WATEREUSE®

INVESTING IN WATER REUSE

FOR CLIMATE CHANGE MITIGATION, ADAPTATION, AND ECONOMIC RESILIENCY

As climate change accelerates, and its associated adverse impacts on water resources increase, it is vitally important the nation invest in water recycling to build resilience, manage energy demands, support public and environmental health, and ensure America's economic prosperity.

A MULTI-BENEFIT SOLUTION

Water reuse is a multi-benefit solution that can help our communities and economy tackle climate change. Water reuse projects across the country demonstrate how this water management approach generates economic, environmental, and public health dividends in response to the risks posed by climate change. Water reuse investments:

- Compare favorably to other options for providing new water supplies by often using less energy, imposing a smaller carbon footprint, and generating fewer air pollution emissions.
- Ensure reliable and resilient community water supplies in the face of increasingly frequent, severe, and prolonged droughts, wildfire, and other climate-related risks by drawing on a stable, locally generated, and controlled water source.
- Support sustainable economic prosperity, advanced clean manufacturing, and well-paying high-skill employment opportunities by providing business and industry with a reliable, long-term supply of water.
- Protect our rivers, lakes, and streams—as well as America's aquifers and wetlands—by reducing extractive water demands, reducing nutrient and other pollutant loads, and providing high-quality water for replenishing groundwater and riparian base flows.

VIRGINIA'S TIDEWATER REGION

Water Reuse Addresses Sea Level Rise, Saltwater Intrusion, Land Subsidence, and Provides a Climate-Savvy Environmental and Economic Win-Win

Virginia's Tidewater Coastal Plain region hosts the largest concentration of military bases and facilities of any metropolitan area in the world. Nearly one-fourth of the nation's active-duty military personnel are stationed in Hampton Roads, and approximately 50,000 federal civilian jobs are also linked to the port's military role. The defense-related economy is responsible for $36 billion in annual economic output for the region. While the region is water rich, it is nonetheless suffering adverse effects of sea level rise, coastal land inundation, flooding, land subsidence (from over-pumping the regional aquifer), and saltwater intrusion into the region's groundwater, placing the region's economic base and the nation's military readiness at risk.

To address these challenges, Hampton Roads Sanitation District (HRSD) is pursuing a multi-benefit water reuse program called the Sustainable Water Initiative for Tomorrow (SWIFT). HRSD's SWIFT project treats wastewater effluent to drinking water standards and reuses it to recharge the regional aquifer. The investment of $1.1 billion in capital outlays provides critical public health, environmental, and economic benefits by:

- Replenishing the overdrawn Potomac Aquifer, recharging 100 million gallons per day of fresh water at full scale, alleviating costly impacts associated with overdraft and saltwater intrusion;
- Providing a reliable safe water supply to support the region's population and the nation's critical military assets and thereby avoiding the likely alternative of investing in more expensive and energy intensive desalination facilities; and,
- Generating nutrient credits that HRSD can trade—providing an estimated savings of $1.5 billion for 11 counties across the region.

FLORIDA'S TAMPA BAY REGION

A SHARP Water Reuse Solution Protecting Essential Water Supplies from Sea Level Rise and Saltwater Intrusion, while Enhancing the Bay's Ecosystems

In Florida's Tampa Bay region, rapid growth has long outpaced natural water resources, leading to groundwater overdrafts, lawsuits, pumping bans, and a regional "Water War." Water reuse has emerged as a centerpiece for the region's approach to water supply reliability—meeting dry season irrigation demands and relieving pressure on the region's limited potable supplies.

Hillsborough County's Saltwater Intrusion and Aquifer Recharge Program (SHARP) is a system of recharge wells along Tampa's coast, creating a hydraulic barrier to prevent saltwater intrusion into the region's drinking water aquifer. At a cost of $20 million, SHARP is yielding significant climate-resiliency benefits by:

- Protecting the region's freshwater aquifer from sea level rise and saltwater intrusion;
- Reducing pumping costs and energy use by raising groundwater levels and increasing pressure in the aquifer;
- Generating water supply credits that offset the project's cost by increasing freshwater yields in a water-limited region facing rapid population and economic growth; and,
- Supporting seagrass and fishery recovery efforts in Tampa Bay by reducing nutrient and other effluent loadings to the estuary.

EL PASO, TEXAS

Reducing the Carbon Footprint and Providing Significant Cost Savings while Solving an International Water Challenge and Preserving Regional Agricultural Communities

Following decades of concern over water scarcity, El Paso Water has aggressively pursued water reuse, conservation, and diversification as it implements its 50-year water plan. For years, the regional aquifers have seen high demand by water users in northern Mexico, New Mexico, and far west Texas. Surface water is very limited, drawing from drought-limited shares of Rio Grande river water.

Pioneering efforts in water reuse and saline groundwater desalination by EPWater have navigated a path to a drought-resilient, cost-effective, and energy-saving supply to support a vibrant local economy. Compared to the next best alternative for meeting the community's water supply needs (importing groundwater acquired from agricultural communities 100+ miles distant), El Paso's water reuse program is:

- Reducing energy use by 3.6 million MWH over the planning period by producing reclaimed water locally, eliminating the need to pump groundwater more than 100 miles to the City;
- Shrinking EPWater's carbon footprint by nearly 700,000 MT of carbon emissions over a 50-year period and reducing sulfur dioxide and nitrous oxide emissions;

- Addressing affordability challenges by saving $1.2 billion, or 74%, relative to importing water[i]; and,
- Preserving regional agricultural communities' farm production levels by delaying importation of groundwater that EPWater ratepayers have rights over.

RENO-SPARKS, NEVADA

Building a Reuse-Driven 21st Century Green Manufacturing Center, Creating Jobs and Economic Diversity while Protecting Special Status Fisheries

A collaborative effort by Nevada's Reno-Sparks area water agencies has enabled development of a large-scale water reuse project serving the Tahoe-Reno Industrial Center (TRIC), an emerging center for high-tech and advanced, clean manufacturing businesses. TRIC exemplifies the critical role of water reuse in paving a sustainable, climate-friendly pathway to regional job creation, climate resilience, and economic prosperity.

TRIC includes the Tesla Gigafactory, Google, Switch, and nearly 100 other businesses producing solar panels and batteries as well as other goods and services, exemplifying the emerging climate-savvy clean economy. Absent large-scale water reuse, TRIC is unlikely to have been feasible within Nevada's water-limited Truckee River basin. Investing in water reuse yields considerable dividends for this region:

- Creating an estimated 20,000 new jobs, largely in emerging clean high-tech sectors, and providing a sustainable boost to the regional economy;
- Diversifying the local economy beyond the gaming and tourism sector, and providing opportunities for high-skill, well-paying, secure jobs;
- Improving instream water quality and supporting two endangered fish species (Lahontan Cutthroat Trout and Cui-ui) downstream; and,
- Avoiding competition between new enterprises and existing water users for the region's scarce raw water supplies.

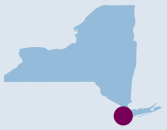
SOUTHERN CALIFORNIA'S CHINO BASIN

Water Reuse Reduces Carbon Emissions, Saves Money, and Enhances the Environment while Solving a Multitude of Water Supply Challenges

California's Inland Empire relied for decades on the Chino Groundwater Basin and imported Colorado River water to serve its flourishing citrus and dairy operations. As the aquifer became highly depleted and widely contaminated, the region originally turned to expensive, unreliable, and energy intensive imported surface water from the Metropolitan Water District (MWD). However, this short-term solution was not sustainable, so local leaders developed the Optimum Basin Management Program (OBMP) to address the region's water challenges.

At its core, the OBMP is a water reuse program with other key components facilitated by water recycling. The OBMP required a sizable investment of $1.6 billion[ii], providing an array of highly valuable net benefits, including:

- Generating energy savings in excess of 5.8 billion kWh over 30 years by relying on local resources rather than energy intensive water imports;
- Reducing the energy-related carbon footprint and other air pollutant emissions from the region's water supply;
- Saving rate payers an estimated $2.4 billion in water supply costs, representing a rate of return of 153% on the investment[iii]; and,
- Restoring instream flows and water quality in the Santa Ana River, returning a surface water supply to downstream Orange County, and replenishing and improving water quality in the Chino Groundwater Basin.



NEW YORK CITY'S BATTERY PARK

Using Onsite, Distributed Water Recycling to Build Resilience to Hurricanes and Extreme Rain Events

Battery Park is a mixed-use community of residential, commercial, and institutional properties constructed on 92 acres of land created along the Hudson River in lower Manhattan. Each building in Battery Park has its own internal wastewater collection system that is interconnected to the New York City (NYC) sewer system.

Battery Park's Solaire Project, a 5-building residential complex, is the first to incorporate onsite water reuse, recycling 25,000 gallons of wastewater per day and using it for flushing, building cooling, sidewalk maintenance, and landscape irrigation. Compared to similar residential buildings in NYC, the Solaire consistently achieves a 48% reduction in water consumption, a 56% reduction in wastewater discharge, a 35% reduction in energy consumption, and a 65% reduction in peak demand for electricity. During Super Storm Sandy when lower Manhattan and the surrounding region experienced severe flooding that disrupted power and sewer service to neighborhoods and towns, Solaire's water recycling system provided continuous service to its residents.

The Solaire Project and similar developments that incorporate on-site water recycling systems, increase resilience and combat climate change by:

- Increasing the capacity of centralized wastewater infrastructure by managing flows to the sewer system and treatment facilities;
- Reducing pollution discharges from combined sewer overflows during wet weather events;
- Protecting against major extreme precipitation events such as hurricanes that may cause disruptions to centralized systems; and
- Reducing greenhouse gas emissions by reducing energy-intensive pumping of wastewater flows to central facilities.

WATER REUSE IS A MULTI-BENEFIT SOLUTION TO HELP COMMUNITIES AND OUR ECONOMY TACKLE CLIMATE CHANGE.

These examples—drawn from across the United States—demonstrate the necessity of investing in our nation's water reuse programs as a critical strategy for tackling the risks posed by climate change. Investment in water reuse will:

- Reduce energy demands and related greenhouse gas emissions compared to most of the remaining alternatives for meeting water supply needs;
- Save ratepayers money by offering cost-effective solutions to a range of critical water resource challenges that grow more pressing with our changing climate;
- Provide climate-independent water supply reliability and resilience in water rich and arid portions of our country, supporting critical economic and national security systems; and,
- Preserve and enhance our public health, environment, and economic future.

---

[i] Present value savings over the 50-year period 2010 – 2060, in 2021 dollars

[ii] In 2021 dollars

[iii] Present value savings over the 30-year period 2001 – 2030, updated to 2021 dollars

For more information, please contact Greg Fogel, Policy Director, WateReuse Association at gfogel@watereuse.org