Managing Climate Hazards and Improving Utility Resilience: Lessons Learned and EPA Tools

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Office of Ground Water and Drinking Water
Creating Resilient Water Utilities (CRWU) Initiative

Speakers

- Presentations from:
  - **Michael Ruppel,** South Monmouth Regional Sewerage Authority and **Rina Dalal**, T&M Associates
  - **Andy Kricun**, Camden County Municipal Utilities Authority
- Brief Q&A with each panelist
- Discussion with all presenters

Resilience Building Process

CREAT Overview

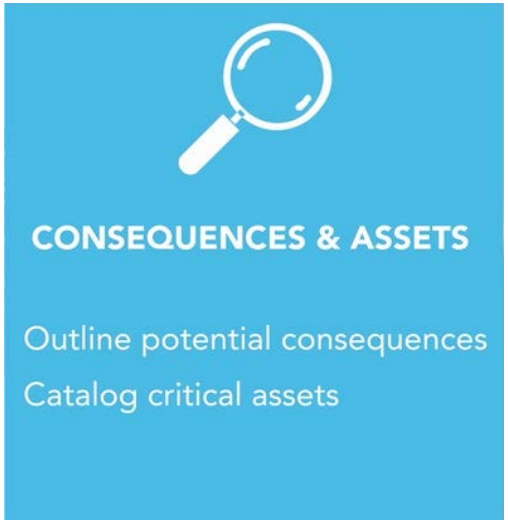
- Web-based tool for conducting **risk assessment** of potential impacts at your utility
- Multiple scenarios provided to help **capture uncertainty**
- Assessments will help inform **planning**
- Results from CREAT help utilities compare **risk reduction and implementation costs**

CREAT – Getting Started & Scenarios to Consider

- Which utility **type and size** best describes your system?
- Which **current concerns** are important to your system?

- Which **threats**, related to current and future concerns, should be assessed first?
- Would a specific set of **climate conditions** be critical to defining these threats?

CREAT – Critical Assets & Plans to Protect Them



- Which types of **consequences** represent the value of assets to your utility and community?
- Which **assets** are both critical and vulnerable to threats being assessed?

- Are there **current measures** already in place to provide resilience to threats?
- What **adaptation plans** could be implemented to increase resilience?

CREAT Process

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

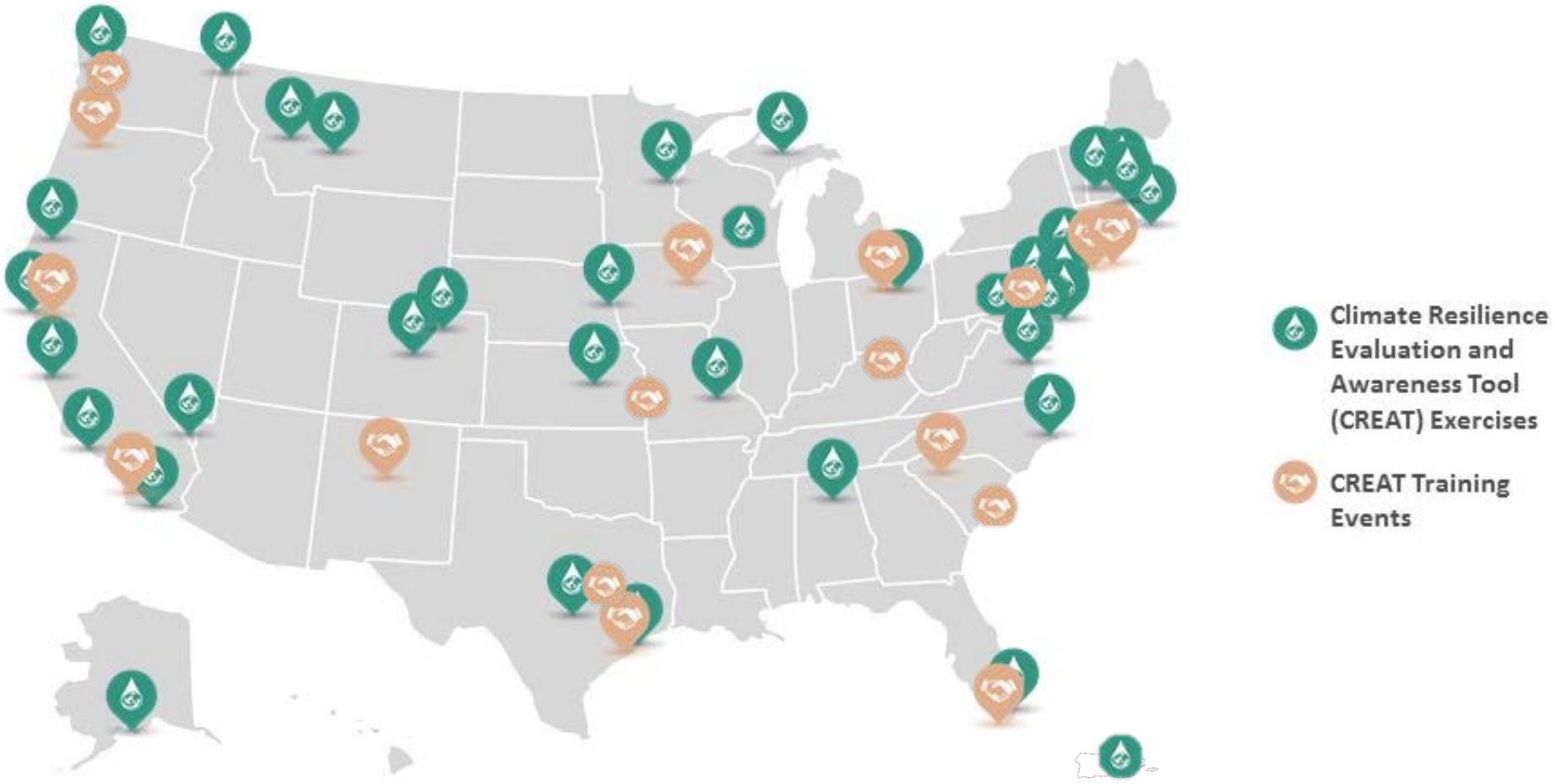
Assess risk from a changing climate

Evaluate adaptation plans

Applications of CREAT

- Opportunity to inform communications with decision-makers, customers, and funders on potential risks and response options
- Process supports evaluation and prioritization of current plans or more prospective options for building resilience
- Results can be integrated to build out plans based on common climate scenarios and economic assumptions
  - Multiple consequence categories for a single system
  - Multiple systems or sectors serving a single community/municipality
  - Multiple communities with shared watershed/resources

Water Utility Climate Resilience Support Projects

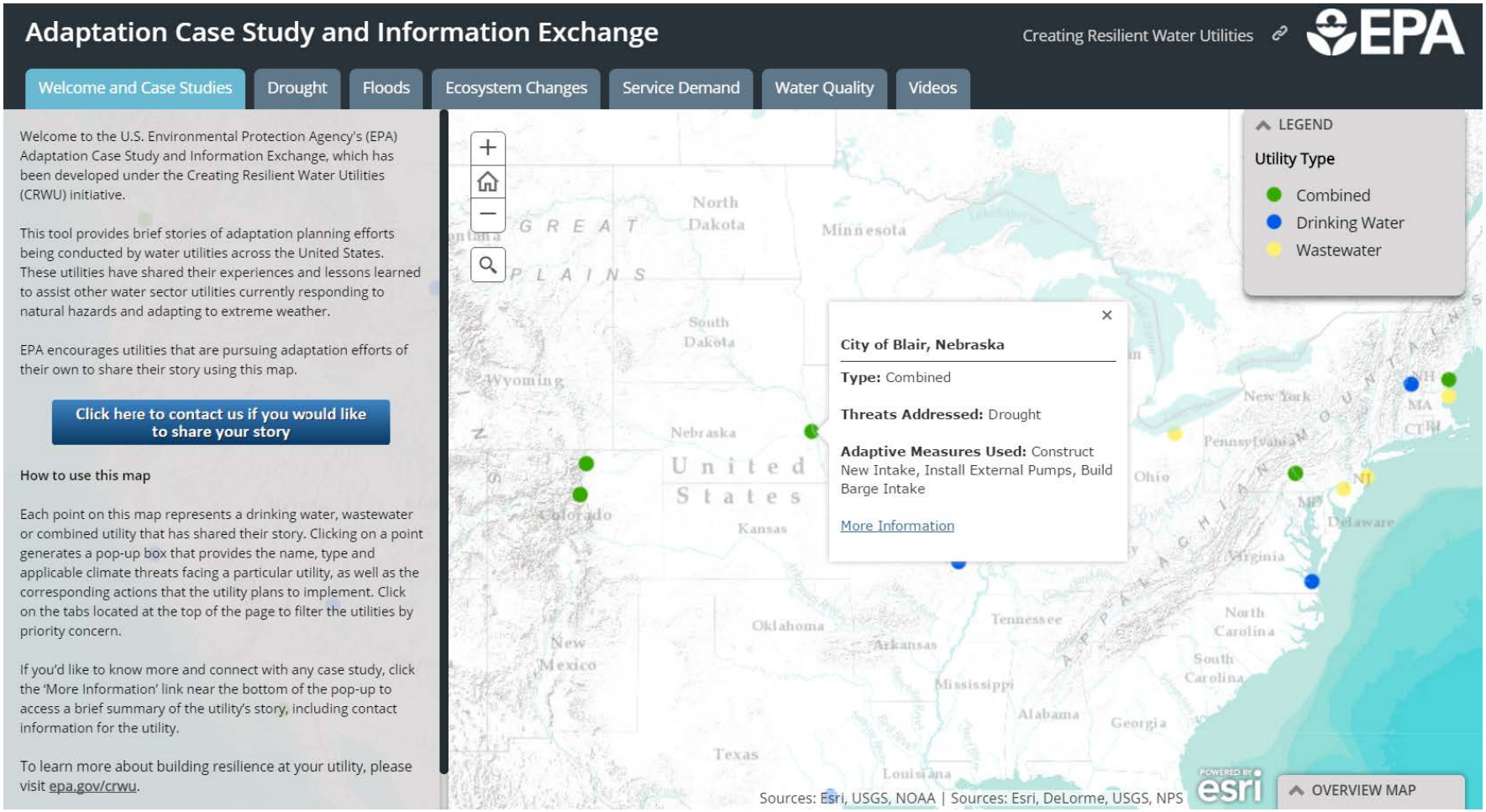


Panelists

- **Michael Ruppel, Executive Director**
  - South Monmouth Regional Sewerage Authority
    - Belmar, NJ
  - **Rina Dalal**, T&M Associates

- **Andy Kricun, Executive Director**
  - Camden County Municipal Utilities Authority
    - Camden, NJ

Adaptation Case Study and Information Exchange



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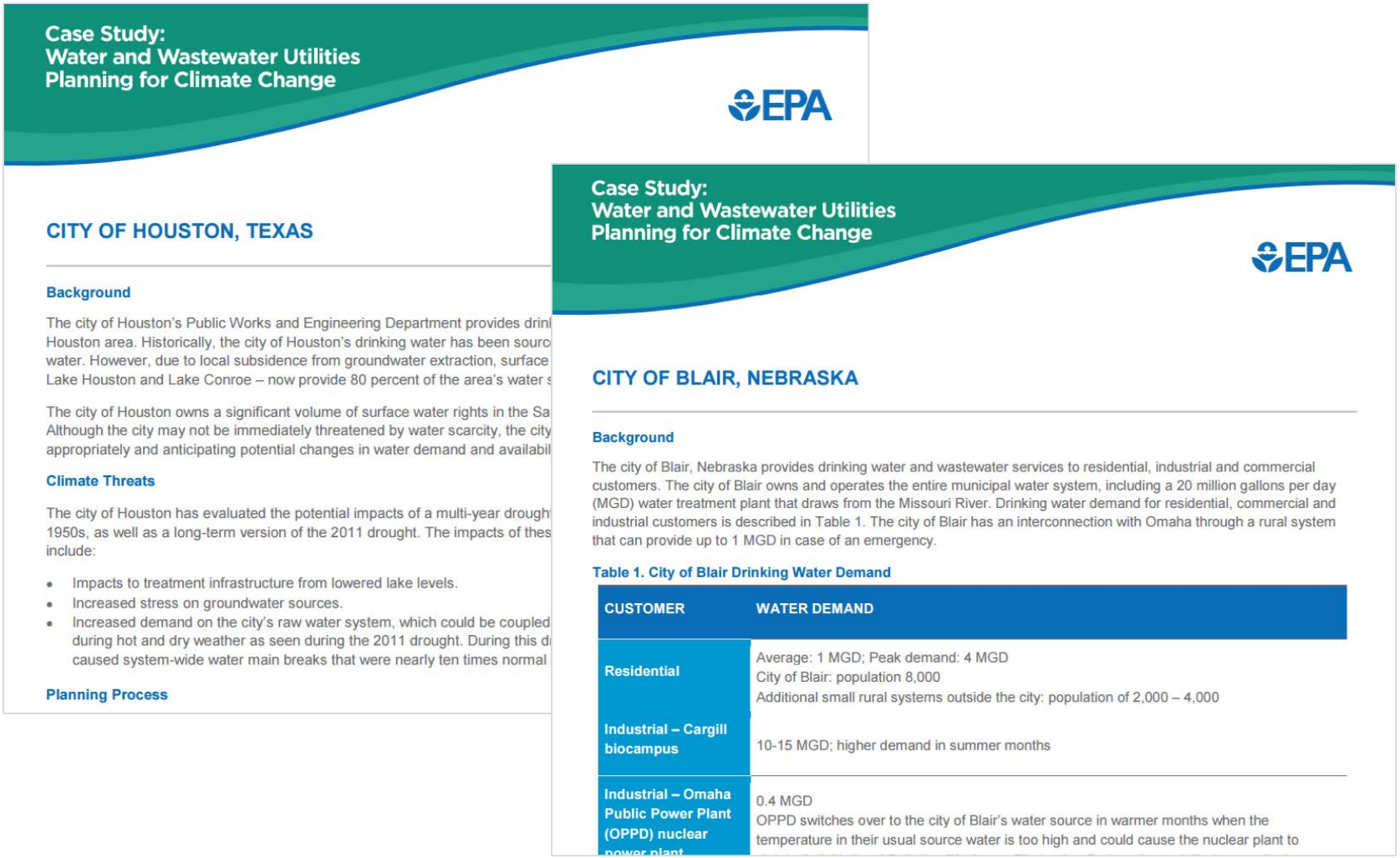

Case Study:
Water and Wastewater Utilities
Planning for Climate Change

EPA

CITY OF HOUSTON, TEXAS

Background

The city of Houston's Public Works and Engineering Department provides drinl
Houston area. Historically, the city of Houston's drinking water has been sourc
water. However, due to local subsidence from groundwater extraction, surface
Lake Houston and Lake Conroe – now provide 80 percent of the area's water s

The city of Houston owns a significant volume of surface water rights in the Sa
Although the city may not be immediately threatened by water scarcity, the city
appropriately and anticipating potential changes in water demand and availabil

Climate Threats

The city of Houston has evaluated the potential impacts of a multi-year drough
1950s, as well as a long-term version of the 2011 drought. The impacts of thes
include:

- Impacts to treatment infrastructure from lowered lake levels.
- Increased stress on groundwater sources.
- Increased demand on the city's raw water system, which could be coupled
during hot and dry weather as seen during the 2011 drought. During this d
caused system-wide water main breaks that were nearly ten times normal

Planning Process

Case Study:
Water and Wastewater Utilities
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CITY OF BLAIR, NEBRASKA

Background

The city of Blair, Nebraska provides drinking water and wastewater services to residential, industrial and commercial customers. The city of Blair owns and operates the entire municipal water system, including a 20 million gallons per day (MGD) water treatment plant that draws from the Missouri River. Drinking water demand for residential, commercial and industrial customers is described in Table 1. The city of Blair has an interconnection with Omaha through a rural system that can provide up to 1 MGD in case of an emergency.

Table 1. City of Blair Drinking Water Demand

CUSTOMER	WATER DEMAND
Residential	Average: 1 MGD; Peak demand: 4 MGD City of Blair: population 8,000 Additional small rural systems outside the city: population of 2,000 – 4,000
Industrial – Cargill biocampus	10-15 MGD; higher demand in summer months
Industrial – Omaha Public Power Plant (OPPD) nuclear power plant	0.4 MGD OPPD switches over to the city of Blair's water source in warmer months when the temperature in their usual source water is too high and could cause the nuclear plant to

Thank you!

Visit us on the web and register for CREAT:
www.epa.gov/crwu

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