



North Memorial Health



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Company Background

North Memorial Health is a series of hospitals and clinics that provide medical care. They were founded in 1954 and now have locations all over the metro area. North Memorial Health Hospital in Robbinsdale has 3,500 full time employees and more than 350 beds. Maple Grove Hospital was founded as a partnership between North Memorial Health and Fairview in 2009. They have 350 full time employees and 130 beds.



"Throughout the summer at North Memorial Hospital, I learned about many different processes that I would never have otherwise thought about. Lacking a background in some of the processes, it was a great way to learn and fun to find information about them. It was also fun to see how a hospital operates behind the scenes." ~ CL

Project Background

Management at North Memorial Health was aware of MnTAP's past success in reducing water consumption at hospitals. After using a combined 56 million gallons of water at North Memorial Health and Maple Grove Hospitals in 2017, they enlisted the help of MnTAP. At both of these locations, outdated equipment and processes were contributing to excess consumption of water and energy. There were also many processes where slight changes could save a great deal of water and energy.

Incentives To Change

North Memorial Health has been trying to find ways to reduce their environmental impact. At North Memorial Health Hospital, over 38 million gallons of water, 1 million therms of natural gas and 17 million kWh of energy were used in 2017. At Maple Grove Hospital, they used over 18 million gallons, 50,000 therms and 8 million kWh. They were looking for different ways to improve the many systems throughout both of these hospitals in order to use less water and energy, and reduce operating costs.



"Our MnTAP intern worked diligently on investigating water savings for our hospital and provided us with opportunities we had not identified. His work with the plant staff and vendors provided us with ideas to save water through operational changes and adding equipment to our systems that had an attractive ROI. The intern's presentation to senior management resulted in funding added to next year's budget to accomplish the savings. This was our first experience working with MnTAP and we look forward to working with them again."

*~ Bob Johnson
Manager of Engineering Services,
North Memorial Health Hospital*

Solutions

Install Closed Loop on Condensers

The kitchen has four industrial refrigerators/freezers. The condensers used to cool these units are cooled by a single pass of domestic water that goes directly down the drain. By installing a pump and a heat exchanger attached to the water loop, this can be made into a closed loop. This solution will save over 2.6 million gallons of water per year.

Install New RO System

The current reverse osmosis (RO) system operates with one gallon made for every two rejected. A new system would create three gallons for every one that is rejected. The current system is also not operating up to standards needed for the lab and sterilizers, resulting in duplication of systems. This solution will save 764,000 gallons of water per year.



Install Weather Sensors for Irrigation

At Maple Grove Hospital, the current irrigation system is only changed seasonally, which may result in overwatering during rainy periods. Overwatering can occur at North Memorial Health Hospital as well, although the clocks for watering are monitored and changed to account for weather. At both locations, installation of weather sensors can save time and water. This solution will save 162,000 and 360,000 gallons of water per year at North Memorial Health Hospital and Maple Grove Hospital, respectively.

Install Solenoid Valve on Trough

Beneath the soup kettles in the kitchen is a trough with a flow of water to help wash away any excess fluids that are drained. This flow could be left on for an entire day and even overnight at times. A solenoid valve and timer were installed to limit the amount of time this flow is on each day and to guarantee it is only on when needed. This solution will save 1.4 million gallons of water and 7,000 therms of natural gas per year.

Install New Dishwashers

The current dishwasher unit at North Memorial Health Hospital is fourteen years old, which is at the end of its effective life span. There are two different new units to consider. At Maple Grove Hospital, the current unit is only nine years old but has had some maintenance issues. This solution will save 170,000 gallons and 145,000 kWh at

North Memorial Health Hospital and 176,000 gallons and 166,000 kWh at Maple Grove Hospital per year.

Install Linkage-less Controls on Boilers

The high pressure steam boilers currently have linkage controls which can have leaks and cause them to require more maintenance. With linkage-less controls, there are fewer parts that can malfunction and fewer places for leaks to form. This solution could save an estimated 79,000 therms per year.

Recommendation	Annual Reduction	Annual Savings	Status
Closed loop on condensers	2,600,000 gallons	\$24,000	Recommended
Install new RO system	764,000 gallons	\$7,000	Further investigation needed
Weather sensors for irrigation	522,000 gallons	\$3,000	Recommended
Solenoid valve on trough	1,400,000 gallons 7,000 therms	\$13,000	Implemented
New dishwashers Less detergent	346,000 gallons 311,000 kWh 1,400 lbs detergent	\$36,000	Recommended
Linkage-less controls on boilers	79,000 therms	\$7,200	Further investigation needed

MnTAP Advisor: Jane Paulson, Senior Engineer