Fredericktown, Missouri Prepares for Climate Change Drought Risk

Fredericktown, Missouri's drinking water utility services the town of just over 4,000 residents with an average demand of 500,000 gallons per day. Fredericktown had concerns about the resiliency of its water system, specifically regarding the amount of sediment deposition and contaminate influx from heavy rain events that affected source water storage capacity. To complicate its concerns, the region suffered a drought in 2012 which left much of the system's lake-bed exposed, reduced storage capacity, and the utility would have been critically low on available source water if not for a release from an upstream lake.

Recognizing the severity of other droughts at the time in Texas and California, and understanding that drought risk may increase in the future, utility officials realized they needed to prepare for the future. Using the EPA's Climate Ready Evaluation and Assessment Tool (CREAT), the utility was able to project potential climate impacts to their system out to beyond the year 2035. Initial results of this tool showed that the utility not only had to be concerned about future drought, but may also need to prepare for flooding caused by more extreme precipitation events. Using the CREAT participatory process, the utility was able to identify several potential adaptation strategies.

Among those considered were implementation of a water conservation strategy, entering into a water-rights agreement, lake dredging, and development of a water reclamation system. Fredericktown pursued the short-term strategy of developing a contract to use water from a nearby lake during dry periods. The utility operators, recognizing that upstream water releases and short-term contract may not be sufficient under future conditions, also identified a potential long-term adaptation action to dredge the lake. The CREAT Tool enabled the city of Fredericktown to assess climate vulnerability, pursue a short-term resiliency action and identify a long-term climate adaptation strategy.

How did they do it?	Applicable EPA Tools
Identified climate risk • Fredericktown, MO recognized their current source water vulnerabilities from levels of erosion, sedimentation and contaminate influx from heavy but sporadic rain events, as well as the increased risk of drought. Together these current threats not only increased the turbidity of the water but reduced the volume of lake storage and could have played a role contributing to greater treatment costs. These current vulnerabilities may be exacerbated by climate change so Fredericktown decided to better understand its climate vulnerability.	EPA's Climate Projections Map can help utilities illustrate projected precipitation and sea level rise scenarios for any climate region. EPA's Climate Projections Map
Assessed its climate vulnerability • Fredericktown, MO used EPA's Climate Ready Evaluation and Assessment Tool (CREAT) to project potential climate impacts to their system out to 2030 and beyond. They identified vulnerability to increased precipitation events (storms) and changing precipitation patterns including a vulnerability to drought -- and the corresponding vulnerabilities to water quality and sedimentation.	EPA's CREAT Tool can help utilities assess climate vulnerability and identify adaptation options using both traditional risk assessment and scenario-based methods. EPA's CREAT Tool

Identified near term resiliency and long term adaptation strategies

- Adopted short term resiliency by contracting with an upstream organization to release water during shortages.
- Planned for long term adaptation by exploring the idea of increasing water storage capacity by dredging the lake.

The EPA's Adaptation Strategies Guide can help you select adaptation strategies based upon expected facility vulnerabilities.

EPA's Adaptation Strategies Guide

Similar Cases and More Information

To see how another Midwestern community acted to reduce future vulnerability, see Iowa City. To see how another utility rebuilt in a vulnerable location but took steps to prepare their facility and adapt to concerns over flooding and sedimentation, see Anacortes, WA. For an example on how a wastewater utility identified projected climate impacts and adaptation strategies, and then partnered with relevant entities to adopt these strategies and reduce stormwater impacts and combined sewer overflows, view Camden, NJ.