The Nation’s drinking water infrastructure is failing, but how do we prioritize the need?

Dramatic water main breaks make headlines across the United States every week that cost millions of dollars in repairs that disrupt traffic, shut down businesses and impact vital services such as firefighting, healthcare and communications. The Environmental Protection Agency publishes a survey of the water infrastructure investment needs, stating that it would take nearly $400 billion to keep the system functioning to meet current challenges. Key decision makers at every level of government are aware this infrastructure is on the brink of failure but lack the means to prioritize these enormous investments based on risk, science and the impacts to national security, human health and overall societal resilience.

Assessing risk from the “bottom-up”

The National Infrastructure Protection Plan encourages critical infrastructure owner/operators to conduct voluntary risk assessments. The American Water Works Association developed a tool (J100) to standardize these assessments for water utilities; however, it is paper-based, laborious and costly.

The Drinking Water Resilience Project (DWRP) will web-host J100 and enable reachback to data, algorithms and resources at national labs and federal agencies to enhance, speed up and reduce the cost. The results—the risk scenarios, the mitigation plans, projects and the costs to implement them—will be inputs to a national scale risk assessment of the drinking water infrastructure.

Provide NISAC with a national risk assessment model for drinking water

The goal of the DWRP is to provide a methodology for assessing risks to the water infrastructure across the sector and the nation. Factors such as climatological stresses, coastal flooding, long-term population shifts, system aging and earthquake predictions can be accounted for both at the local level as inputs to J100 and as prioritization factors at the national scale. The ultimate DWRP program outcome is an annual risk-based prioritization of the key large investment needs for the sector for the next five years. The model will reside at the National Infrastructure Simulation and Analysis Center (NISAC) under their statutory authority. The annual report would be a joint product of National Protection and Programs Directorate (NPPD) / Infrastructure Protection and EPA.

Guide investment decisions through scientific risk assessment: save lives and $MILLIONS.

Preventing one pipe break in Manhattan, an aqueduct failure in California or reducing the impacts of drought in Texas, the DWRP can conservatively save $90 to $300 million in lost gross domestic product (according to estimates by Sandia.)

Coastal flooding causes co-located sanitary treatment systems to contaminate drinking water systems. Hundreds of thousands of customers are left without safe water to drink at a time when they are also homeless and lacking electricity or communications. The impact on human health is immeasurable. The healthcare costs for an infectious disease outbreak is in the tens of millions of dollars.

Milestones:

FY13: Seedling concept development
FY14: J100 coding, hosting & prototype
FY15: National model framework development
FY16: National model prototype testing
FY17: Prioritization reporting

Identify performers/partners

- American Water Works Association
- National Institute of Building Sciences
- NISAC/Sandia National Labs
- Los Alamos Labs
- NPPD/IP/Homeland Infrastructure Threat & Risk Analysis Center
- EPA
- FEMA office of Response & Recovery

Utilities conduct self-assessments. NISAC provides data, resources & algorithms via a portal & 3rd party controls. Result: national scale model & priorities

To learn more about the Drinking Water Resilience Project, contact SandT.RSD@hq.dhs.gov