San Antonio Water System

Scaling drought resilience with community-wide conservation

Project at a Glance

Utility Overview

- Utility: San Antonio Water System (SAWS)
- Location: San Antonio, Texas
- Population served: 1.86 million
- Service area: 967 square miles

Challenges

- Rapidly growing population and economy
- Prolonged drought
- Decreased water source permits
- Need for Endangered Species Act compliance

Solution

- A “conservation first” approach that treats conservation as a source of water supply. This includes three primary strategies: (1) education and outreach, (2) financial incentives, and (3) reasonable regulation.

Costs and Funding Sources

- Total project budget: $5.4 million
- Incentive and education programs: $3.5 million
- Conservation staff of 22 full-time people, 5 part-time enforcement officers, 4 seasonal PT staff, and periodic seasonal temporary staff: $1.5 million
- Program management, research, and web development projects: $0.4 million
- Funding source: Capital Improvement Budget

Benefits

- **Reduces water consumption by 50%**
- **Maintains a cost-effective water supply**
- **Ensures affordable rates for all income levels**
- **Engages the community**
- **Creates drought resilience**
- **Increases wildlife habitat for monarch butterflies and other pollinators through native plants**
- **Protects endangered species**
- **Greens urban spaces**
- **Saves money for local businesses**

BACKGROUND

The City of San Antonio is located in South Central Texas (70 miles southwest of Austin and 190 miles west of Houston) in a region of Blackland Prairie grassland and oak woodlands. San Antonio overlies parts of four major aquifers. Chief amongst these is the Edwards Aquifer, which provides 42% of the city's water supply during prolonged drought conditions. The Edwards Aquifer covers approximately 3,600 square miles of South Central Texas and has a mean annual recharge of 704,000 acre-feet, with substantial variation depending on precipitation totals.

The Edwards Aquifer covers approximately **3,600 square miles** of South Central Texas and provides **42%** of the city's water supply during prolonged drought conditions.

CHALLENGE

The combination of a rapidly growing population and economy, prolonged drought periods, and decreased water source permits required San Antonio to adopt innovative water planning practices. From a regulatory perspective, the local utility, San Antonio Water System (SAWS), was motivated to diversify its portfolio two decades earlier by a least two legal drivers. In 1994, the Texas legislature placed a limit on pumping from the Edwards Aquifer, and, more recently, an extensive Habitat Conservation Plan was implemented to preserve endangered species associated with the local aquifer-fed springs. This also provided certainty for Edwards Aquifer permit holders.

With their water supply in danger, San Antonio community leaders worked to put in place a balanced approach to new water sources and long-term programs that leverage conservation as a source of water throughout the community.

SOLUTION

The resulting programs, led by SAWS, take a "conservation first" approach and treat conservation as a source of water supply. This approach is implemented through a comprehensive commitment to education and collaboration with numerous regional NGOs, a variety of incentive programs, and effective infrastructure investments in order to sustain a community-wide conservation ethic.

Three primary strategies drive SAWS' conservation program: (1) education and outreach, (2) financial incentives, and (3) reasonable regulation. Within each of these categories, SAWS uses a diverse set of tools to reduce water use

among residential, commercial, industrial, and institutional customers. The ever-evolving program options include:

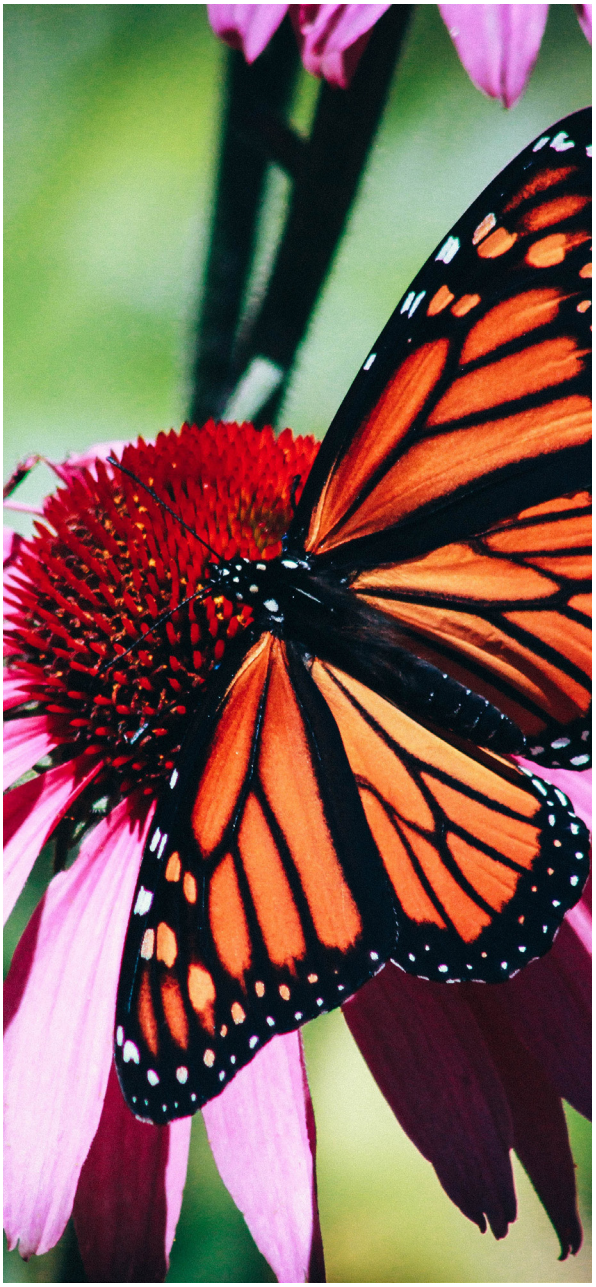
- → A tiered rate structure to incentivize lower water consumption
- → Conservation ordinance designed to assist the community in achieving water-saving goals without significantly impacting quality of life
- → Watering restrictions that can be triggered by aquifer levels
- → A variety of rebate- and incentive-based programs, such as irrigation design rebates, to encourage water conservation
- → Incentives to reduce the price of water efficiency supplies such as water-saver plants, pervious patio materials, and technology devices
- → Leak repair education water waste enforcement
- → SAWS' WaterSaver Landscape Coupon Program, which has replaced over 2 million square feet of water-intensive grass with low water-use plants and permeable patios
- → Irrigation consultations and irrigation efficiency rebates
- → Peak demand reduction through the GardenStyleSA.com & E-Newsletter, among other efforts to educate the public

SAWS has seen particular success in growing cost-effective partnerships with a thriving set of local educational organizations and programs focused on conservation. These groups offer personalized consultations and lead a variety of tours and hands-on workshops that educate community members on conservation tactics like rainwater harvesting, wildscaping, and other forms of drought-tolerant landscaping.

RESULTS

Water Resources Benefits

Over 25 years, SAWS' programs have reduced the city's water usage from 225 gallons per capita per day (GPCD) to 117 GPCD – a nearly 50 percent reduction. Water conservation investments are estimated to have offset a need for approximately 200,000 additional acre-feet of supply and the associated costs required to secure it. The programs have resulted in approximately **3.2 million acre-feet of cumulative savings**.



San Antonio currently relies on the Edwards Aquifer for 42 percent of its water supply during prolonged drought conditions—down significantly from 70 percent in 2000—and expects to lower this to 31 percent by 2070. As SAWS continues to diversify its water supply through water conservation and the development of non-Edwards supplies, the utility becomes more resilient against drought and climate change.

Environmental Benefits

Reduced reliance on the Edwards Aquifer has helped protect the seven endangered species of the local system, including the Fountain Darter and Texas Blind Salamander. SAWS' programs have also created wildlife habitat for monarch butterflies and other critical pollinator species by encouraging the use of native plants through water-smart landscaping initiatives.

Economic Benefits

By reducing the number of additional water supplies needed, SAWS can keep rates affordable for all income levels in its service area. While the SAWS service population has changed over time, the cost of investment in conservation has remained between **$3 to $4 per capita**.

Local businesses that participate in the utility's large-scale commercial rebate program have also realized significant savings. For example, a local manufacturer that modified its processes to reduce water consumption at a cost of $1.4 million received a rebate of $264,207 from SAWS and now saves $138,307 a year. Accounting for the cost, the SAWS rebate, and the annual savings, this San Antonio business will recoup its investment in about 8 years while the $140,000 annual savings continue well into the future.

Social Benefits

SAWS works with the City of San Antonio to integrate its conservation first water management strategies with the city's sustainability goals set out in the San Antonio Tomorrow plan. While land use and city planning are often left out of the conversation on future water system demands, San Antonio has recognized that successful water management strategies all hinge on smart and sustainable development. As SAWS strives to meet water demand targets despite rapid growth, the city and SAWS cooperate to successfully plan for continued sustainability.

Sources

SAWS: About the Edwards Aquifer
SAWS: Outdoor Conservation
SAWS: Financial Reports
SAWS: Case Studies, Conservation Ordinance
SAWS: Case Studies, Residential Conservation Makeover
SAWS: Case Studies, Large Scale Commercial Rebates
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Texas Water Resources Institute Flash Flood Alley
America's Next Great Metropolis Is Taking Shape In Texas, Forbes 2016
The Edwards Aquifer Website
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Conservation Plans for People in Poverty, Karen Guz, Conservation Director, SAWS,
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