

North Tonawanda Water Treatment Plant



City of North Tonawanda Water Treatment Plant North Tonawanda, Niagara County

Various elements of the evaluation included:

- Analysis of impact on water distribution pressure and flow
- Analysis of the treatment process stability
- Analysis of equipment maintenance
- Development of recommendations, costs, and benefits of system improvements

Background

The City of North Tonawanda is located in southern Niagara County, between the cities of Niagara Falls and Buffalo. It has a population of approximately 35,000 people, and caters to a large tourist population during certain periods of the year.

The North Tonawanda water treatment plant has a design flow capacity of 18 million gallons per day (MGD) and produces an average of 4 MGD of drinking water with peak demands of 5.5 MGD. The facility has two main buildings, a remote pumping station and a 4 million gallon storage tank. The original pumping station, built in 1886, still functions as one of North Tonawanda's pumping stations. The second building, the water treatment plant, was constructed in 1922 and renovated in 1958. The remote pumping station and storage tank were constructed in 1960.

The plant at the main facility has annual electrical and fuel costs of approximately \$212,000 and \$38,000, respectively. The annual energy cost for the remote pumping station and storage tank is about \$25,000. In an effort to control these energy costs the City took part in the New York State Energy Research and Development Authority's (NYSERDA) FlexTech Program with Stearns & Wheler, LLC performing the engineering and contracting work. The total study cost was \$45,600 with NYSERDA providing **\$22,800**. Stearns & Wheler created an alternatives evaluation to analyze opportunities for energy cost savings, energy conservation, and efficiency improvements.

Recommendations

Stearns & Wheler offered several recommendations to reduce and control energy costs. These included replacement of existing oversized equipment, maintenance of existing pumps, a computerized maintenance management system, automation of equipment, installation of variable frequency drives, and plant shutdown during nighttime hours.

Maintenance and repair of the pumps provide the facility with more capacity and efficiency. The largest pump, a 350 HP pump, had not been evaluated or maintained in more than 30 years causing a decrease of 53% in maximum flow capacity. The pump inefficiencies throughout the facility were in-part responsible for increased energy consumption and related costs.

Other recommendations include pumping coordination that prevents the larger pumps from operating simultaneously, and lighting conservation that shuts-off lights in areas of the facility not in use.

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Results

Implementation of the energy efficiency recommendations amounts to an annual electric savings of over 893,000 kWh for the City of North Tonawanda, and will reduce the water treatment plant's energy use and costs. Implementation of the recommended measures could reduce annual electric costs by \$89,880 or 43%, and annual fuel oil costs by \$2,700 or 7%. Some of the recommended alternatives will also provide an additional annual operational cost savings of \$90,000.

The City of North Tonawanda has implemented some of the recommended measures using NYSERDA's **New York Energy Smart**SM Commercial Industrial Performance Program and received an incentive of **\$64,000**. The cost of these measures for the city was \$230,000, but provides a \$57,000 annual electric savings.

New York Energy SmartSM

All **New York Energy Smart**SM programs are funded by a System Benefits Charge (SBC) paid by electric distribution customers of Central Hudson, Con Edison, NYSEG, National Grid, Orange and Rockland, and Rochester Gas and Electric. NYSERDA, a public benefit corporation established by law in 1975, administers SBC funds and programs under an agreement with the Public Service Commission.

New York Energy SmartSM programs are designed to lower electricity costs by encouraging energy efficiency as the State's electric utilities move to competition. The programs are available to electric distribution customers (residential, commercial, institutional, and industrial) who pay into the SBC.



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