United States Environmental Protection Agency

Climate Resilience Evaluation and Awareness Tool Version 2.0
A Climate Risk Assessment Tool for Water Utilities

Purpose

The Climate Resilience Evaluation and Awareness Tool (CREAT), developed under EPA's Climate Ready Water Utilities initiative, assists drinking water, wastewater, and stormwater utility owners and operators in assessing risks to utility assets and operations. Extreme weather events, sea-level rise, shifting precipitation patterns, and temperature changes will affect water quality and availability. Managing these events will pose significant challenges to water sector utilities in fulfilling their public health and environmental mission. Version 2.0 of CREAT provides access to the most current scientific understanding of climate change, including downscaled climate model projections, that will increase user awareness of projected changes in climate, related impacts , and potential adaptation options.

CREAT has a flexible and customizable risk assessment framework that organizes available climate data and guides users through a process of identifying threats, vulnerable assets, and adaptation options to help reduce risk. CREAT supports utilities in considering impacts at multiple locations, assessing multiple climate scenarios, and documenting the implications of adaptation on energy use. To support more robust decision-making, CREAT encourages users to compare the performance of adaptation options in multiple time periods across climate scenarios.

FEATURES

Scenarios of climate change are provided at local scales to support identification of threats that affect utilities.

Pre-loaded data contains libraries of drinking water and wastewater utility assets (e.g., treatment plants, reservoirs, pump stations) and customizable adaptation strategies for implementation.

Climate change information and data at regional and local levels is included to support the assessment of threat likelihood and potential asset, environmental, community and economic consequences.

Results support implementation of climate change adaptation options and assessment of their effectiveness in reducing risk to climate change impacts.

Reports on climate data, risk reduction, and costs can be generated from the tool to evaluate various adaptation options.

Data and process can be customized over time as new information becomes available, enabling updates to adaptation strategies in the future.

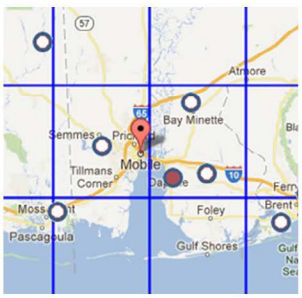
Process: Adaptation, Planning & Use

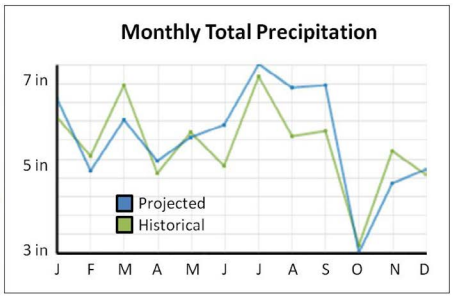
In CREAT 2.0, water utility owners and operators use information about their utility to identify climate change threats, assess potential consequences, and evaluate adaptation options. This approach allows utilities to assess impacts based on established thresholds when utility operations are disrupted and assets are impacted. Complementing other tools and resources already employed in risk management practices (e.g., models of hydrology and projected demand), utilities can use climate science data to evaluate the plausibility of climate-related impacts and how soon these impacts may affect the utility.

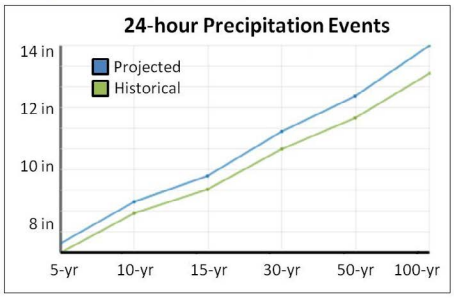
continued on page 2

CREAT Process: Application of climate information and utility knowledge to assess risks and challenges presented by climate change.

The CREAT 2.0 framework incorporates available qualitative regional and quantitative (downscaled) local climate information to help inform the utility planning process. The software does not attempt to forecast climate change (e.g., temperature and precipitation changes), but offers a range of potential conditions to consider. Users can consider these scenarios of projected climate change to help identify related impacts important to operations, maintenance, and management.







CREAT provides data and plots for comparing local historical conditions with downscaled climate model projections for each grid cell.

Example: Projected changes in intense precipitation will likely increase the frequency of flood events and the peak influent flows into collection systems following storm events. CREAT provides pre-loaded historical precipitation data and projected changes based on model outputs to help users understand how these events will differ as climate changes. Utility experience regarding how storms have impacted utility assets and operation in the past is key to interpreting the potential impact of these changes in the future. CREAT guides the user through a detailed risk assessment including the selection of adaptation options to reduce consequences from floods and higher peak influent flows. By evaluating benefits (i.e., reduction in risk) of different adaptation options, users can develop effective adaptation plans to prepare for projected changes in storm conditions.

Benefits of CREAT

CREAT helps utilities organize and communicate risks from climate impacts and potential gains from adaptation to decision makers, stakeholders and citizens. Incorporating CREAT results with overall utility planning builds customer confidence that a utility is being proactive in identifying significant risks or gaps where additional planning may be needed.

For More Information: CREAT 2.0 is available for download at www.epa.gov/climatereadyutilities. For more information, email CRWUhelp@epa.gov.

CLIMATE READY WATER UTILITIES EPA