



Improving the Quality of Life in Rural Ohio

2017 Second Quarter Report CASE STUDY: **OHIO RURAL WATER ASSOCIATION AND BELLAIRE**

The Ohio Rural Water Association conducted an energy efficiency assessment for Bellaire's water treatment plant. Bellaire is in the mid-east of Ohio, and has a population of 4,207 residents and 2,514 households.

The assessment identified five items for potential energy savings: retrofitting the old T12 tube lighting with high efficiency LED bulbs; replacing the old sodium halide security lighting with high efficiency LED security lights; installing a variable frequency drive and flow meter on the new ground well motor; upgrading the motor and installing a variable frequency drive integrated with a pressure transducer to the high service pump; and purchasing a suitable dehumidifier to deal with humidity issues.

Bellaire still uses old T12 fluorescent lighting, which are being phased out by federal legislation. Replacing them with retrofit LED kits could save an estimated 24,867 kWh and \$2,625.96 annually. The current security lighting uses 400-watt sodium halide bulbs that can be replaced with 165-watt LED bulbs and save an estimated 11,745 kWh and \$1,240.27 annually. Bellaire had a new ground well dug to increase capacity, but due to contamination issues is now forced to use the well instead to divert 1,000,000 gallons of water per day. Currently the well pump is being valve throttled, but by installing a variable frequency drive and flow meter to the pump motor and slowing the motor to match required flow rates, Bellaire could save an estimated 338,184 kWh and \$35,712.23 annually. The current 100hp high service pump motors alternate use, and are an estimated 40 years old. By upgrading one of the motors to inverter duty, increasing the efficiency from less than 92% to 95.5%, installing a variable frequency drive integrated with a pressure transducer to reduce flow rates and extend operating hours, and avoid using the other motor except for emergencies, Bellaire could save an estimated 150,984 kWh and \$15,943.91. By purchasing a new highly efficient dehumidifier, Bellaire could halt their worsening equipment and piping corrosion and deterioration issues, savings them an indeterminate amount of money and maintenance costs down the road.

The Ohio Rural Water Association was founded in 1976, with the goal of improving the quality of life in rural Ohio. With funding primarily through membership dues and federal grants, ORWA offers free on-site technical support to water and wastewater systems, both large and small. This includes: assistance with the operation and maintenance of water and wastewater treatment plants; source water protection planning; and distribution system troubleshooting such as leak detection, smoke testing, line locating, and sewer line inspecting. ORWA also offers training opportunities on the operation, management, finance, and governance of water and wastewater utilities.

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