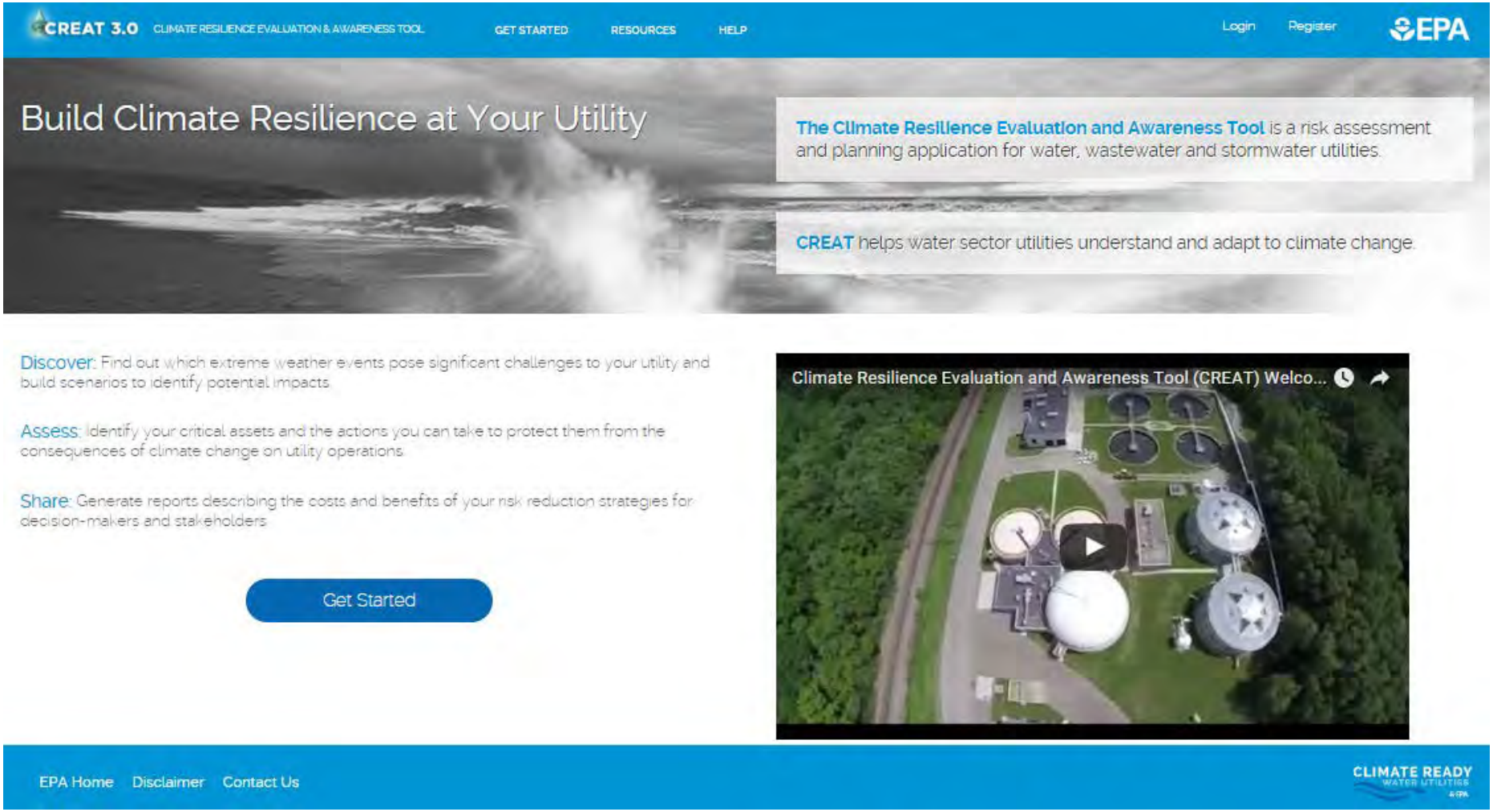
Assess Risks and Plan Adaptation for your Utility

CREAT

- Web-based tool for conducting **risk assessment** of potential climate change impacts at your utility
- Multiple climate scenarios provided to help **capture uncertainty**
- Assessments will help inform **adaptation planning**
- Results from CREAT help utilities compare **monetized risk and adaptation costs**



CREAT 3.0


CREAT 3.0
CLIMATE RESILIENCE EVALUATION & AWARENESS TOOL
GET STARTED
RESOURCES
HELP
Login
Register
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Build Climate Resilience at Your Utility
The Climate Resilience Evaluation and Awareness Tool is a risk assessment and planning application for water, wastewater and stormwater utilities.
CREAT helps water sector utilities understand and adapt to climate change.
Discover: Find out which extreme weather events pose significant challenges to your utility and build scenarios to identify potential impacts.
Assess: Identify your critical assets and the actions you can take to protect them from the consequences of climate change on utility operations.
Share: Generate reports describing the costs and benefits of your risk reduction strategies for decision-makers and stakeholders.
Get Started
Climate Resilience Evaluation and Awareness Tool (CREAT) Welco...
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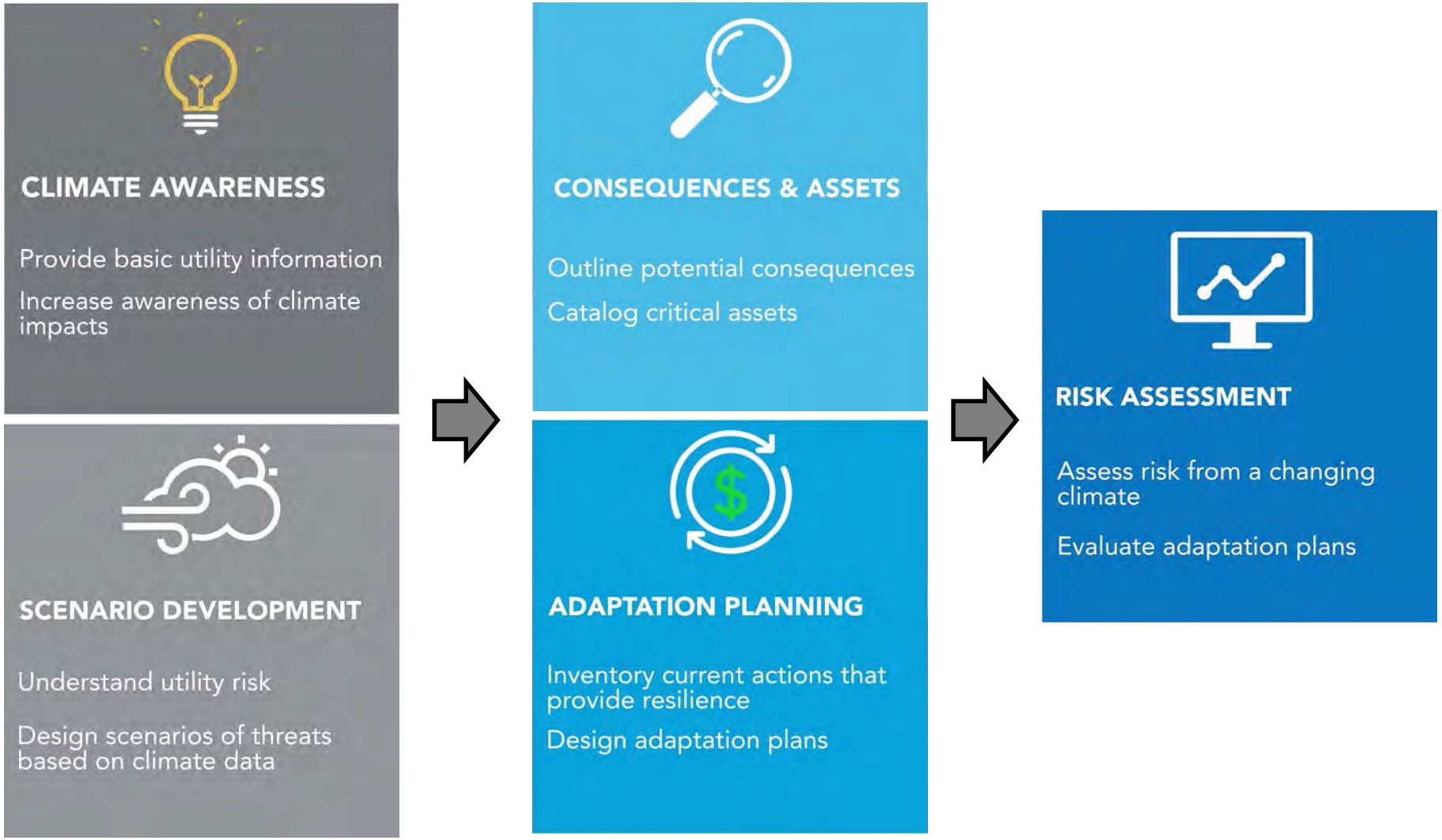
CREAT 3.0 Process

DEMO

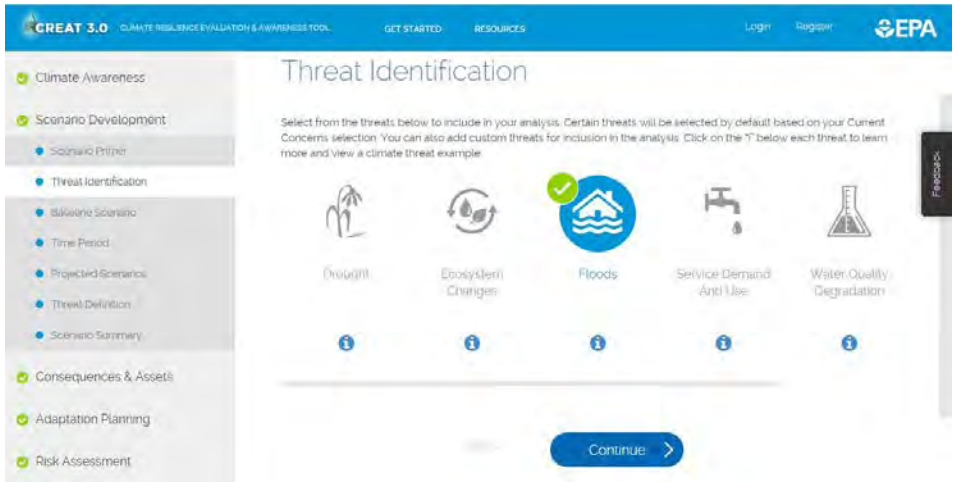


CREAT 3.0

- Explore local climate data
- View links to publications, models, and other tools

- Catalog data and assumptions
- Understand and assess climate impacts

- Compare adaptation options
- Generate reports to support decisions



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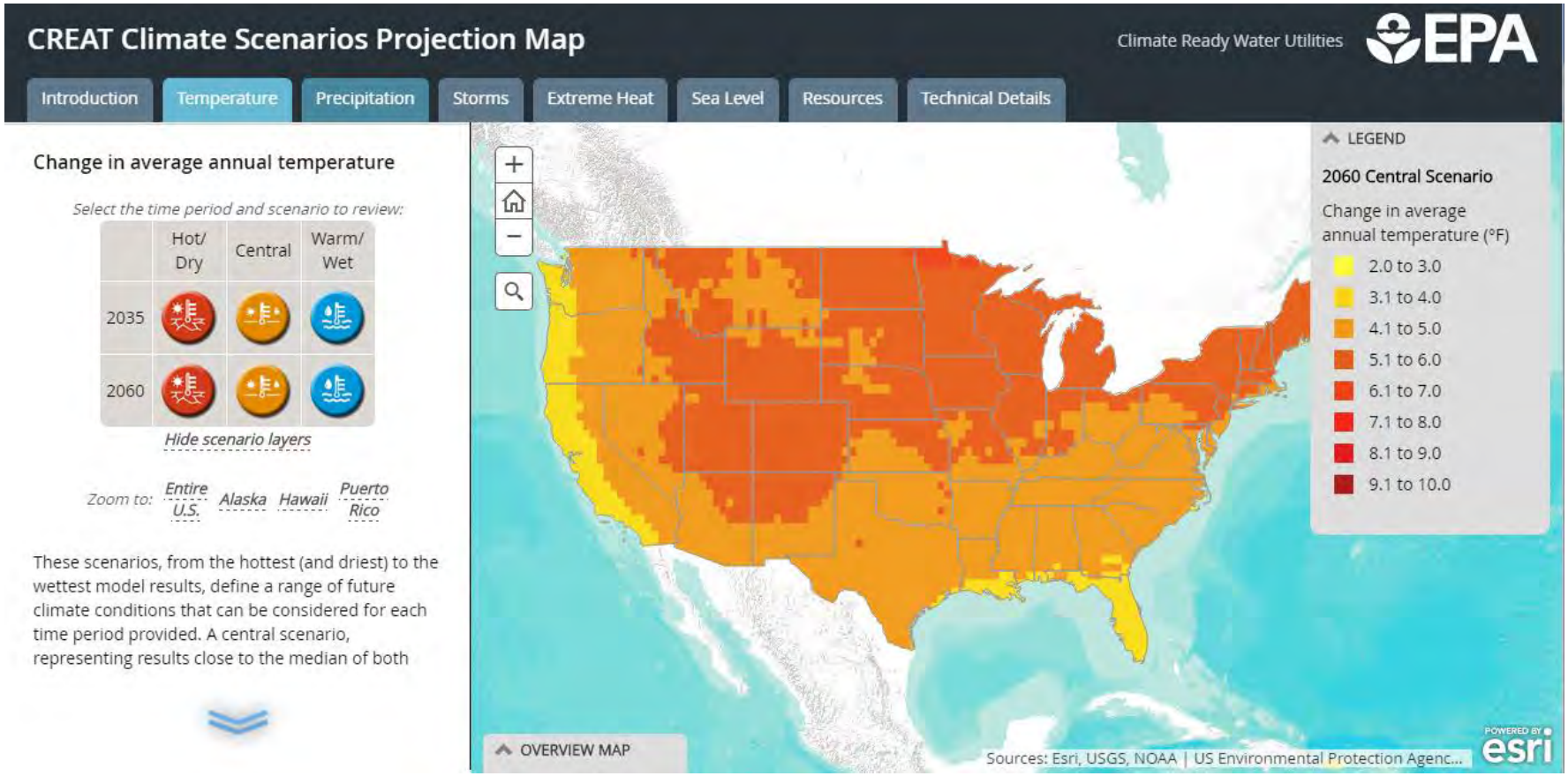
Climate Change Impacts: CREAT Data Services

Explore climate change, related hazards and adaptation options at your location

Scenario-Based Climate Change Map

LINK

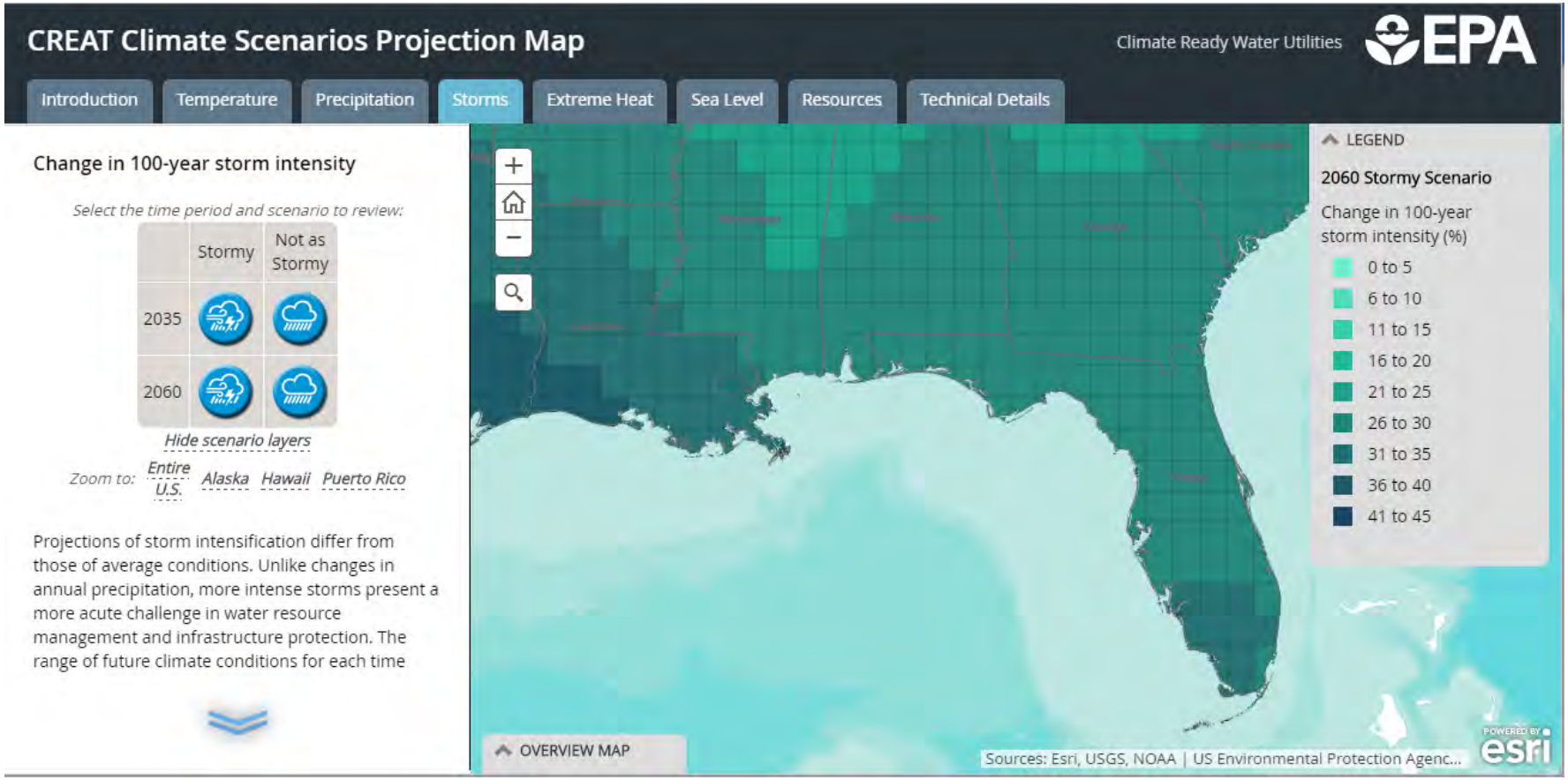
Provides scenarios that capture the range of projected changes in temperature and precipitation from models



Scenario-Based Climate Change Map

LINK

Data includes changes in average conditions and extreme events (hot days and storms), plus sea level rise



Scenario-Based Climate Change Map

LINK

For the grid cell containing Miami:

Change in Average Annual Temperature

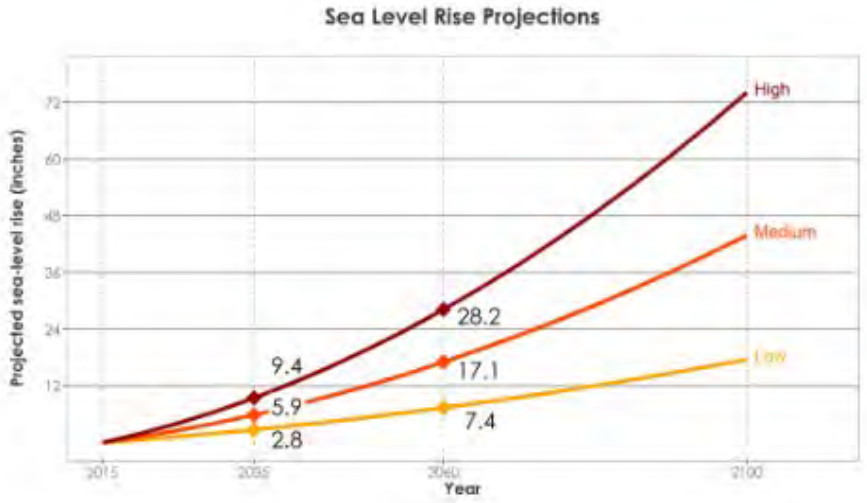
Period	Scenario		
	Hot/ Dry	Central	Warm/ Wet
2035	2.0 °F	1.7 °F	1.5 °F
2060	3.8 °F	3.3 °F	2.8 °F

Change in Average Annual Precipitation

Period	Scenario		
	Hot/ Dry	Central	Warm/ Wet
2035	-5.0%	-0.9%	2.3%
2060	-9.8%	-1.7%	4.6%

Change in 100-Year Storm Intensity

Period	Scenario	
	Stormy	Not as Stormy
2035	14.4%	2.8%
2060	28.0%	5.5%



Storm Surge Inundation Map

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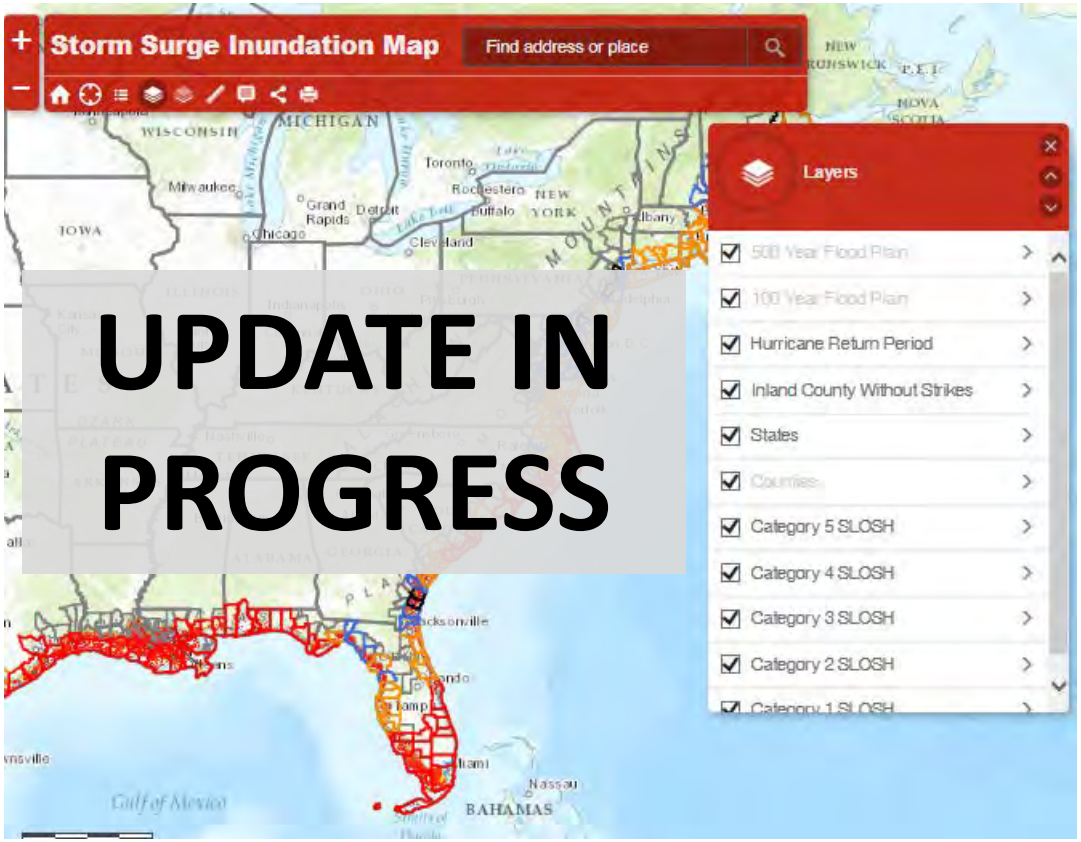
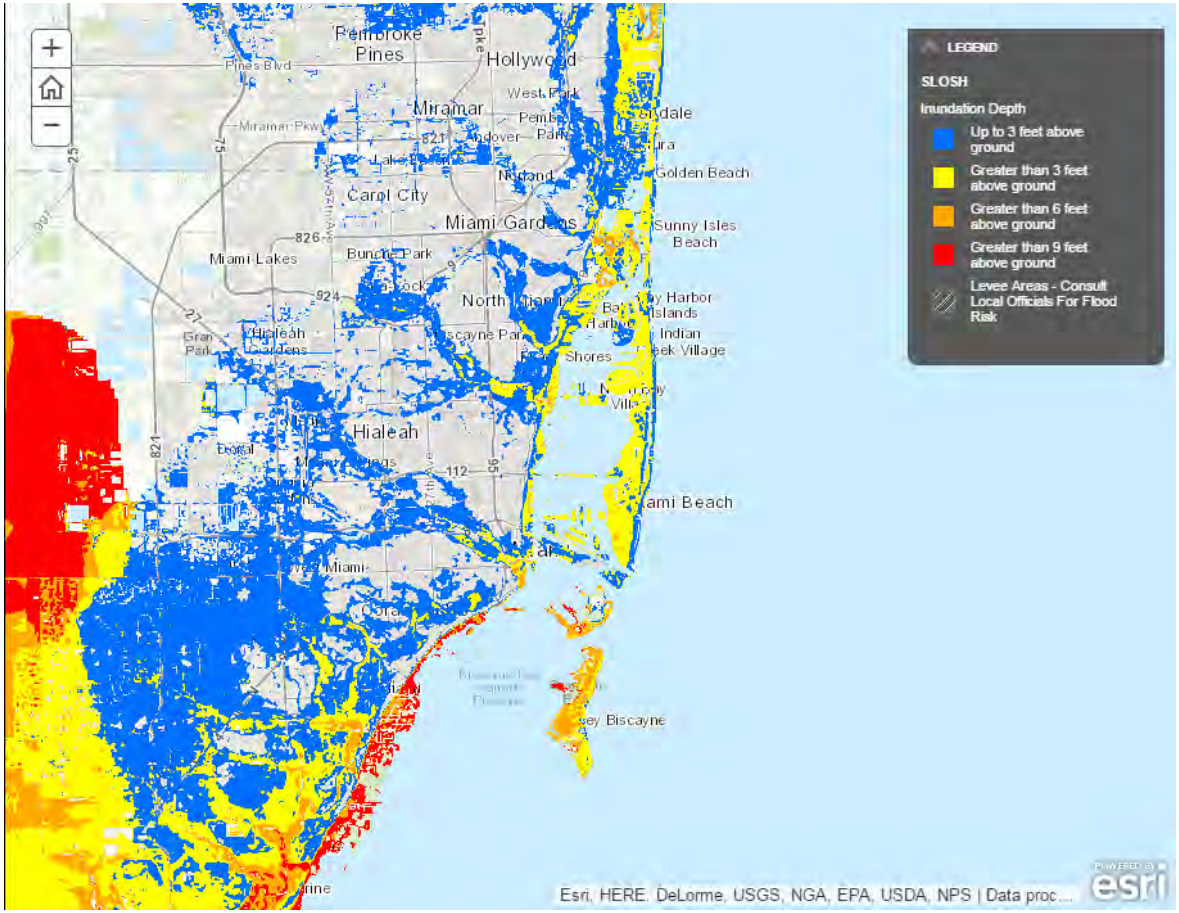
- Access current worst-case coastal storm surge scenarios and hurricane strike frequency information
- Layers include FEMA flood zones and inundation from Sea, Lake, and Overland Surge from Hurricanes (SLOSH) model results



Storm Surge Inundation Map

LINK

For Miami-Dade County:



Hurricane Statistics for Miami-Dade Co, FL		
Category	# of strikes	Return period* (yrs)
1	6	18
2	5	22
3	8	14
4	4	28
5	2	55

*Return period is defined as the average recurrence interval of a hurricane of similar magnitude over an extended period of time, e.g., 1900-2009

- Frequency of storms and potential flood depth useful for planning
- <u>Caution:</u> no consideration of sea level rise or more intense storm events

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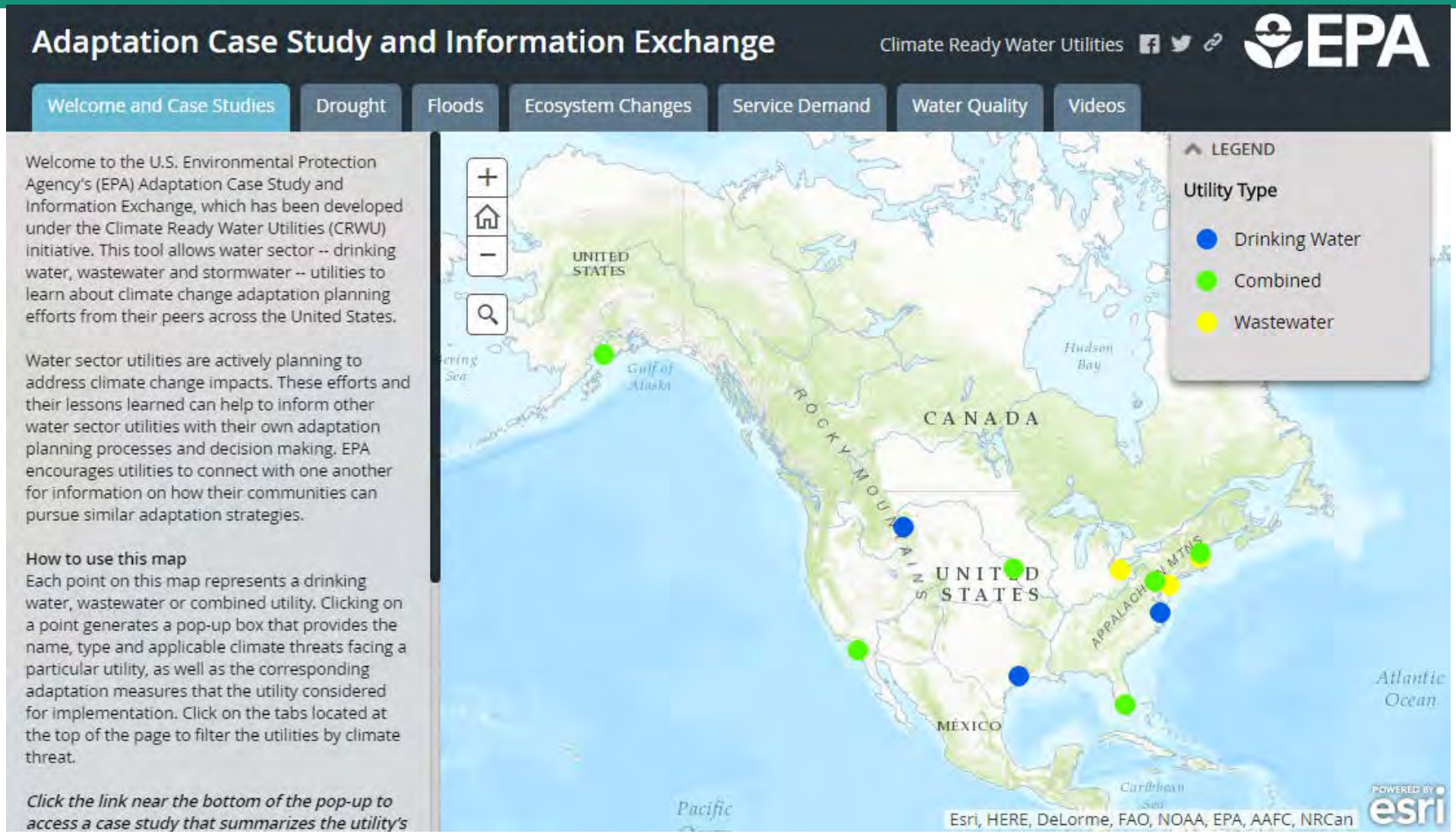
Adaptation in Action: CREAT Use at Utilities

Utility Case Study Examples

Case Study and Information Exchange

LINK



Case Study and Information Exchange

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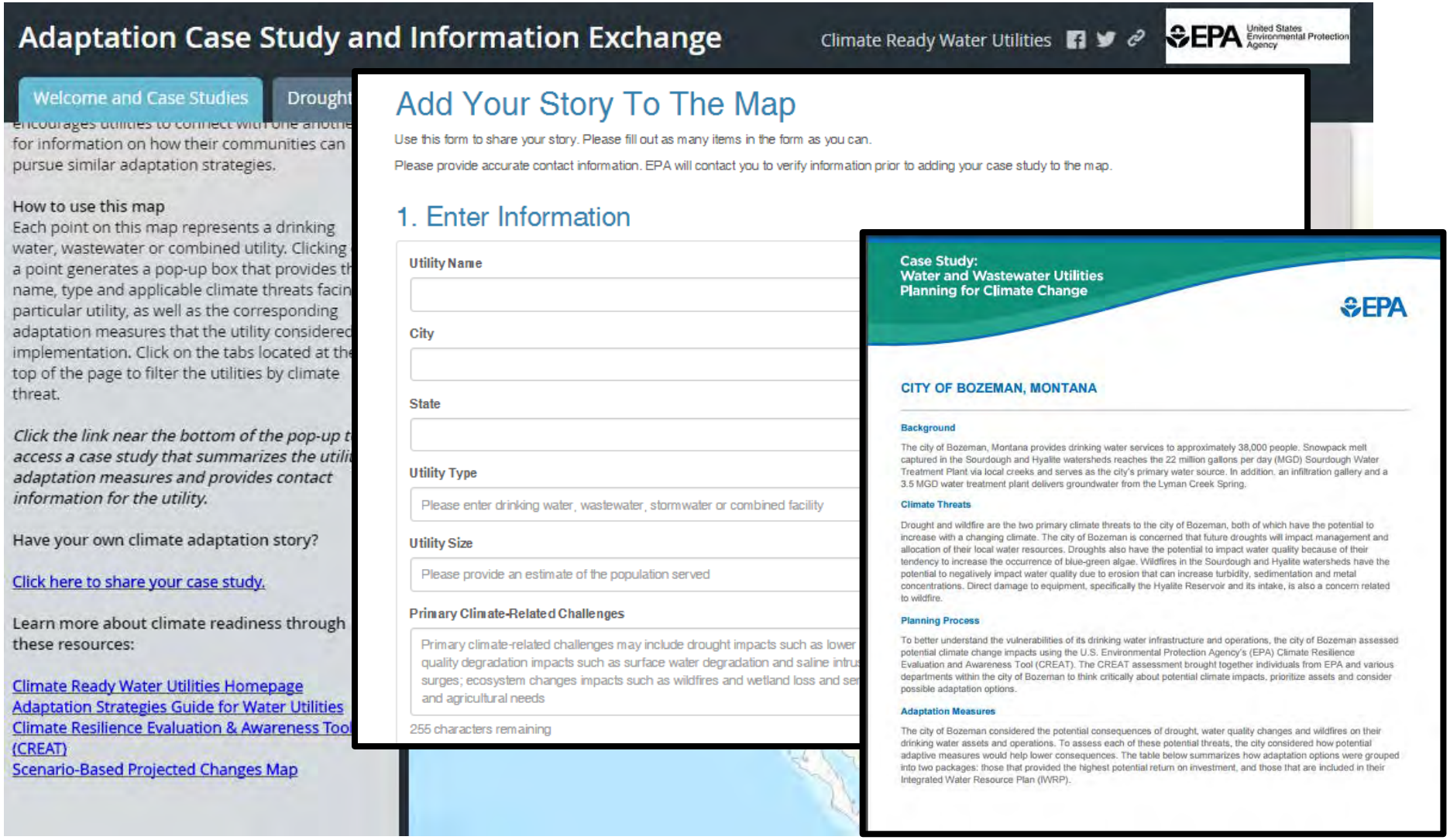


Example Case Studies – Seminole Tribe of Florida

- Assessment focused on demand and wildfire after exploration of flooding risk revealed potential impacts lower than other risks
- Planning efforts encompass multiple communities with different needs and potential hazards

Natural Disasters

Water Supply Management

LOCATION	POTENTIAL ADAPTIVE MEASURES
Brighton Reservation (Wildfire)	Clear tree line near backup generator on the adjacent property at the water treatment plant
	Improve fire wall by replacing fence near facilities
	Relocate the backup generator away from the tree line
Hollywood Reservation (Increased Demand)	Install meters at isolation valves to track water use
	Adopt of drought-tolerant landscaping at the casino and consider irrigation changes
	Implement of a 'Healthy Homes' program to encourage adoption of water-saving devices
	Improve existing groundwater monitoring system
	Conduct community outreach to raise awareness of drought conditions and potential conservation activities

Example Case Studies – Camden County MUA (NJ)

- Assessment focused on improving operations under changing climate conditions as well as addressing potential extreme events
- Planning efforts encompass multiple goals for optimizing energy use and cost along with gains in resilience

GOAL	ADAPTIVE MEASURES
Improve water quality / Reduce CSOs	Capturing excess stormwater using planted trees and rain gardens through the Camden SMART initiative
	"Daylighting" streams that had previously been paved over using a low interest loan from the New Jersey Environmental Infrastructure Trust
	Converting an abandoned building into a riverside park
	Cleaning inlets to optimize the sewer system's performance through changes in operations and maintenance
	Replacing netting systems to optimize the sewer system's performance through changes in operations and maintenance
Improve air quality	Installing catalytic converters to reduce emissions
	Reducing I&I to minimize energy use and cost throughout the CCMUA system
Minimize costs	Using gravity connections as a replacement to municipal pumping stations
	Implementing electric peak shaving
	Using heating loops and energy-efficient equipment to increase total energy efficiency
Reduce energy	Installing a 1.8 megawatt solar panel array through a purchase agreement at no cost to CCMUA, and buying power from the contractor at a discounted rate
	Implementing a sewage-to-heat facility through a grant from the New Jersey Board of Public Utilities which converts latent heat in sewage into heat at the plant
	Building a digester facility to produce enough biogas to meet about 50 to 60% of the utility's power needs
	Installing a 1.8 megawatt solar panel array to provide 10% of energy needs at the wastewater treatment plant

Other CRWU resources

Other Water Security tools

- https://www.epa.gov/waterresilience

Recognize & Reduce Risk

Community Based planning

WHEAT WATER Health & Economic Analysis Tool

Consequence Analysis

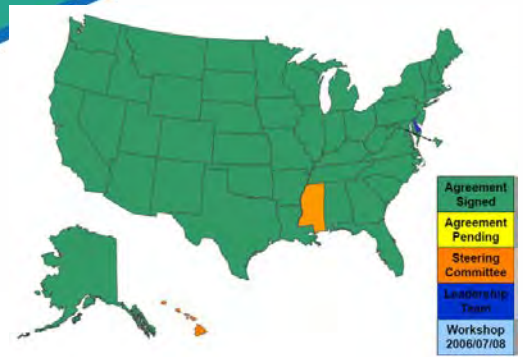
VSAT

Risk Assessment Methodologies

Maintain a Resilient Infrastructure

Water Contaminant Info Tool

TTX Tools



Water/Wastewater Agency Response Networks

FedFUNDS

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Thank you!

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Questions?

Nerds in hell