Brandon Irene WSC
Brandon Water System
Energy Assessment
April 2025

Energy Efficiency Program Overview:

The Texas Rural Water Association has implemented a program to assist water and wastewater utility systems to evaluate and lower their energy consumption and costs. This energy efficiency assessment considers current and past energy use, identifies the primary energy consuming components, and identifies methods to lower energy use and costs.

Executive Summary of Potential Energy/Money Savings:

This Executive Summary provides the estimated cost of upgrades, potential annual energy/money savings, payback period, return on investment, and rebates:

Project Item	Energy Conservation Measure Description	Annual Energy Savings (kWh)	Annual Cost Savings ($)	Estimated Cost of Improvement ($)	Rebate Total ($)	Payback (Years)	Reference Pages
Distribution Pump and Groundwater Production Well Pump Motors	Install VFD Controllers and Optimize Existing VFD Controllers	13,948.20	$1,753.25	$3,345.00	$0.00	1.91	2
		13,948.20	$1,753.25	$3,345.00	$0.00		

Project Overview:

The unincorporated community of Brandon Texas is located Northeast of the city of Hillsboro, in Hill County. According to the USDA Economic Research Service data dated June 16, 2023, the Median Household Income (MHI) for Hill County Texas was $52,495.00, which is 78.4% of the $66,959.00 MHI for the state of Texas. The Brandon Irene WSC Brandon Water System serves an estimated population of 321, with approximately 107 connections.

The Water System facilities included in this assessment consist of one water treatment and distribution facility utilizing hydropneumatic tanks, with one on-site groundwater production well.

This system's facilities are in compliance with the Texas Commission On Environmental Quality (TCEQ) Emergency Preparedness Plan (EPP) and Section 13.1394 of the Texas Water Code, which requires all affected utilities (water systems that have residential customers or provide overnight accommodations to customers) to provide water service with a minimum of 20 psi during an extended power outage lasting 24 hours or more.

Energy Efficiency Observations/Opportunities:

Brandon Irene WSC Brandon Water System's chief electrical energy consuming devices are as follows:

Brandon Water Plant (Plant 1):

Distribution Pump Motors:

1. Two Baldor 20 Hp 460 volt 23.5 amp motors, each with an efficiency rating of 91.0%.

On-site Well Pump Motors:

1. Well No.1: Well No. is powered by a 50.0 hp 460-volt 68.1-amp Franklin submersible motor with an efficiency rating of 83.0%.

Summary:

The electrical power for the Brandon Irene WSC Brandon Water System facilities is provided by TXU Energy. The information provided covers the period from February 20, 2024 through February 18, 2025. The data shows that the system paid an average rate of **$0.091/kwh**. During this period, the system consumed **44,000.0** kWh of electricity. The cost for the supplied electricity was **$3,942.93** and the total cost for service to the system was **$4,967.01**. It should be noted that the system incurred peak electrical demand charges in the amount of **$1,136.07** during the covered time period. This amount is equal to approximately 22.9% of the entire electrical expenditure for the covered time period.

Energy Efficiency Recommendations:

The existing groundwater production well motor is of a high efficiency design and therefore replacement or upgrading of this equipment is not recommended at this time. The existing distribution pump motors are also of a high efficiency design and replacement is therefore not recommended at this time.

The installation and optimization of variable frequency drive systems (VFD's) on all distribution pump motors and groundwater production pump motors will add increased pumping efficiency, and thereby result in an increase in electrical efficiency and savings. Some sources site a potential 50% reduction in energy consumption for distribution pump motors with the addition of variable frequency drives, as well as 13% potential savings with the installation of such devices on groundwater production wells (California Energy Commission). The optimization of the existing distribution pump motor VFD's would result in an estimated savings of **$985.73**. There is no cost associated with this savings, as the equipment is already installed. The installation of VFD's on the existing groundwater production well pump motor would result in an estimated annual savings of **$256.29** for the water system. With the estimated cost for a VFD drive system for the existing motor averaging $3,345.00 per unit (See Attachment: VFD Pricing Estimates),the acquisition of such a device would reduce electrical usage costs to a degree that in approximately 13.0 years the initial investment would be recovered, and the resultant continued savings would be a source of additional revenue for the water system (See Energy Assessment Savings Table). When taken together, the overall potential savings would reduce the R.O.I. for the recommended upgrades to approximately 1.9 years.

Additionally, the installation and optimization of VFD controllers would allow for greater operational control and configuration of motor run times and could help to eliminate up to 45% of the current peak electrical demand charges incurred by the system, which would result in an additional annual savings of approximately **$511.23**.

In addition to the aforementioned recommendations, it is also highly recommended that hour metering instrumentation be installed on all electrical components, and that regular records of pump and motor runtimes are recorded. The ability to calculate pump and motor run times is an integral part of a good preventative maintenance program and is the single best way to determine the actual distribution of the workload between the various pumps in the distribution system. It will also aid in determining pumping cycles and allow for adjustments to be made which can lead to longer pump runtimes, fewer motor starts, and greater overall efficiency.

If the above-mentioned recommendations are followed, it is estimated to result in a potential annual savings of **$1,753.25** for the Brandon Irene WSC Brandon Water System, which is a projected savings of approximately **44.5%** based upon the supplied electrical rates and usage data.

Sources of Funding:

United States Department of Agriculture Rural Development

The USDA RD has a wide range of loan and grant programs which systems can use to fund any or all improvements which will help them achieve long term energy savings. Below are a few of the types of programs and services they can provide to utilities.

USDA Programs & Services for Utilities

Denali Commission High Energy Cost Grants
Electric Infrastructure Loan & Loan Guarantee Program
Emergency Community Water Assistance Grants
Energy Efficiency and Conservation Loan Program
High Energy Cost Grants
Rural Economic Development Loan & Grant Program
Solid Waste Management Grants
Water & Waste Disposal Loan & Grant Program
Water & Waste Disposal Loan Guarantees
Water & Waste Disposal Predevelopment Planning Grants
Water & Waste Disposal Revolving Loan Funds

Texas Contacts

State Office Address:
101 South Main Street, Suite 102
Temple, Texas 76501
Michael Canales, Community Programs Director
Telephone: (254) 742-9789
Fax: (844) 767-7087
Email: michael.canales@tx.usda.gov

Most loans and grants are originated and serviced in the Area Office. Please contact the Area Office that services your County.
General questions: Please call the State Office at (254) 742-9700.

CoBank

Many rural Americans depend on CoBank's water customers every time they turn on the tap. Not only are many of our customers in the business of providing clean, safe drinking water to rural areas, but others also process wastewater and deliver other services.

CoBank works with water and wastewater not-for-profit associations, municipalities, and investor-owned utility companies to provide the funding required to meet their needs. A large part of this country's water delivery system dates back to the years shortly after World War II when the federal government was building out the nation's infrastructure. But during the past couple of decades federal money for those systems has been reduced and each year, according to the Environmental Protection Agency, the estimated price tag for patching up the infrastructure rises. It's been estimated that more than $335 billion would need to be spent over the next 20 years to upgrade the U.S. water infrastructure. National Office: CoBank 5500 S. Quebec St., Greenwood Village, CO 80111.
(800)-542-8072

National Rural Water Association

Key Points:
Reasonable, below market interest rate of 3% and a maximum repayment period of 10 years
Straight forward application process and quick turnaround time (just a few days until check is in hand)
Loan amounts may not exceed $100,000 or 75% of the total project cost, whichever is less.
Financing is available for pre-development (planning) costs for projects and for replacement equipment, system upgrades, maintenance and small capital projects.
New focus on energy efficiency projects that improve water system sustainability through lower energy costs, providing consumers with more affordable water and wastewater services.
NRWA charges no administrative or processing fees to further capitalize on available funds - 100% of revolved funds are reinvested in the program.
Systems must be public entities - including municipalities, counties, special purpose districts, Native American Tribes and corporations not operated for profit (cooperatives), with up to 10,000 population and rural areas with no population limits.
Contact information: National Rural Water Association (800)-332-8715,
2915 S. 13th Street, Duncan, Oklahoma 73533
To access the following referenced funding sites please use this link below:
https://www.tceq.texas.gov/assistance/water/water-and-wastewater-funding-sources

Water and Wastewater Funding Sources

Texas Water Development Board (TWDB) Funding Sources

The **Texas Water Development Fund (TWDF)** is a streamlined, state loan program. The program includes loans for water supply, conservation, water quality enhancement, flood control, and municipal solid waste. The flexibility of this program allows the TWDB to fund projects with both water and wastewater-related purposes in one loan while offering low-interest rates.

The **Economically Distressed Areas Program (EDAP)** provides financial assistance in the form of a grant or a combination grant/loan for water and wastewater services to economically distressed areas where services do not exist or existing systems do not meet state standards. The program also includes measures to prevent future substandard development by requiring Model Subdivision Rules.

The **Rural Water Assistance Fund (RWAF)** provides small rural water utilities with low-cost financing for water and wastewater construction projects. The TWDB offers attractive interest rate loans with long-term finance options. In addition, entities, such as water supply corporations, who generally utilize taxable financing, are able to access lower interest rate loans through the program.

The **State Participation Program (SPP)** enables the TWDB to assume a temporary ownership interest in a regional project when the local sponsors are unable to assume the total debt for an optimally sized facility. The project sponsor then repurchases the TWDB's interest in the project under a payment schedule that allows for the deferral of principal and interest payments.

The **State Water Plan Funding** provides for financing of projects in the state water plan. Projects will be prioritized based on legislative direction and are required to be recommended strategies in the state water plan. The program provides loans at interest rates lower than those offered by commercial markets, and extended repayment terms. Projects include water conservation and reuse, desalting groundwater and seawater, building new pipelines, developing reservoirs and well fields, and many more.

Texas Water Development Board Contact List — contact list for the Texas Water Development Board's financial assistance programs by region.

U.S. Environmental Protection Agency (EPA) Funding Sources

The Clean Water State Revolving Fund (CWSRF) provides loans for wastewater-related projects at interest rates lower than those offered by commercial markets. Projects include treatment facilities, collection systems, storm water and nonpoint source pollution control and estuary management. The program also provides additional subsidies, in the form of loan forgiveness, for applicants meeting certain program criteria, such as disadvantaged communities or green infrastructure.

The Drinking Water State Revolving Fund (DWSRF) provides loans for drinking water projects at interest rates lower than those offered by commercial markets. Projects include treatment facilities, distribution systems, consolidation, and source water protection. The program also provides additional subsidies, in the form of loan forgiveness, for applicants meeting certain program criteria, such as disadvantaged communities or green infrastructure.

Texas Water Infrastructure Coordination Committee (TWICC)

The Texas Water Infrastructure Coordination Committee (TWICC) is comprised of state and federal funding agencies, technical assistance providers, water and waste water trade organizations, and regulatory agencies. The purpose of the TWICC is to identify and develop solutions to water and wastewater infrastructure compliance issues and to seek affordable, sustainable and innovative funding strategies for the protection of public health and the efficient use of government resources in Texas.

LOCAL BANKS are more open to lending to Water and Wastewater systems and should be considered as a possible lender for some of the system's projects.

Attachments:

1. Energy Assessment Savings Table.
2. Electric and Cost Savings Analysis Spreadsheet.
3. VFD Pricing Estimates.