Energy Optimization at University of Minnesota Physicians

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UNIVERSITY OF MINNESOTA

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Company Background

- Joint healthcare facility
  - University of Minnesota Physicians (UMP) and Fairview Health Services
- M Health Clinics and Surgery Center (CSC) - created in 2016
- 5,300 employees, 1,366 rooms, and 37 medical specialties
- Building houses: Masonic Cancer Clinic, lab and imaging services, and an outpatient surgery center

Goals

- Steam, electricity and plug load reduction
- EUI (energy use intensity) reduction
  - 161 to 120
- Natural gas savings by University of Minnesota

UMN's Main Energy Plant

Project Overview

Past Efforts

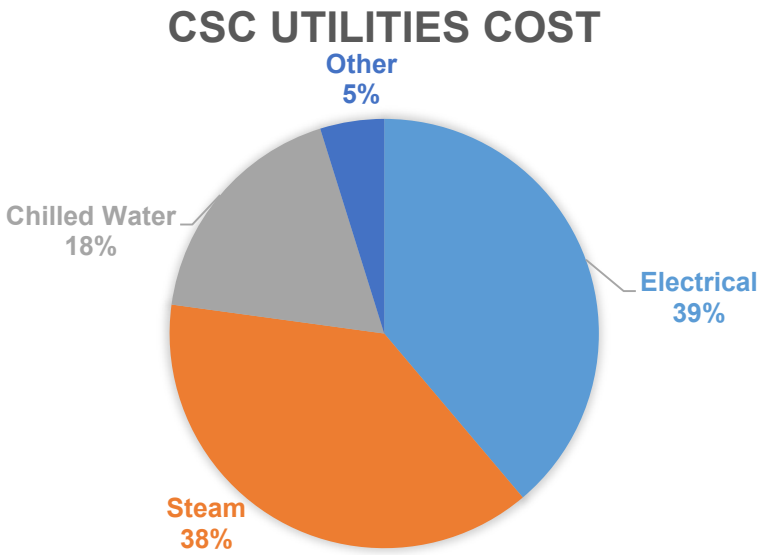
- Previous energy reduction and comfort improvement studies conducted at another UMP owned building
  - HVAC
  - Electricity
  - Plug loads

University of Minnesota Physicians, Minneapolis MN

Project Overview

Focus Areas

- **Lighting**
  - Energy use in different lighting zones
  - Recommendations for energy and cost reduction
- **Plug loads**
  - Determine plug load energy use
  - Identify and quantify strategies for reduction
- **HVAC**
  - Trends in steam and chilled water use
  - Potential for energy savings



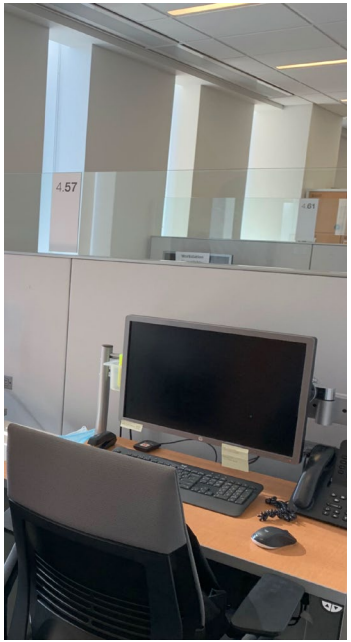
Approach

- **Studied lighting fixtures**
  - Floor plans with lighting plan
  - Contractor information sheets
  - Hours of operation
- **Analyzed plug loads**
  - Computer specifications and standby conditions
  - Hours of operation

- **Studied HVAC system**
  - Building data sheets
  - Online meter data from the University
  - Regulations and requirements

Computer Power Management

- **System wide change in hours of operation**
  - Introducing standby operation for 50% of the day
- **283,000 kWh/yr**
- **$31,000/yr**
- **Immediate payback**
- **Next step**
  - Create a less energy intensive power plan with the IT department



Advanced Power Strips (APS)

- **Controls peripheral loads in staff workspaces such as monitors**
  - Turns them off or switches to standby after a period of no operation
- **490 kWh/APS/yr, 133,000 kWh/yr**
- **$14,700/yr**
- **Payback in 9.9 months**
- **Next step**
  - Trial of APS in other locations to determine feasibility

https://www.amazon.com/CyberPower-HT705GR-Advanced-Power-Outlets/dp/B07BCHQFTK

Solutions

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Computer Management	**283,000 kWh**	**None**	**$31,000**	**Immediate**	**Planned**
Light Scheduling	179,000 kWh	None	$19,000	Immediate	Planned
Advanced Power Strips	**133,000 kWh**	**$12,150**	**$14,700**	**9.9 months**	**Implementing**
Light Switch Reminders (5th)	18,000 kWh	None	$2,000	Immediate	Planned
Green Team	Unknown	None	Unknown	N/A	Recommended
Sterile boiler system evaluation	Up to 410,000 lb steam	TBD	Up to $11,000	TBD	Further study required

Anecdote

- **Got a chance to work with a great team at UMP**
- **Great learning opportunity**
  - Project management
  - Data analysis
  - Energy optimization