United States Environmental Protection Agency

EPA's CREAT: Decision Support Example

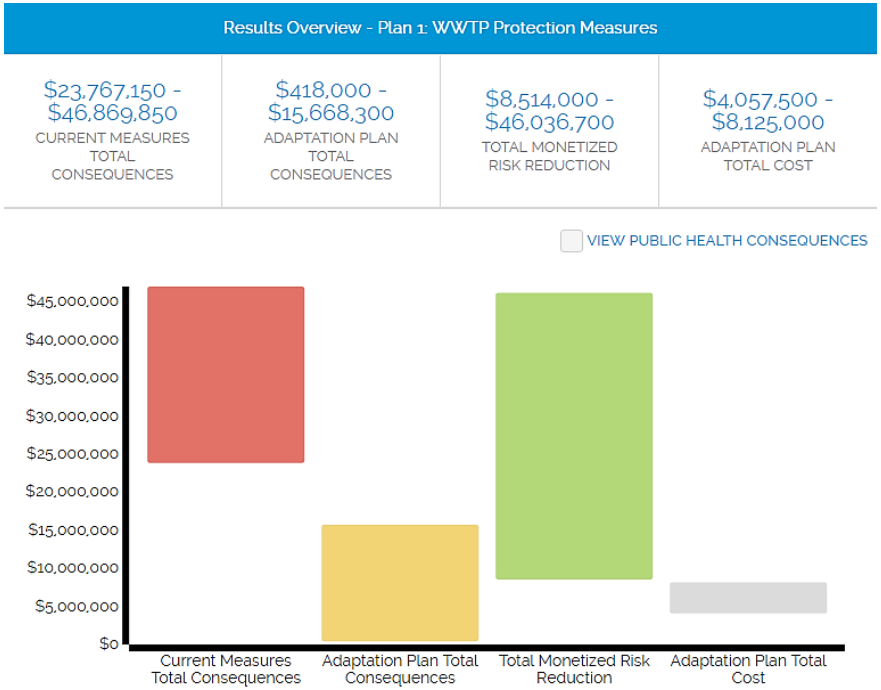
EPA's Creating Resilient Water Utilities (CRWU)

Special thanks to Steve Fries, EPA

The CREAT Process

CREAT 3.0

- **Web-based tool** for assessing risk of potential impacts
- **Module-based process** with clearly defined goals and reports
- Multiple scenarios provided to help **capture uncertainty**
- **Assessment of current resilience** will help inform adaptation planning
- Results help utilities compare **risk reduction** and **implementation costs**



Tool Resource - CREAT 3.0 Modules

CLIMATE AWARENESS

Provide basic utility information

Increase awareness of climate impacts

SCENARIO DEVELOPMENT

Understand utility risk

Design scenarios of threats based on climate data

CONSEQUENCES & ASSETS

Outline potential consequences

Catalog critical assets

ADAPTATION PLANNING

Inventory current actions that provide resilience

Design adaptation plans

RISK ASSESSMENT

Assess risk from a changing climate

Evaluate adaptation plans

Economic Consequences

LEVELS	Utility Business Impacts
VERY HIGH	Long-term or significant loss of expected revenue or operating income
	$1,590,000+
HIGH	Seasonal or episodic compromise of expected revenue or operating income
	$1,062,000 - $1,590,000
MEDIUM	Minor and short-term reductions in expected revenue
	$531,000 - $1,062,000
LOW	Minimal potential for loss of revenue or operating income
	$0 - $531,000

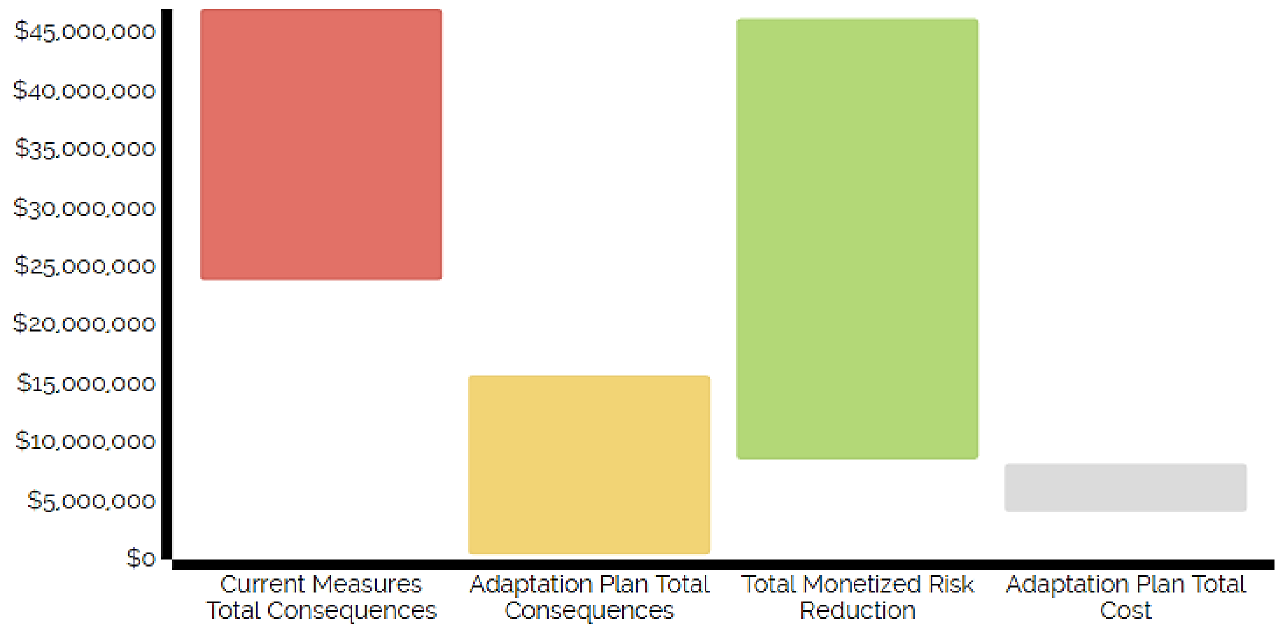
- Ranges of values are provided for each category based on utility information
- Basis for default values are published sector survey data
- Values can be modified, additional categories can be considered

CREAT Outputs: Risk Results

Results Overview - Plan 1: WWTP Protection Measures

$23,767,150 - $46,869,850 CURRENT MEASURES TOTAL CONSEQUENCES	$418,000 - $15,668,300 ADAPTATION PLAN TOTAL CONSEQUENCES	$8,514,000 - $46,036,700 TOTAL MONETIZED RISK REDUCTION	$4,057,500 - $8,125,000 ADAPTATION PLAN TOTAL COST

VIEW PUBLIC HEALTH CONSEQUENCES



Consider Other Economic Factors/Impacts

Contribute your risk assessment results to the Adaptation Case Study and Information Exchange Map to share your lessons learned with others. The map provides an opportunity for utilities to learn about climate change adaptation planning efforts from their peers across the United States.

Add Custom Impact

PLAN REPORT	PLAN NAME	TOTAL COST	ENERGY IMPACTS	SOCIO-ECONOMIC IMPACTS	COMMUNITY PUBLIC HEALTH IMPACT	UTILITY BUSINESS IMPACTS	SOURCE/RECEIVING WATER IMPACTS
Download	Collection Priority	$25,000 - $100,000	Low	Neutral	Beneficial/Ene	Neutral	Beneficial/Ener
Download	System Protection	$275,000 - $1,100,000	Low	Medium	Beneficial/Ene	Beneficial/E	Beneficial/Ener

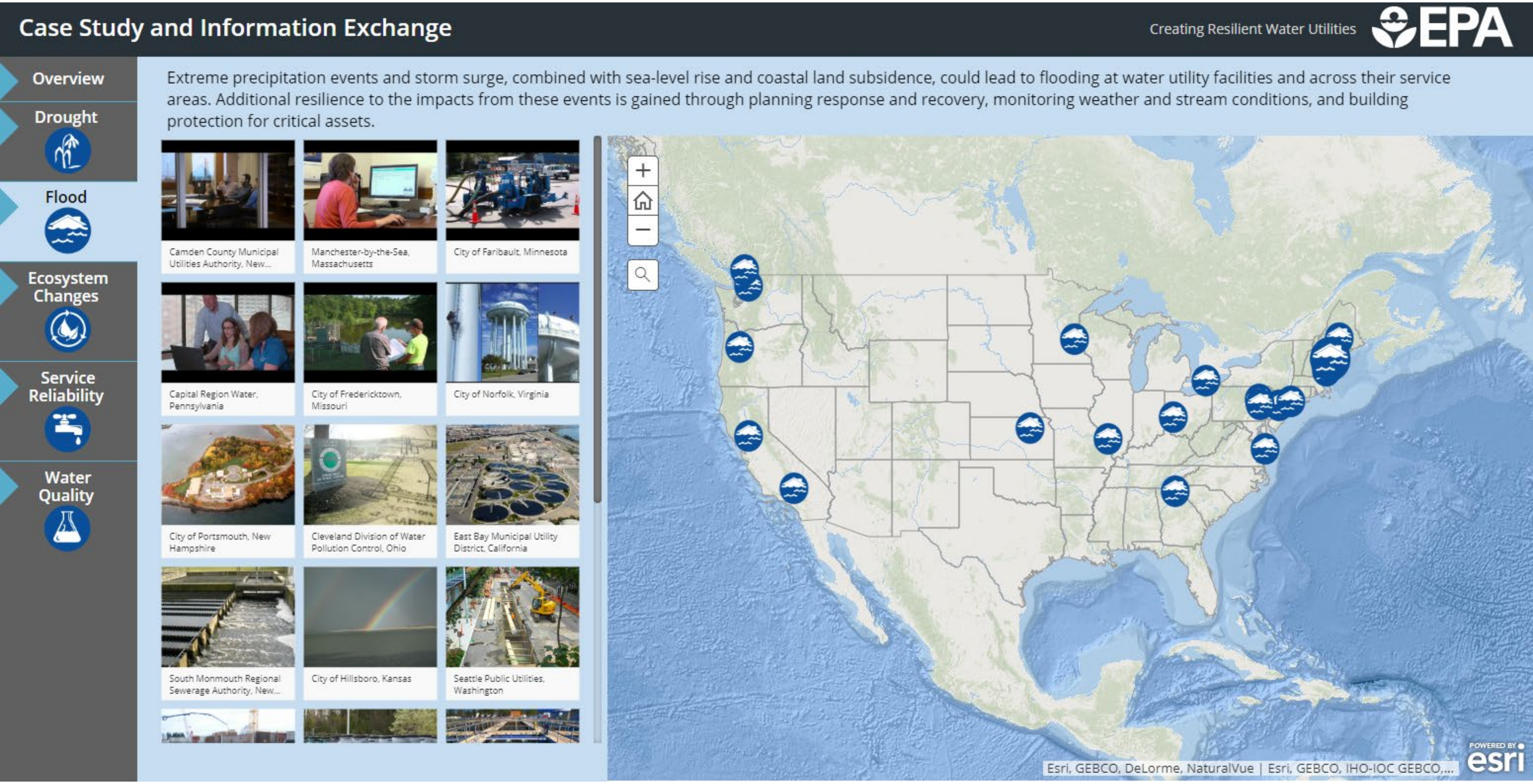
Note: CREAT generates a plan report you can view and download after you complete at least one critical asset/threat pair assessment for each adaptation plan. If you are viewing this report on a tablet, it will display best using the Microsoft Word App.

Back

Export Data

Complete Analysis File

Case Studies



Example Case Studies – Manchester-by-the-Sea (MA)

- Coastal community challenged by flooding from both precipitation (landward) and storm surges (seaward).
- Two-pronged approach that manages overland flows from both directions, along with consideration of relocation of critical facilities.

Type	Resilience Strategies
Flooding from coastal storm surges	Relocate WWTP to higher ground to avoid damage from coastal storm surge
	Construct a sea wall on Manchester Harbor to protect the WWTP from coastal storm surge
	Green infrastructure at the facility to reduce parking lot flooding
	Join the mutual aid network, Massachusetts Water/Wastewater Agency Response Network
Flooding from heavy precipitation events	Relocate WWTP to higher ground to avoid damage from flooding
	Green infrastructure in the community to capture stormwater flows
	Future infiltration and inflow reduction activities to complement existing efforts
	Incorporate leakage reduction into ongoing utility maintenance

Example Case Studies – Seminole Tribe of Florida

- Tribe concerned with meeting demand in one Reservation, while protecting facilities from fire in another.
- Fire protection: remedy potential vulnerabilities along fence line.
- Demand management: improving their data collection and communication with customers.

Type	Resilience Strategies
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 drought-tolerant landscaping at the casino and consider irrigation changes
	Implement 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

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CRWU Points of Contact (EPA)

Steve Fries
fries.steve@epa.gov

Curt Baranowski
baranowski.curt@epa.gov

Visit us on the web and register for the CRWU newsletter at: www.epa.gov/crwu