

CASE STUDY



WATER REDUCTION AT MAYO CLINIC HEALTH SYSTEM

Summary

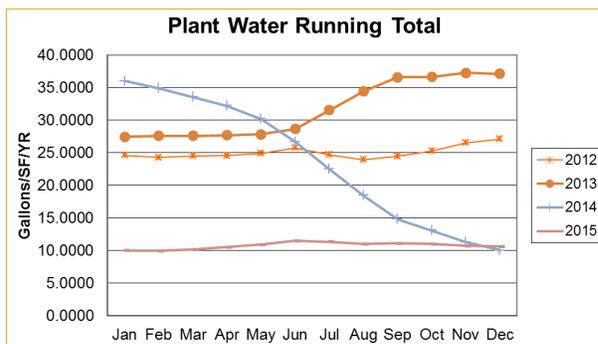
- Water consumption at the Mayo Clinic Health System - Eau Claire campus increased in 2013 to nearly 60 gallons per square foot per year, which was 28 percent higher than the previous year.
- Analysis was done to determine the cause of the water use increase trend. The analysis reviewed consumption statistics for irrigation, domestic use, and physical plant use.
- Analysis indicated that irrigation water use was declining and domestic water use remained flat. The culprit appeared to be high water use in the physical plant. Processes were altered to reduce water consumption in the plant without compromising patient comfort or equipment performance.

Benefits

- \$51,000 in savings from reduced sewer charges and \$19,000 in water cost reduction.
- Reduction of 25 million gallons of water reduced for plant use
- Reduction of just over 1 million gallons of water used for irrigation
- Decrease of \$40,000 in chemical treatment costs.

Mayo Clinic Health System - Eau Claire

Mayo Clinic Health System - Eau Claire is part of the Mayo Clinic System. The hospital is a non for profit Level II Trauma center that serves seven counties and a population of 287,000. Licensed for 304 beds, the hospital currently staffs 204 beds and provides more than 40 specialty and subspecialty health care services.



The Problem

A trend in increasing water consumption triggered action by the Mayo Clinic Health System Energy Team to determine a cause and recommend an improvement plan. Not only did the increase in water consumption correlate with increases in water and sewer charges, but it caused concern for environmental impact. A goal was established to decrease water consumption by three percent enterprise-wide as well as locally.

The Strategy Selected

The strategy developed included two areas of focus:

1. Continued reduction of landscape irrigation

- a. Sustainable landscapes (native plantings) were installed as part of the Luther Building construction in 2010.
- a. Landscaping planners recommended plant types based on climate, drought resistance, and hardiness.

2. Improve use of water resources in the physical plant

- a. Stop using well water for physical plant use
- b. Increase number of cooling tower cycles (from two to four) and now at seven.

- c. Improve water treatment to reduce boiler blowdowns.
- d. Improve water treatment to increase chiller efficiency.

Implementation Process

The process of implementation began with assessment of water users on campus, which included irrigation, domestic use, and physical plant use. The Energy Team analyzed consumption rates in those three categories and learned that plant use had continued to climb while water use for irrigation and domestic use stayed relatively flat. Further analysis of physical plant water consumption revealed that cooling towers were cycling twice and then refilling. Chiller tubes were fouled due to microbiological growth from iron reducing bacteria content (from well) causing inefficiency in thermal energy transfer. Boiler water treatment inconsistency and high iron content appeared to be necessitating increased blowdowns. We then consulted with our water treatment vendor to determine the best solution. It was determined that we would save more water and reduce chemical use by utilizing city water for physical plant use.

Challenges and Lessons Learned

The biggest challenge faced has been the acceptance of prairie restoration by patients, visitors, and staff versus a typical irrigated lawn (turf). The division has been

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50/50 between supporters and non-supporters. Non-supporters have been very vocal and on several occasions have written or called the CEO directly. Opinions varied internally on how the prairie should be managed and mistakes were made by altering the look to improve it. The

areas took three years to fully develop. Regardless of how much education was provided, people “didn’t seem to get it.”

Another challenge has been to maintain consistency in water treatment. Constant monitoring is required.

Practice Greenhealth 2015 Water Benchmark Highlights

Metrics	Mayo Clinic Health System - Eau Clair Water Data	Practice Greenhealth 2015 Benchmark
Gallons water per sq.ft.	31.5	42.9
Gallons water per cleanable sq.ft.	35.5	47.9
% change water use intensity	42.3%	9.0%
Millions gallons water /Operating Room	1.7	2.2

