

Conventional Systems, Unconventional Results

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Major Health Partners

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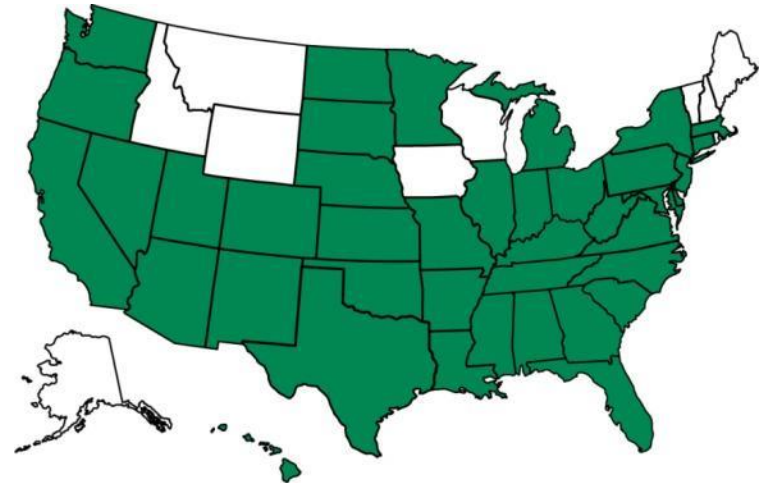
About CMTA

- Founded in 1968
- Top 50 MEP firm in U.S.
- Over 200 Employees in seven offices
- 77 Licensed Professional Engineers
- 72 LEED APs
- 1 WELL AP
- 153 ENERGY STAR projects
- 54 LEED projects



Now CMTA Has...

- Health care projects in over 30 states and Canada
- Multiple Indiana projects
- Multiple long-term clients



About Major Health Partners

- Founded in 1924
- Beginning in 1960 the facility underwent several renovations
- Currently 51 inpatient beds
- Full range of acute care services
- Patients come from southeastern Indiana



About the New MHP Medical Center

- 305,000 square feet
- 55 inpatient beds
- 38 outpatient rooms in new Ambulatory Care Center
- 4 ORs and 1 C-section suite
- Medical offices on the second floor



BSA Lifestructures

Design Team Selection Process

- Executive architect
- Architect and Engineers selected separately
- “Dream Team”
- MHP held the contracts to reduce filters



Project Benchmarking

“In God we trust, all others bring data.”

“You cannot manage what you do not measure.”

W. Edwards Deming, Ph.D.



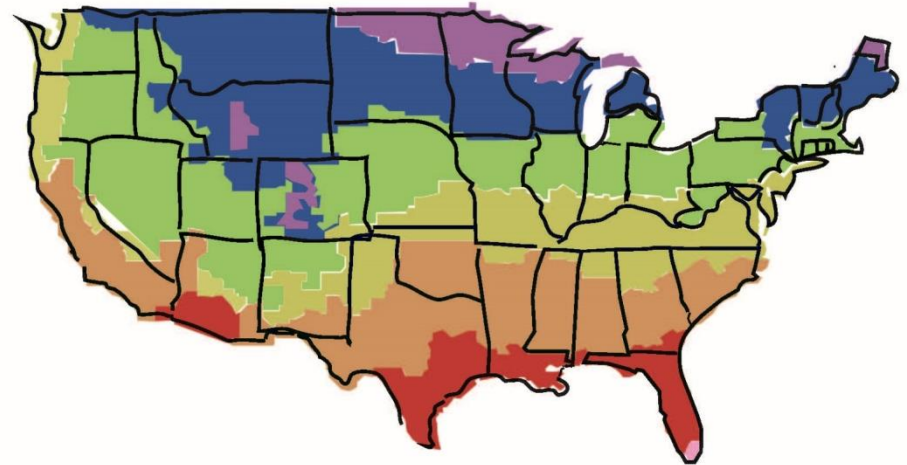
Energy Efficiency in Health Care

- Health care has been slower than other sectors to adopt energy efficient practices
- Targeting 100, ASHE, ACHE, Premier and other organizations are now focusing on reducing energy use
- ASHRAE AEDG 50% Reduction for Hospitals

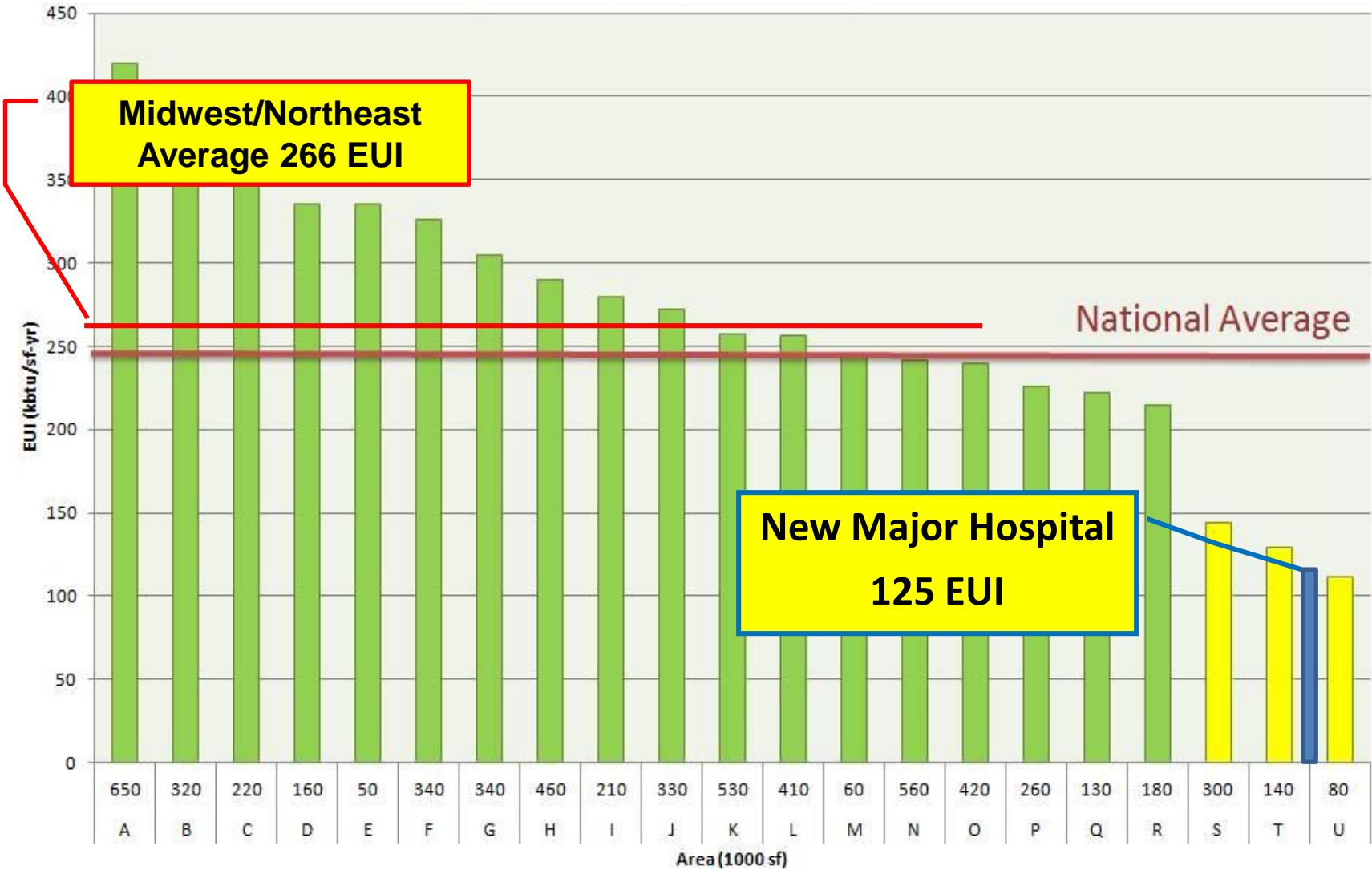


What is EUI?

- EUI is expressed as **energy per square foot per year**. It's calculated by dividing the total energy consumed by the building in one year (measured in kBtu) by the total gross floor area of the building.



Regional Large Hospital EUI



Architect

- Improved building envelope
 - Roof
 - Walls
 - Windows
 - Building pressure test
- Orientation



MEP Engineer

- HVAC
- Chilled Water
- Water Heating
- Lighting
- Controls
- Kitchen



What does this mean for MHP Medical Center?



High Performance Systems Steam/Hot Water (Conventional)

- Minimize steam boiler size
- High efficiency condensing boiler for building heat and domestic hot water
- Small steam boiler for CSR and humidification



High Performance Systems

Chilled Water Generation (Conventional)

- Variable speed chillers
- Primary pump, variable flow chilled water distribution with automatic coil control valves
- Heat recovery



High Performance Systems Air Handling Units/VAV (Conventional)

- Reduced system maintenance
 - Standardized filter sizes
 - Direct Drive Fans
 - UV Lights



High Performance Systems OA Units (Unconventional)

- Energy recovery – minimum outside air
- Multiple smaller fans
 - Improved fan efficiency
 - Improved fan power
 - Improved system redundancy



MEP Systems (Unconventional)

- Heat recovery for minimum outside air
- Heat pump chiller
- Hot water production during the summer
- Water source heat pump with dedicated outdoor air unit MOB
- 100% power backup



High Performance Systems Lighting (Conventional)

- Reduce lighting energy intensity (w/sf)
- Lighting control system
 - Night corridor dimming
 - Exterior façade lighting
 - Natural lighting



LED Lighting

- MHP Medical Center is 100% LED lighting
- 0.51W/sf.
- 58% better than code (1.2W/sf for hospital).



Why is energy efficiency important?

- Health care is the **second most energy-intensive building sector** in the United States, according to the DOE
- Every \$1 a not-for-profit health care organization saves in energy is equivalent to generating **\$20 in new revenues**



ENERGY STAR Target Finder

Major Hospital

	Project	Median	Annual Savings
ENERGY STAR Score	>95	50	
EUI	125	266	
Energy Costs	\$409,200	\$675,000	
	Annual Savings		\$266,000

Commercial Buildings Energy
Consumption Survey (CBECS) Data



ENERGY TRACKING FORM



PROJECT INFORMATION:

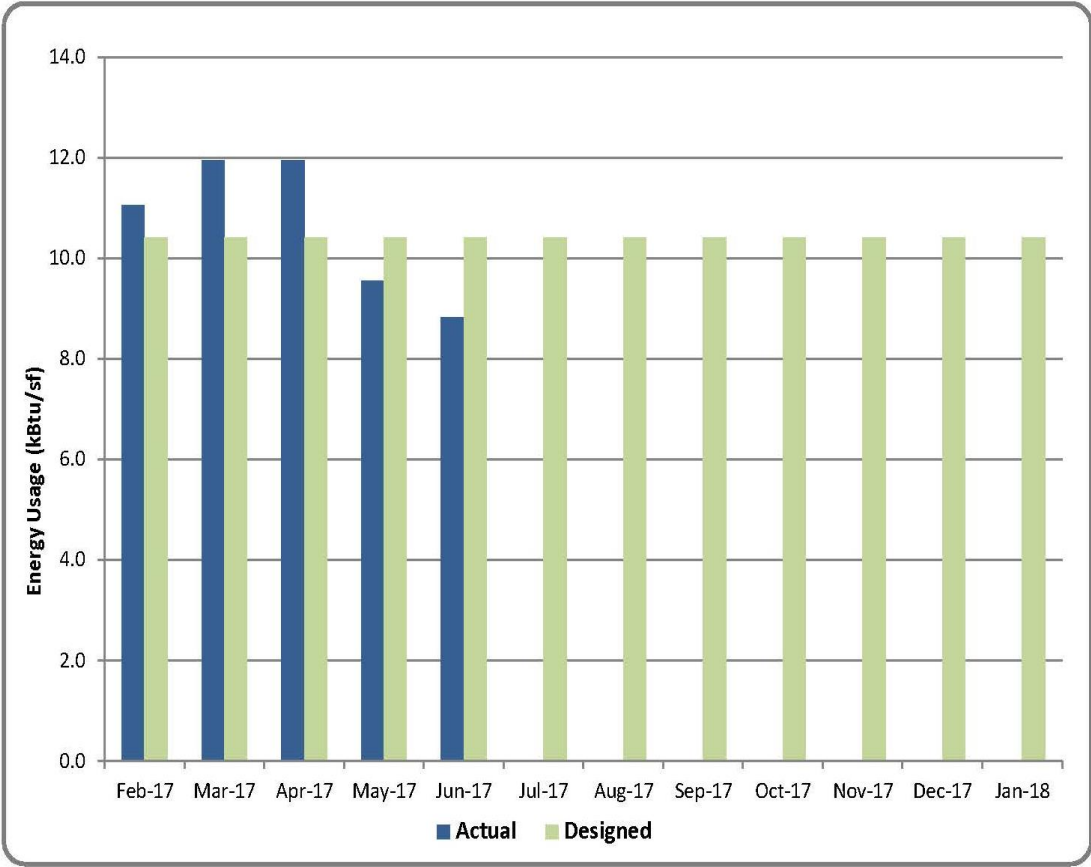
Project Name:	MHP - Major Hospital	
Facility GSF:	345,300	sqft
Monitoring Start Date:	2/1/2017	

UTILITY BILL INPUT:

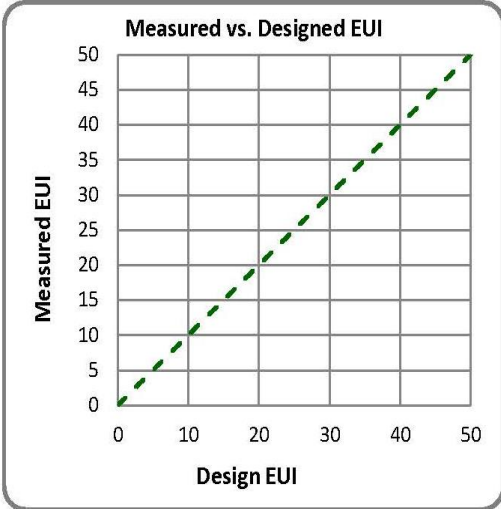
Month	Total Cost (\$)	Electrical Usage (kWh)	Gas Usage (ccf)	Electrical Energy (kBtu)	Gas Energy (kBtu)	Total Energy (kBtu)	Actual (kBtu/sf)
Feb-17	\$58,342	446,713	22,297	1,524,185	2,294,361	3,818,546	11.1
Mar-17	\$58,579	550,580	21,818	1,878,579	2,245,072	4,123,651	11.9
Apr-17	\$57,903	625,850	19,315	2,135,400	1,987,514	4,122,914	11.9
May-17	\$53,687	652,989	10,397	2,227,998	1,069,851	3,297,850	9.6
Jun-17	\$54,078	694,948	6,602	2,371,163	679,346	3,050,508	8.8
Jul-17				0	0	0	0.0
Aug-17				0	0	0	0.0
Sep-17				0	0	0	0.0
Oct-17				0	0	0	0.0
Nov-17				0	0	0	0.0
Dec-17				0	0	0	0.0
Jan-18				0	0	0	0.0
Totals	\$282,589	2,971,080	80,429	10,137,325	8,276,144	18,413,469	53.3
Proj. EUI= 160.0							

MHP - Major Hospital

Monthly Energy Consumption (kBtu/sf)



Designed EUI= 125.0
YTD kBtu/sf= 53.3
Projected EUI= 128.0



What's the WOW! Factor?

- \$266,000 Annual Energy Savings
- \$252/ft² construction
- \$325/ft² occupied
- Reduces operational cost
- Improves health care services by:
 - Purchasing new equipment
 - FTEs
 - Financing future improvements
 - Stronger bottom line



Questions?

www.cmtaegr.com

