



City of Spanish Fork

Adding capacity for peak demand with smart irrigation

Project at a Glance

Utility Overview

- Utility: Spanish Fork Public Works
- Location: Spanish Fork, Utah
- Population served: ~43,000
- Service area: 15 square miles

Challenges

- Growing peak water demand
- Limited water system capacity
- Recurring drought
- State water conservation goals

Solution

- Innovative water conservation program to install free smart irrigation controllers for residential customers to reduce pressurized outdoor irrigation and stagger watering times to lower peak demand.

Costs and Funding Sources

- Total project cost: ~\$330,000
- Funding sources:
 - Operating budget: ~\$30,000 for professional installers, utility vehicles, and conservation staff
 - Grants: \$300,000 to purchase smart controllers
 - (State of Utah Department of Natural Resources: \$150,000 and Central Utah Water Conservancy District: \$150,000)

Benefits



Lowered peak daily demand by 0.5%



App-enabled technology saved participating residential customers time and money



Reduced pressurized irrigation by 4,500 gallons, or 17%



Provides real time data to customers



Only 1.2% increase in demand despite a 4% population growth in 2018



Improves metering accuracy



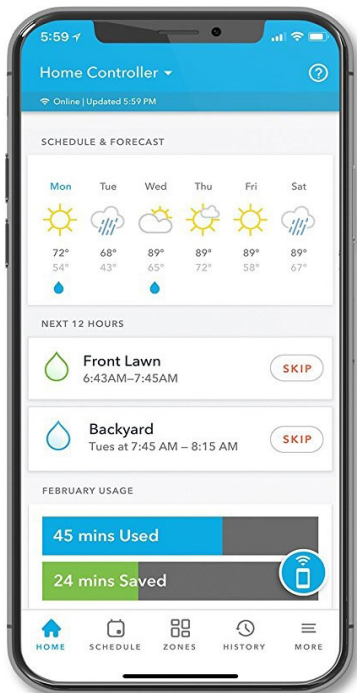
Helps identify leaks sooner



BACKGROUND

Spanish Fork, Utah is situated in central Utah, and lies in the south-central portion of Utah County with Utah Lake to the northwest and the Wasatch Mountains in the southeast. The City experiences four distinct seasons with dry hot summers, temperate falls, fairly snowy winters, and rainy springs. Spanish Fork provides drinking water and pressurized irrigation for its residents. Drinking water is supplied from springs. Irrigation water is provided via a pressurized irrigation distribution network that receives water from several sources including Cold Springs, Darger Springs, the East Bench Canal, the Spanish Fork River, and the Spanish Oaks Reservoir.

As the City continues to grow, peak demand is expected to exceed the capacity of the City's current water system.



CHALLENGE

Spanish Fork's water system experiences peak daily demand at 5 a.m. and 10 p.m. As the City continues to grow, this peak demand is expected to exceed the capacity of the City's current water system. This led city leaders and staff to take a conservation-first approach and extend the current system's capacity without purchasing additional costly water rights or new reservoirs. The City's conservation efforts were also driven by Spanish Fork's desire to not only meet but exceed Utah's statewide goal of reducing water use by 25% by 2025.

SOLUTION

To address these water conservation challenges, in 2018 Spanish Fork started its program to provide residents with free, professionally installed smart irrigation controllers. Residents that have an automatic sprinkler system with a controller, a smart phone, and wireless internet are eligible to sign up for a free system through the City's website. The smart controllers are installed during the summer months.

Once installed, smart irrigation controllers allow wireless and remote operation of outdoor irrigation systems based on customizable zones tailored to specific vegetation types and sun exposure and hyperlocal weather monitoring to prevent over watering, among other features, i.e., "weather intelligence." This reduces overall water use by only watering at optimal times.

These systems also provide utilities the ability to remotely stagger outdoor watering times to address peak demand similar to peak electric demand management. In particular, in its program Spanish Fork scheduled homes with smart controllers to water during different time intervals organized by address and wind speeds around the home. The recommended schedules were also designed to be convenient and

reasonable for residents, and homeowners can choose to opt out of the schedule if desired. Most participants stay on the recommended schedule, however.

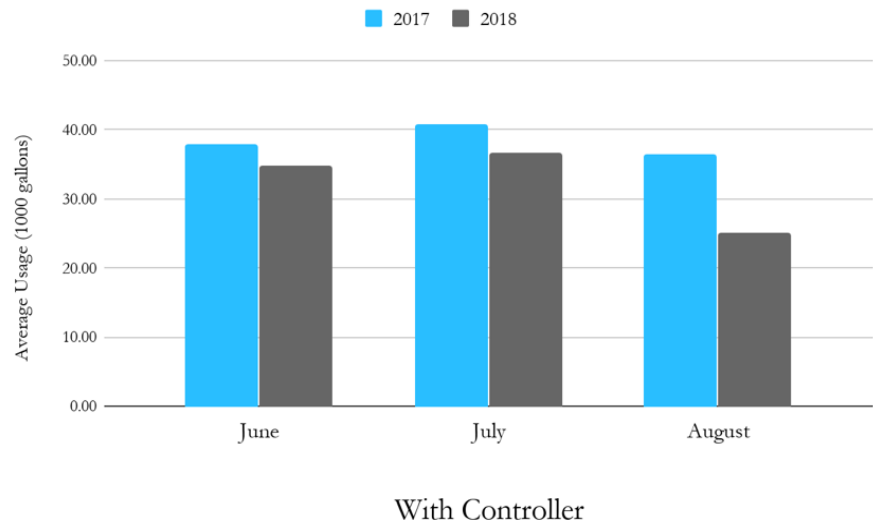
Current grant funding will support the program through 2021. As of summer 2018, the City had installed 953 controllers and received over 1,300 requests. During summer 2019, the City plans to install 1,300 controllers, and had 350 residents ready for installation as of February 2019.

RESULTS

Water Resource Benefits

In the first year of the program, with 953 smart controllers installed Spanish Fork saw a 0.5% reduction in peak daily demand. At full installation, Spanish Fork estimates a potential of up to 5% peak reduction with 3,000 controllers and improved scheduling. On a household basis, residents with smart controllers saw reduced pressurized irrigation by an average of 4,500 gallons, or 17%, when compared to homes with no smart irrigation controller. On a citywide basis, this water savings allowed the City to avoid purchase of additional water rights and water system capacity. And the City saw only a 1.2% increase in water demand despite a 4% population growth in 2018 also extending the capacity of the existing water system. In other words, due to Spanish Forks' program, for every 6 households with a smart controller, 1 new household can be added without the need for additional water system capacity.

Residents with smart controllers saw a 17% reduction in irrigation versus homes without controllers.



Sources

Spanish Fork: [Water Conservation Project](#)
Spanish Fork: [Pressurized Irrigation System Master Plan](#)
Spanish Fork: Secondary Metering and Its Future, Utah Rural Water Association 2019 Spring Conference, February 27, 2019, Presentation
Brigham Young University: Spanish Fork Irrigation-Water Conservation Study, April 2019
Brigham Young University: Spanish Fork Irrigation-Water Conservation Study, April 12, 2019, Presentation

WaterNow Alliance April 10, 2019, Interview with Spanish Fork Staff