



Energy Conservation at North Memorial Health

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UNIVERSITY OF MINNESOTA

Driven to DiscoverSM

Company Background

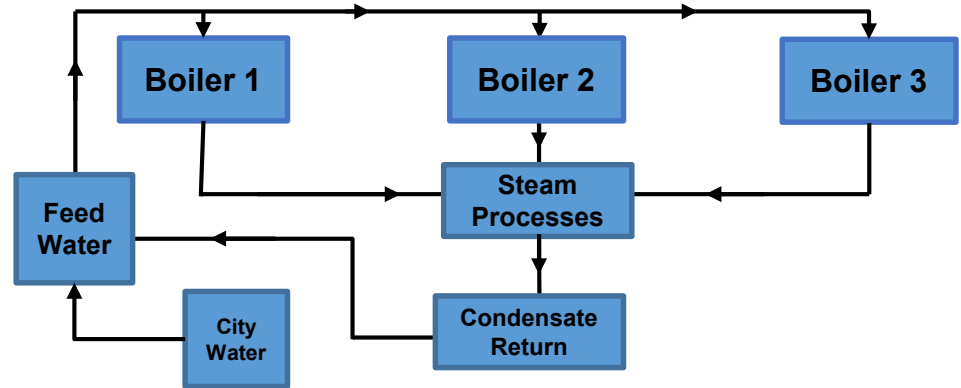
- Founded in 1954
- Level I trauma center since 1988
 - One of four in Minnesota
- Inpatient and emergency care services
- 3,300 employees, 350 beds
- Operates 24/7
- Campus includes atrium, two parking garages, RMB, West Hall



Project Overview

Current Situation

- 1.3 million therms per year for steam production
 - High pressure
 - Low pressure
 - Robbinsdale Medical Building
- Winter demand 3-4 times as large as summer demand



Approach

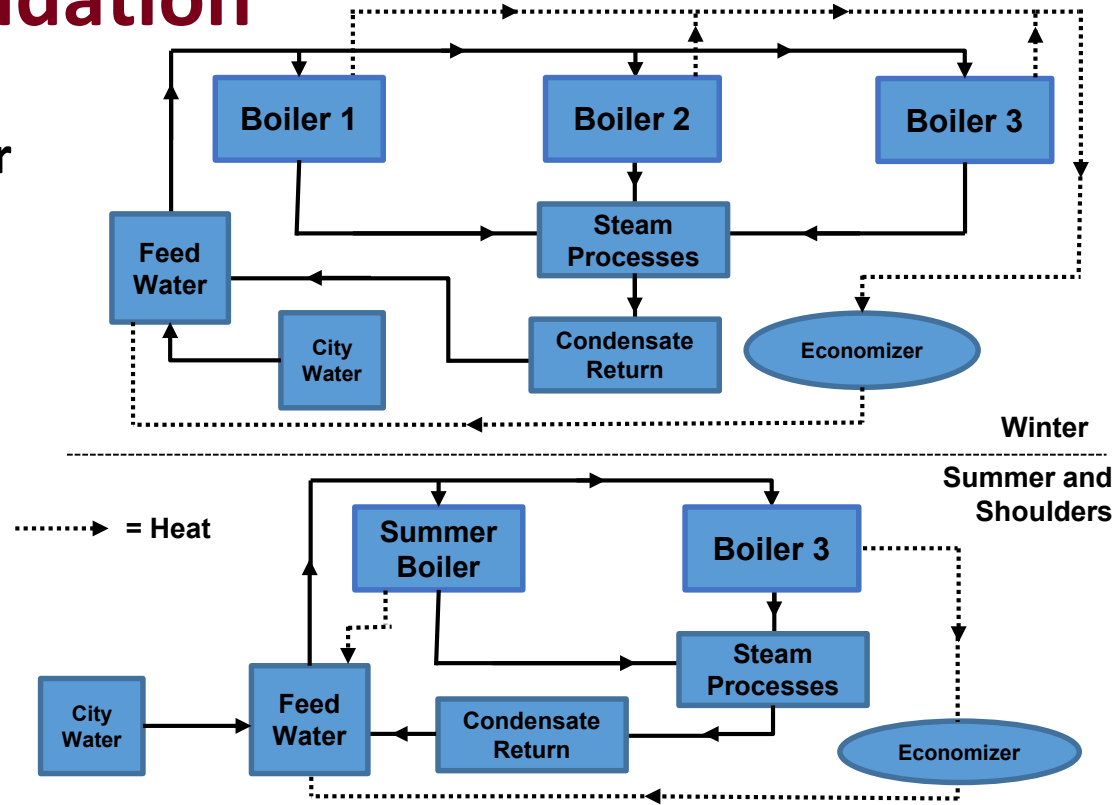
- Complete energy balance
 - Data sheets
 - Meter readings
- Analyze boiler operations
 - Boiler efficiencies
 - Hours of operation
 - Standby conditions
- Talk with long-time employees
- Work with vendors and specialists



Primary Recommendation

Combination of summer boiler system and economizer

- Install 500 hp Stackmaster boiler for summer and shoulder months
- Install 2175 hp economizer in line with all three boilers
 - without economizer, boiler payback is 30+ years



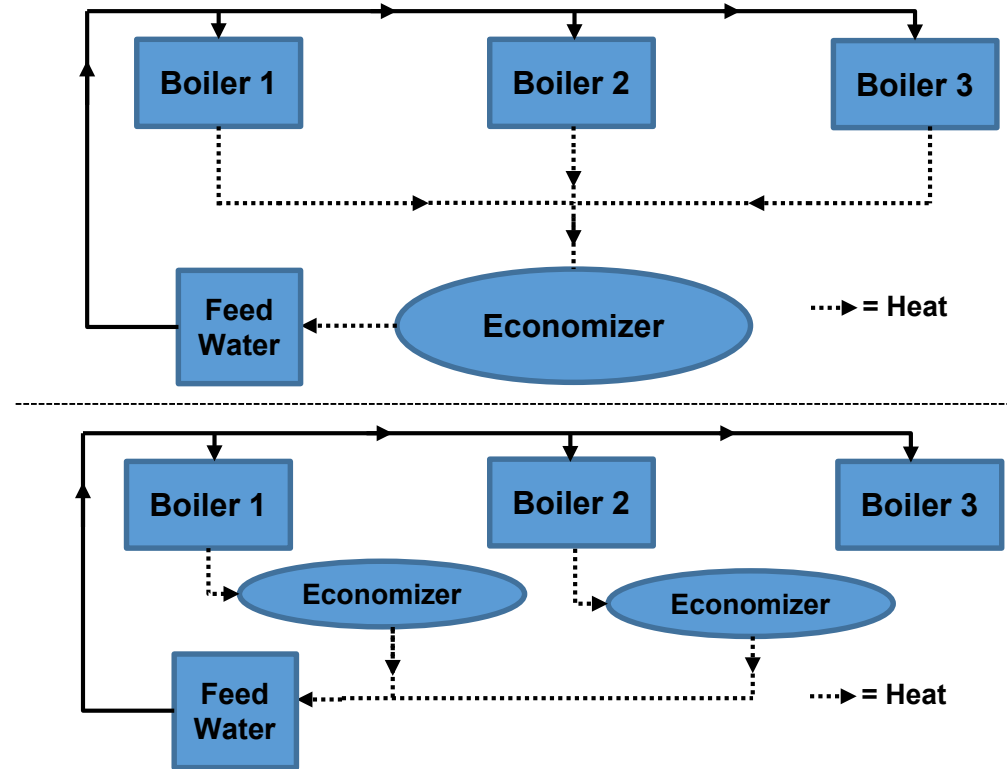
Primary Recommendation

•Type of Economizer

- 3-in-1 is less expensive, takes up less space
- Requires shut-down for installation
- Individuals avoid this, but space is an issue

•Economizer Only

- (PRO) Can install during low demand
- (PRO) 7-9 year payback
- (CON) lower yearly savings



Primary Recommendation: Savings

- **125,000 therms/year**
- **\$56,000/year**
 - 82% greater than lone economizer
- **14.4 year payback**
 - 53% shorter payback than lone boiler
- **Greatest lifetime savings of any option**
 - Over \$200,000 more
 - Based on 30-year window

Solutions (examples below)

Recommendation	Annual reduction	Total cost	Annual savings	Payback period	Status
Summer Boiler System with Stack Economizer	125,000 therms	\$806,000	\$56,100	14.4 years	Recommended
Insulation Jackets	2,900 therms	\$5,500	\$1,400	4.0 years	Recommended
HVAC Controls	5,000 therms	\$0	\$2,400	Immediate	More Research Needed
Boilerless Cooker for Kitchen	717 therms 47,000 gal water	\$3,000	\$610	5.3 years	Recommended
Decreasing Low-Demand Operating Pressure	23,300 therms	\$0	\$10,400	Immediate	Currently Testing

Anecdote



- Awesome attitude towards the program
- Plenty of opportunities to grow and learn
- Really believes in the program
- Thank you North Memorial and Thank you MnTAP!

