

SUMMARY WHITE PAPER: RECYCLED WATER AS A RESILIENCY TOOL



OVERVIEW & CONTEXT

In March 2021, the WaterReuse Association convened the virtual 36th Annual WaterReuse Symposium, which included eight live roundtable discussions with facilitated breakout sessions. Led by WaterReuse members and Champion sponsors, the live roundtables were presented in a format that allowed both knowledge sharing and interaction between participants. First, a group of six to ten experts on a given roundtable topic participated in a web-based video panel discussion viewed by several hundred attendees. When the live roundtable discussion concluded, the attendees moved into one of six pre-selected breakout sessions. Each breakout session focused on one aspect of the broader live roundtable discussion. WaterReuse member volunteers facilitated the breakout dialogs, with one taking notes that were later used to produce this series of summary white papers.

This paper summarizes the discussions held during the 36th WaterReuse Symposium Recycled Water as a Resiliency Tool roundtable.

LIVE ROUNDTABLE SUMMARY

The roundtable panelists defined resiliency as the ability of a system to respond to continued stressors and maintain its core function, whether the stressors be environmental, regulatory, institutional, or economic in nature. The discussion explored resiliency in the context of recycled water and beyond, including the role of integrated planning, key drivers, enablers, and metrics for success at the local and global scale.

Paramount to building resiliency into a treatment design or organizational structure is integrated planning. The panel emphasized the need to begin integrated planning early, incorporating multiple stakeholders and organizations, and considering the multiple benefits that can be achieved in the community. Looking towards the future, communities need to integrate investments beyond wastewater, stormwater, and drinking water. This includes thinking about the unique needs of surface infrastructure, broadband, food supply, education, housing, air pollution, and

SPEAKERS

- BRUCE CHALMERS, Regional Recycled Water Program Manager, Metropolitan Water Dist. of Southern California
- GLEN DAIGGER, Professor of Engineering Practice, University of Michigan
- ZEYNEP ERDAL, Water Business Leader, Black & Veatch (Moderator)
- TED HENIFIN, General Manager, Hampton Roads Sanitation District
- FELICIA MARCUS, William C. Landreth Visiting Fellow, Stanford University; Founding Member, Water Policy Group
- FRANCESCA MCCANN, Business Development Director – InfraManagement Group, Black & Veatch
- CINDY WALLIS-LAGE, President of Water Business, Black & Veatch

jobs. Western Australia's Water Corporation began its planning process with a question, "what if we never received rain again?" which allowed the utility to engage with the community and develop a holistic resource recovery program to provide a resilient water supply.

Essential drivers of water recycling as a resiliency tool include regulatory adversity, economic adversity, resource protection adversity, sea level rise adversity, and workforce adversity. In facing regulatory adversity, Hampton Roads Sanitation District in Virginia concluded it could minimize the need to adapt treatment to iterative wastewater regulations by instead designing a system that treats recycled water to drinking water standards. Addressing a combination of resource protection and regulatory adversity, the Metropolitan Water District of Southern California assessed the stressors at a regional scale to find a solution that bolstered the drinking water supply in times of water stress, while also addressing the Los Angeles County Sanitation District's regulatory challenge in meeting ocean outfall requirements. Inter-

nationally, Singapore's water reuse program considered stormwater, wastewater, and seawater as potential water sources. Singapore was able to lessen its dependence on imported water and minimize impacts of flooding from stormwater during wet periods.

When it comes to financial resiliency, panelists urged planners to find ways to optimize ratepayer dollars, including leveraging other funding sources and developing projects that provide economic development or revitalization. For example, leveraging community bonds, public-private partnerships, low-interest loan programs, and small grant programs from federal and state funding demonstrate the project planner's commitment to optimizing project funding.

The panel concluded with a discussion of the need to create an understanding of the value of water. When the public demands the sustainable and resilient use of water supplies, the implementation of water reuse and recycling as a tool is as a metric of success.



BREAKOUT DISCUSSIONS TAKEAWAYS

Echoing the themes of the roundtable, the six breakout rooms discussed early planning as a key tool, utility resilience and risk management, innovation and technology, implementation case studies, success metrics, and use of sustainable groundwater management strategies. Breakout discussions included 154 participants, with anywhere from 13 to 32 attendees in each room.



BREAKOUT ROOM 1 **EARLY PLANNING AS A** **KEY TOOL**

This breakout focused on early planning in water reuse projects to address barriers, including the disparity of planning timelines for elected officials that range from short to long-term, public opinion, and prescriptive regulatory frameworks. Early planning can assist in

breaking down silos between agencies, which allows for collaboration among planners and often provides a solution beneficial to a region. When considering metrics for success, the group discussed key performance indicators, including staying on budget, the per capita cost of water, measurable benefits to the community, and recovery of groundwater or surface water supply.



BREAKOUT ROOM 2 **UTILITY RESILIENCE AND RISK** **MANAGEMENT**

Breakout session participants discussed approaches to overcoming barriers to cross-sector collaboration, including community engagement to build trust and reach collective agreement, as well as engaging industry partners. Other barriers noted were agency conservatism, which limits

project funding and the ability to get demonstration projects off the ground, water allocation rights in regional partnerships, and a lack of regulator buy-in for regional projects. Metrics for success discussed included surveys that demonstrate greater public acceptance over time, comparing cost of recycled water to the cost of other water supplies, job creation, green infrastructure, and demonstrating the success of a project in providing resiliency.



BREAKOUT ROOM 3 **INNOVATION/TECHNOLOGY**

This breakout group discussed approaches that enable a community to develop resiliency, including integrated water resource plans, advances in technology and data management, and engagement with outside organizations specializing in bringing utilities together to encourage innovation. The group discussed the U.S. EPA's definition

of integrated planning as a barrier due to its narrow focus, which can perpetuate fragmented thinking. Looking forward, participants saw breakthroughs in tools developed for future scenario planning, improvements for direct potable reuse due to real-time monitoring and source control programs, and energy sector research and technology implementation as a model for success.



BREAKOUT ROOM 4 **OPPORTUNITIES TO IMPLEMENT CHANGE** **AT UTILITIES, CASE STUDIES**

Participants considered barriers geographically. In the city of Los Angeles, for example, barriers arose in trying to implement one-size-fits-all solutions for a large and diverse city where rate increases must be approved by ratepayers and a recycled water demand fluctuates seasonally. Australia found that while demonstration plants engender success for a full-scale solution, it can be difficult to obtain regulator buy-in for expending

resources on a demonstration project. In Sydney, Australia, there are nearly 45 water councils that must work together to approve resiliency solutions, making consensus a difficult path to navigate. A common theme across the discussion was the importance of communicating the social and environmental benefits of water reuse, beyond the price of water, as a driver for multi-agency collaboration. The group encouraged the use of baseline metrics to map water use over time and highlighting the use of recycled water in creating green spaces.

Singapore NEWater Visitor Centre
provides open and transparent
education on treatment processes.





BREAKOUT ROOM 5 **DEFINITION OF SUCCESS –** **WHAT ARE THE RIGHT METRICS?**

This breakout room narrowed in on the metrics for success, citing the need to establish broad value to the community, measure ecosystem impacts, and require 20-30 year water supply planning. To establish value in a community, the group discussed communicating

treatment safety and protection of public health, positive impacts on industry, increased water supply, and broader ecosystem benefits. Once a project is implemented, the group noted that it is important to document progress and resiliency in the face of stressors to the community to demonstrate the effectiveness of water reuse projects.



BREAKOUT ROOM 6 **USE OF SUSTAINABLE GROUNDWATER** **MANAGEMENT STRATEGIES, INCLUDING** **WORKING WITH AGRICULTURE**

The group discussed several barriers to ensuring resilient groundwater supplies, including competition between utilities within the same region, limitations in water reuse options, lack of uniform regulations, public perception

of health and safety, responsiveness to contaminants of emerging concerns, and individual state water plans. The breakout room supported using water quality parameters, such as total dissolved solids, chlorines, CECs, water levels, and nutrients, as key performance indicators. Looking forward, the group discussed shifting to one water planning and breaking down silos between water stakeholders as essential next steps.

**The Hampton Roads Sanitation District
treats its SWIFT water to drinking
water standards to ensure resiliency
to iterative wastewater regulations.**



CLOSING SUMMARY OF THE DISCUSSION

Panelists urged the water reuse community to collaborate, connect, and communicate to build resiliency. Collaboration among utilities, regulators, and the public creates a connection of openness and transparency that allows the water sector to plan holistically. Integrated planning will be essential in providing a reliable water supply to communities so they can continue to weather the various challenges of the future.

The WaterReuse Association thanks Black & Veatch for sponsoring and assistance in organizing this live roundtable at the 36th Annual WaterReuse Symposium.