

**American Water Resources Association  
2015 SUMMER SPECIALTY CONFERENCE**

**Climate Change Adaptation**

**June 15 - 17, 2015**

**New Orleans, LA**

**Monday, June 15**

**3:30 PM – 5:00 PM**

**SESSION 3: Climate Change Adaptation 2**

**U.S. EPA Case Studies: Using Green Infrastructure to Build Community Resiliency - Eva Birk,**  
U.S. EPA, Washington, DC

This presentation will cover recent research by U.S. EPA into the multiple benefits of green infrastructure for climate resiliency. While many cities have scaled up green infrastructure implementation to help reach water quality goals, these practices can also serve to jump start tangible efforts to improve community resiliency. Bioretention, street trees and green roofs, for example, can help communities manage flooding, reduce urban heat island effect, and recharge fragile groundwater supplies. This presentation will reflect on case studies developed through U.S. EPA's Green Infrastructure Technical Assistance Program that highlight ways communities can incorporate green infrastructure into wider adaptation planning efforts. Case studies include Norfolk, Virginia, where EPA helped identify green infrastructure alternatives for a low-lying coastal area subject to sea level rise, and Iowa City, Iowa, where technical assistance helped scope green infrastructure practices for riverfront properties prone to flooding. For more information: [http://water.epa.gov/infrastructure/greeninfrastructure/gi\\_support.cfm](http://water.epa.gov/infrastructure/greeninfrastructure/gi_support.cfm) and [http://water.epa.gov/infrastructure/greeninfrastructure/climate\\_res.cfm](http://water.epa.gov/infrastructure/greeninfrastructure/climate_res.cfm)

**Climate-Informed Water Resources in the Southeast U.S. - Rachel Gregg,** EcoAdapt, Seattle, WA (co-authors: W. Reynier, J. Hitt, A. Score)

Supporting sustainable water resources is key to the well-being of human communities, habitats, and species. Water resources are under pressure from a variety of sources, including increased competition, drought, floods, pollution, rapid urbanization, and climate change, among others. Climate-induced effects on the water cycle will alter hydrologic systems and intensify extreme weather events in different ways throughout the United States. In turn, these changes will affect how managers, planners, and other practitioners approach water resources management, planning, and conservation. Different mechanisms are available to support climate-informed water resources action, including increasing water supplies, protecting ecosystems, increasing water resource use efficiency, and improving flood protection, among others. EcoAdapt's State of Adaptation Program is a research initiative designed to facilitate adaptation action by surveying practitioners, assessing adaptation activities, writing in-depth case studies to catalyze creative thinking, and synthesizing information collected to further develop the field of study and action. Since 2009, we have surveyed over 2,500 practitioners

and produced over 400 case studies of real-life, practical climate adaptation examples from the coasts of North America, the western states and provinces, and the Great Lakes. In the course of our work, we have noted a significant gap in capacity and reported activity around adaptation in the southeastern United States, especially in relation to climate-informed water resources. This project aims to survey, document, and assess climate adaptation activities, needs, and opportunities in Southeast U.S. water resources planning, conservation, and management. This presentation will include discussion of the current science, tools, and approaches for building climate resilience into water resources, as well as case studies from our assessment of climate-informed water resources action in the Southeast.

**Climate Change Impacts and Potential Stormwater Responses: Barriers and Opportunities for Local-level Action - Susan Asam**, ICF International, Kailua, HI (co-authors: S. Julius, B. Bierwagen, D. Spindler, P. Robinson, T. Allen)

This presentation will highlight findings from a soon-to-be-released report (Climate Change Impacts and Potential Stormwater Responses in the Chesapeake and Great Lakes Regions) that is being developed as a technical input to the National Climate Assessment. The report is the product of a collaborative effort involving the Environmental Protection Agency, the Great Lakes Adaptation Assessment for Cities Project of the Graham Sustainability Institute at the University of Michigan, ICF International, Lake Superior National Estuarine Research Reserve, National Oceanic and Atmospheric Administration Office for Coastal Management, and Old Woman Creek National Estuarine Research Reserve. The report provides key takeaways from eight similar but locally-specific efforts to explore the potential impacts of changing precipitation patterns on stormwater management and consider options (e.g., green infrastructure, low impact development) to address those impacts. The presentation will highlight some of the lessons regarding: incorporating climate change into planning (including dealing with uncertainty); building local capacity; identifying and communicating costs and benefits of green infrastructure; and implementation within the current governance structure. As time permits, it will end with a facilitated discussion regarding ways to promote local-level implementation of alternative strategies to control stormwater (e.g., green infrastructure) in the face of climate change.

**Water Resiliency Planning - Local, Onsite Rain Harvesting Green Infrastructure for Beneficial Uses - Neal Shapiro**, City of Santa Monica, Santa Monica, CA

The City of Santa Monica, as all of Southern California, faces an unreliable water resources supply. This scenario is due to dependence on imported water, which requires large amounts of energy to transport from hundreds of miles away, a severe "mega" drought scenario, and potential supply disruptions due to endangered species management and natural disasters. To address this water supply challenge, the City embarked on an innovative water planning endeavor to achieve city-wide water self-sufficient from local water resources only, eliminating its imported water supply. The resultant sustainable water master plan includes supply and demand management portfolios to reach this self-resiliency goal by 2020. One component of the supply portfolio is rain harvesting - collecting rainwater and stormwater from impermeable

surfaces, storing them, and using this water to offset potable water uses, e.g. indoor flushing and irrigation. Besides the benefit of a new water supply, this strategy has other benefits - reduces water pollution and improves water quality of our local water body; reduces flooding; reduces energy use and air pollution; preserves surface and underground water flows and functions. Two examples and City case studies of this supply portfolio strategy are indoor flushing at the new Pico Library, and spray irrigation at Ozone Park. The Pico Library has a 12,000 gallon cistern to collect and store rain from building roofs. The highly treated, non-potable water is used for flushing in the three bathrooms, the first building in the City to implement this strategy. The City received an EPA Green Infrastructure Technical Assistance grant to design a stormwater harvesting system at a local park to replace potable water with highly treated non-potable stormwater for spray irrigation of the park's turf. Stormwater and any dry weather runoff flowing in a storm drain line under the park will be mined, diverted to a cistern, stored and treated for use. Both strategies, harvesting precipitation from elevated and at grade impermeable surfaces and from below grade storm drains, replace the use of imported potable water with locally produced non-potable water for non-potable applications. This onsite rain harvesting strategy provides a local water supply to offset using imported potable water. It helps insulate the City from climatic flux scenarios that may occur in the future. And ultimately, it adds water supply resiliency to the City's overall water management program, and puts the City, its residents and businesses in a more sustainable and adaptive position to effectively deal with potentially-dramatic climatic changes and to maintain a high quality of living.