**Brandon Irene WSC Bynum Hillsboro Water System**

**Energy Assessment**

**May 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 Overview:**

The Brandon Irene WSC Bynum Hillsboro Water System serves the unincorporated community located approximately 8 miles southeast 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 Bynum Hillsboro Water System serves an estimated population of 1,878, with approximately 626 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, and one elevated storage tank facility 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 Bynum Hillsboro Water System’s chief electrical energy consuming devices are as follows:

**Plant 4:**

**Distribution Pump Motors:**

1. One Baldor 15 Hp 460 volt 17.7 amp motor with an efficiency rating of 90.2%. **\***
2. One General Electric 15 Hp 460 volt 17.5 amp motor with an efficiency rating of 90.0%. **\***

**On-site Well Pump Motors:**

1. Well No.4: Well No. 4 is powered by a 75.0 hp 460-volt 94.0-amp Franklin submersible motor with an efficiency rating of 88.0%. **\***

**\* All pump motors at this facility are equipped with VFD controllers. However, these devices have not been configured for optimal energy savings.**

**Plant 5:**

**On-site Well Pump Motors:**

1. Well No.5: Well No. 5 is powered by a 100.0 hp 460-volt 126.0-amp Franklin submersible motor with an efficiency rating of 89.0%. **\***

**\* All pump motors at this facility are equipped with VFD controllers. However, these devices have not been configured for optimal energy savings.**

**Summary:**

The electrical power for the Brandon Irene WSC Bynum Hillsboro Water System facilities is provided by TXU Energy at the Plant 4 site, and by Hilco Electric Cooperative, Inc. at the Plant 5 site. The information provided covers the period from February 26, 2024 through March 05, 2025. The data shows that the system paid an average rate of **$0.115/kwh**. During this period, the system consumed **658,452.0** kWh of electricity. The cost for the supplied electricity was **$55,643.71** and the total cost for service to the system was **$64,994.50**. It should be noted that the system incurred peak electrical demand charges in the amount of **$11,939.65** during the covered time period. This amount is equal to approximately 18.4% of the entire electrical expenditure for the covered time period.

**Energy Efficiency Recommendations:**

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

The optimization of the existing 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 VFD’s would result in an estimated savings of **$11,969.21**. There is no cost associated with this savings, as the equipment is already installed, and as such the savings would be immediate.

Additionally, the optimization of the existing 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 **$5,372.84**.

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 **$17,342.06** for the Brandon Irene WSC Bynum Hillsboro Water System, which is a projected savings of approximately **31.2%** 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](http://www.rd.usda.gov/programs-services/denali-commission-high-energy-cost-grants)

[Electric Infrastructure Loan & Loan Guarantee Program](http://www.rd.usda.gov/programs-services/electric-infrastructure-loan-loan-guarantee-program)

[Emergency Community Water Assistance Grants](http://www.rd.usda.gov/programs-services/emergency-community-water-assistance-grants)

[Energy Efficiency and Conservation Loan Program](http://www.rd.usda.gov/programs-services/energy-efficiency-and-conservation-loan-program)

[High Energy Cost Grants](http://www.rd.usda.gov/programs-services/high-energy-cost-grants)

[Rural Economic Development Loan & Grant Program](http://www.rd.usda.gov/programs-services/rural-economic-development-loan-grant-program)

[Solid Waste Management Grants](http://www.rd.usda.gov/programs-services/solid-waste-management-grants)

[Water & Waste Disposal Loan & Grant Program](http://www.rd.usda.gov/programs-services/water-waste-disposal-loan-grant-program)

[Water & Waste Disposal Loan Guarantees](http://www.rd.usda.gov/programs-services/water-waste-disposal-loan-guarantees)

[Water & Waste Disposal Predevelopment Planning Grants](http://www.rd.usda.gov/programs-services/water-waste-disposal-predevelopment-planning-grants)

[Water & Waste Disposal Revolving Loan Funds](http://www.rd.usda.gov/programs-services/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)**](http://www.twdb.texas.gov/financial/programs/TWDF/index.asp)[4]  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)**](http://www.twdb.texas.gov/financial/programs/EDAP/index.asp)[5]  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)**](http://www.twdb.texas.gov/financial/programs/RWAF/index.asp)[6]  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)**](http://www.twdb.texas.gov/financial/programs/SPP/index.asp)[7]  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**](http://www.twdb.texas.gov/swift/projects/index.asp)[8]  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**](http://www.twdb.texas.gov/contact/doc/RWPD_Teams.pdf)[9]  — 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)**](http://water.epa.gov/grants_funding/cwsrf/cwsrf_index.cfm)[10]  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**](http://water.epa.gov/grants_funding/dwsrf/) [11][**(DWSRF)**](http://water.epa.gov/grants_funding/dwsrf/)[12]  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)**](http://www.twicc.org/index.html)[13] 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.

This assessment and the recommendations contained herein are based on the data provided by the system and on onsite observations and data obtained through research conducted by the assessor. All sources of said research data have been cited where possible. This assessment is an attempt by the assessor herein to use all data as provided, and to obtain any available supporting data, to determine the electrical usage of the components herein described and to calculate potential energy and cost savings based upon said data. The assessor herein does not assume any responsibility for the reliability of said data or of its source, and hereby disclaims responsibility for the accuracy of said data. The Texas Rural Water Association, its parent organization and subsidiaries, as well as the United States Department of Agriculture Rural Development Agency and its parent and subsidiaries, hereby also disclaim any responsibility for the accuracy of said data used in the preparation of this assessment.