



# M Health Fairview



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## Organization Background

M Health Fairview is a health services provider that serves the Greater Twin Cities Area. The project was located at the University of Minnesota Medical Center West Bank Campus, one of the largest and oldest of the 11 M Health Fairview hospitals. The West Bank Campus Hospital employs over 3,000 people and is 1.7 million square feet.



*During my time working for M Health Fairview, I was given the opportunity to discover the mechanical background of building maintenance and conditioning. Being able to learn about and help optimize the processes that keep people safe and comfortable indoors at M Health Fairview has been the most fulfilling job I have had to date. I will happily bring forth with me the skills in both leadership and teamwork that I have honed this summer.” ~ TS*

## Project Background

The hospital uses large amounts of resources to maintain space conditions for their employees and patients 24/7. Water and energy are in constant use. A boiler plant on campus provides steam to heat the hospital campus as well as neighboring businesses. This project was focused on mapping resource use and identifying opportunities to save steam along with other energy and water saving opportunities.

## Incentives To Change

With a hospital campus that has been serving patients for over 100 years, equipment throughout the West Bank Campus may be older and less efficient compared to newer technologies. The opportunity to save resources and money while contributing to climate change prevention efforts has spurred M Health Fairview to update their systems on the West Bank Campus.

*“Our MnTAP intern was an amazing addition to our team! He made so many useful recommendations for our site that we plan on doing at other M Health Fairview sites. We were very fortunate to have him as part of our team this summer.”*

*~ Gabriella Appel, Manager Plant Operation  
M Health Fairview UMMC West Bank*

## SOLUTIONS

### Replace Failed Steam Traps

When steam traps fail, the resources that go into creating the steam are wasted. A steam trap survey was completed using an ultrasonic leak detector. Of the 138 live traps that were tested this summer, 27 had failed. By repairing or replacing the failed traps, the hospital would save 140,000 therms of natural gas, 650,000 gallons of water, and \$190,000 a year.

### Recommence Yearly Steam Trap Surveys

Recommencing yearly steam trap surveys will ensure failed steam traps are replaced or repaired quickly to maintain optimal steam trap performance. For the nearly 800 steam traps on the West Bank Campus, the estimated annual savings for conducting a steam trap survey are 150,000 therms of natural gas, 650,000 gallons of water, and \$240,000.

### Install Variable Frequency Drives to Optimize Supply Airflow/Air Changes per Hour

Installing VFDs on AHU fans that supply conditioned air at a flow rate higher than standard requirements would allow the AHUs to operate at lower speeds so they meet just the minimum requirements (provided the room cooling load does not demand higher flow rates). This recommendation would save 1,930,000 kWh and \$150,000 annually.

# Solutions

## Optimize Water Softener Settings

Water softening on the West Bank Campus is essential for both patient care needs and processes such as sterilizing surgical instruments. The water softening system for process applications can be optimized by setting the incoming water hardness value to match the actual feed water hardness. This change would reduce annual regenerations resulting in 9,400 lbs of salt and 16,500 gallons of water saved per year.

## Flash High-Pressure Condensate

High-pressure steam traps and sterilization process machines that use steam discard their high-pressure condensate to a flash tank which vents to the environment. Since this high-pressure condensate cannot be returned to the boiler without risking pipe damage, using the vented steam as a source of heat instead of releasing it was explored.

## Connect Single Pass AHUs to Chilled Water

Supply air is cooled by sending cold water through a high surface area cooling coil in the air handler units (AHUs) on the West Bank Campus. Two AHUs are cooled by single pass cooling that uses an estimated 458,000 gallons of water a year. If the chiller closest to these AHUs is

replaced, connecting these AHUs to the chilled water system will save all of this water and \$5,300 dollars per year.

## Fix Leaks Throughout Campus

Periodic steam leaks spring up on the West Bank Campus due to the high pressures of the system. This summer, a leak causing extra expense of up to \$324,000 was found. It was recommended that this leak be fixed as soon as possible to eliminate the water and energy wasted.



Recommendation	Annual Reduction	Annual Savings	Status
Replace Failed Steam Traps	140,000 therms 650,000 gal water	\$190,000	Partially Implemented
Recommence Yearly Steam Trap Surveys	150,000 therms 650,000 gal water	\$240,000	Recommended
Install Variable Frequency Drives to Optimize Supply Airflow/Air Changes per Hour	1,930,000 kWh	\$150,000	Recommended
Optimize Water Softener Settings	9,400 lbs of salt 16,500 gal water	\$1,800	Recommended
Flash High-Pressure Condensate	--	--	Needs Further Investigation
Connect Single Pass AHUs to Chilled Water	458,000 gal water	\$5,300	Recommended
Fix Leaks Throughout Campus	190,000 therms 2,250,000 gal water	\$324,000	Recommended

MnTAP Advisor: Laura Sevcik, Pollution Prevention Specialist