Utah Department of Environmental Quality

Case Study

December 2015

Service Area:
Portions of Salt Lake County

Service Population (2015 estimate):
631,000

Wholesale Agencies:
17

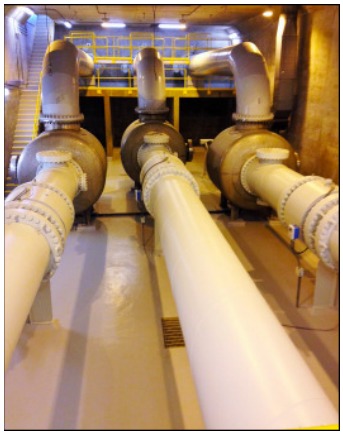
Annual Water Deliveries (FY 13/14):
41.1 billion gallons

Annual Energy Use (FY 12–14 average):
37.6 million kWh

Annual Energy Expense (FY 13/14 budget):
$4.2 million

Energy Savings (Nov. 2014–Nov. 2015):
3.9 million kWh

Energy-Related Cost Savings (Nov. 2014–Nov. 2015):
$435,000



Jordan Aqueduct Reach 4
Near Point of the Mountain

Energy Audit Partners

Steve Jones, PE
Hansen, Allen & Luce

Jeff Hare, MBA
Cascade Energy

Energy Efficiency Profile

Jordan Valley Water Conservancy District

Jordan Valley Water Conservancy District Saved $435,000 In One Year

Energy represents the largest controllable cost of providing water to the public. Utah water systems are designed, built and operated to ensure water needs are met. The majority of water systems have not been designed with energy efficiency as the focus. Energy audits, available through Rocky Mountain Power's (RMP) *watt*smart program, are an essential first step towards energy efficiency. Water system operators and managers that haven't implemented some or all of the energy efficiency measures recommended in an energy audit are probably spending more energy to delivery water to their customers. The money savings achieved by implementing energy efficiency measures can be used for equipment upgrades, meeting new water quality requirements, boosting the salaries of staff, or keeping water rates affordable.

Jordan Valley Water Conservancy District

Primarily a wholesaler of water to cities and improvement districts in Salt Lake County, Jordan Valley Water Conservancy District (JVWCD) is one of Utah's largest public water suppliers. Its vision is "to provide a sustainable water supply to promote individual and community well-being."

About 75% of JVWCD's water comes from surface-water sources in the Provo River watershed or along the Wasatch Mountains' east bench. This water is treated to remove contaminants. The remaining 25% comes from groundwater in aquifers deep beneath the Salt Lake Valley.

Sourcing, treating, and delivering high-quality water requires significant energy, which is one of the district's largest operational costs. In 2014, JVWCD began a strategic energy management program to ensure that they're operating their system as energy efficient as possible.

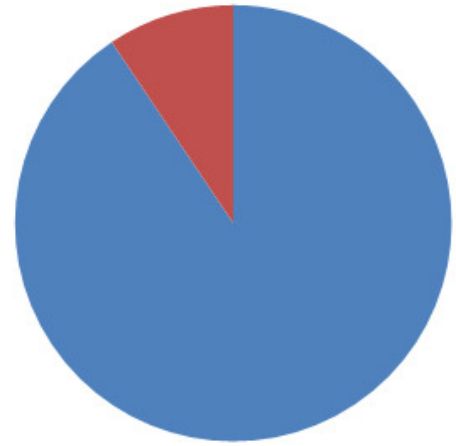
JVWCD Staff Involvement in Energy Savings Effort

In order to meet JVWCD's goal to provide high-quality, sustainable water supplies in a cost-effective manner, a multidisciplinary team of employees was appointed to identify and implement no-cost operational optimization strategies and low-cost energy-saving projects. Striving for culture change—a real shift in the way the team thinks about energy and their role in and ability to contribute to the energy-saving effort—was essential to move the project forward. Several project and operational adjustment 'wins' not only demonstrated the value of the team's efforts but also energized the team to do more. JVWCD is committed to continue to identify and implement no-cost operational strategies and low-cost energy-saving projects in the future.

Energy Savings

In 2014, JVWCD began a strategic energy management program and set a goal to save 1 million kilowatt-hours in one year. **After one year, the district has saved close to 4 million kilowatt-hours, a value of $435,000.** The changes implemented during the program will continue to save energy every year.

Energy Savings in 2015



- 37.6 M kWh Annual Energy Use (2012-14 average)
- 3.9 M kWh Energy Savings in 2015 (11/2014 - 11/2015)

Operational Strategies

The following changes were implemented by staff at JVWCD to save money and optimize energy and power savings:

- Determine the energy cost of each water source or facility (an energy map). Afterwards, JVWCD adopted a policy to use low-cost options first before more-expensive ones.
- Complete a mass balance to analyze flows into and out of each pressure zone and understand where water is being used.
- Use an extended-period hydraulic model to identify inefficiencies such as redundant pumping, extreme pressure fluctuation, and undersized pipes.
- Coordinate with member agencies to deliver wholesale water at "low energy cost" locations and/or distribute demand locations to reduce bottlenecks in JVWCD's system.
- Consider energy consequences when optimizing surface-water and groundwater sources. Adjustments in the timing of using Echo Reservoir storage water, un-stored Provo River water, and certain wells resulted in significant energy savings.
- Develop a culture of energy savings. Everyone contributes, from office staff to water operators to senior management.

For more ideas on how to reduce the cost of power necessary to deliver water, review DEQ's Drinking Water Energy (Cost) Savings Handbook at http://www.drinkingwater.utah.gov/index.htm.

Jordan Valley Water Treatment Plant in Herriman (view is from the southwest near Mountain View Corridor looking northeast)