

Partners Healthcare System, Inc.

STRATEGIC ENERGY MASTER PLAN



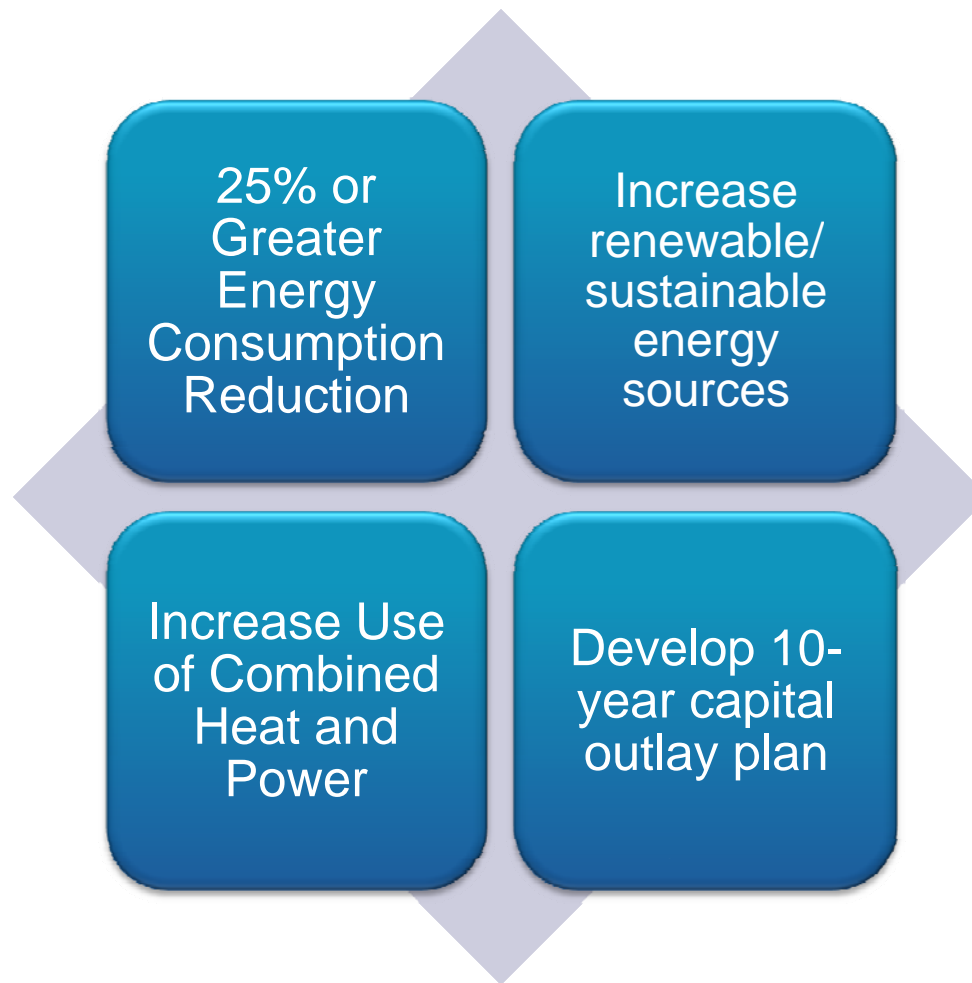
PROGRESS STATUS



CDM JACOBS

SEPTEMBER 2009

Strategic Energy Master Plan Goals



Major Project Task Items

Facility Energy
Benchmarking

Facility Central
Plant
Infrastructure
Assessment

Assessment of
Facility Energy
Conservation
Opportunities

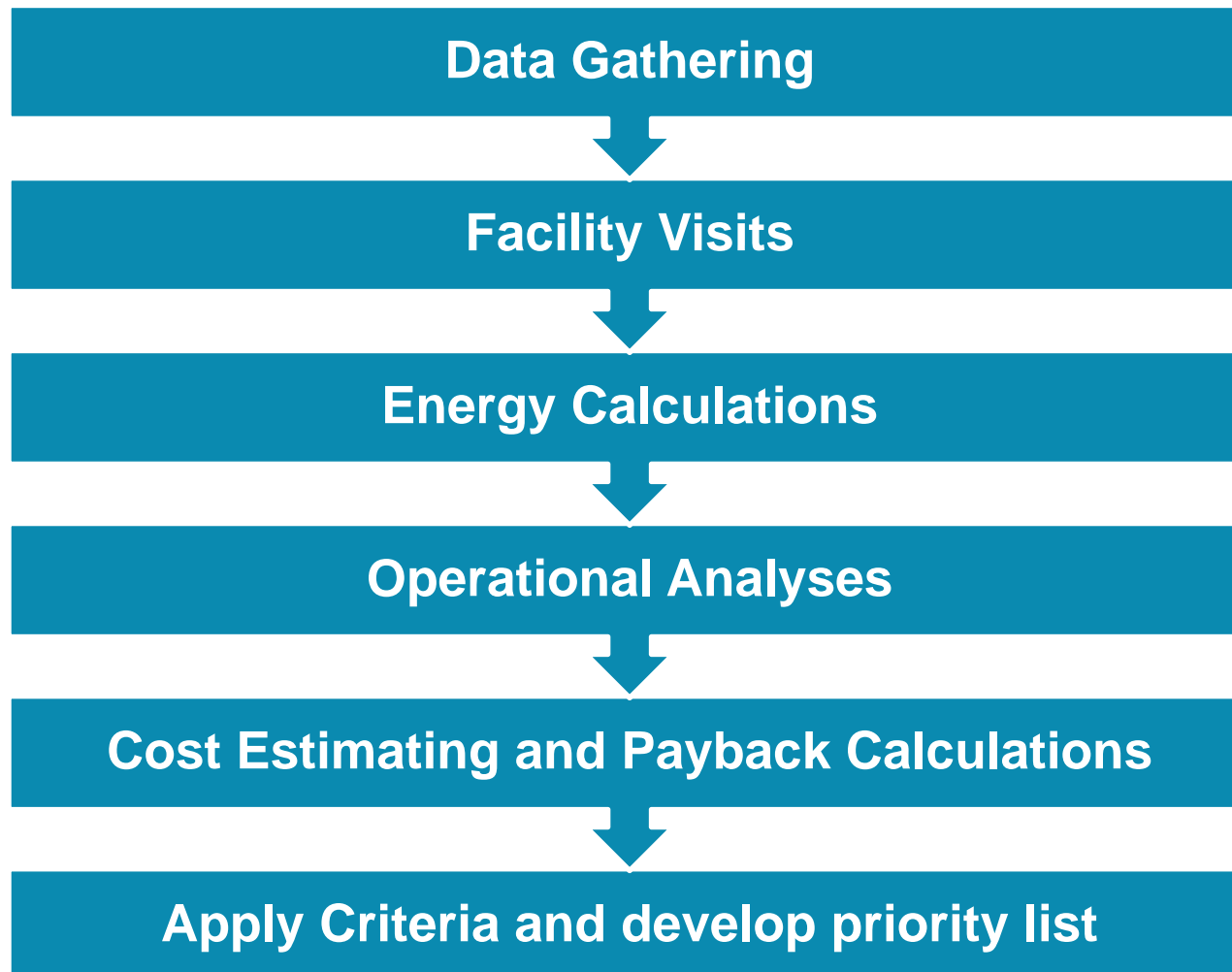
Energy Source
Reliability
Assessment

Assessment of
Regulations,
Zoning and
Legal Issues

Identification of
Financial
Incentives

Cost/Benefit
Analysis of
Renewable
Technologies

Project Methodology



FACILITY ENERGY BENCHMARKING

Facility Energy Benchmarking

- Modeled In Patient Acute Care Facility – Boston: DOE 2.1
 - Benchmark – Electricity: 100,300 BTU /SF/YR
 - Benchmark – Thermal Use: 150,390 BTU/SF/YR
 - **Benchmark – Total Use: 250,690 BTU/SF /YR**

This model assumes most lighting has been retrofitted to more efficient lamps and ballasts and higher efficiency chillers have been installed, which is true for most PHS facilities.



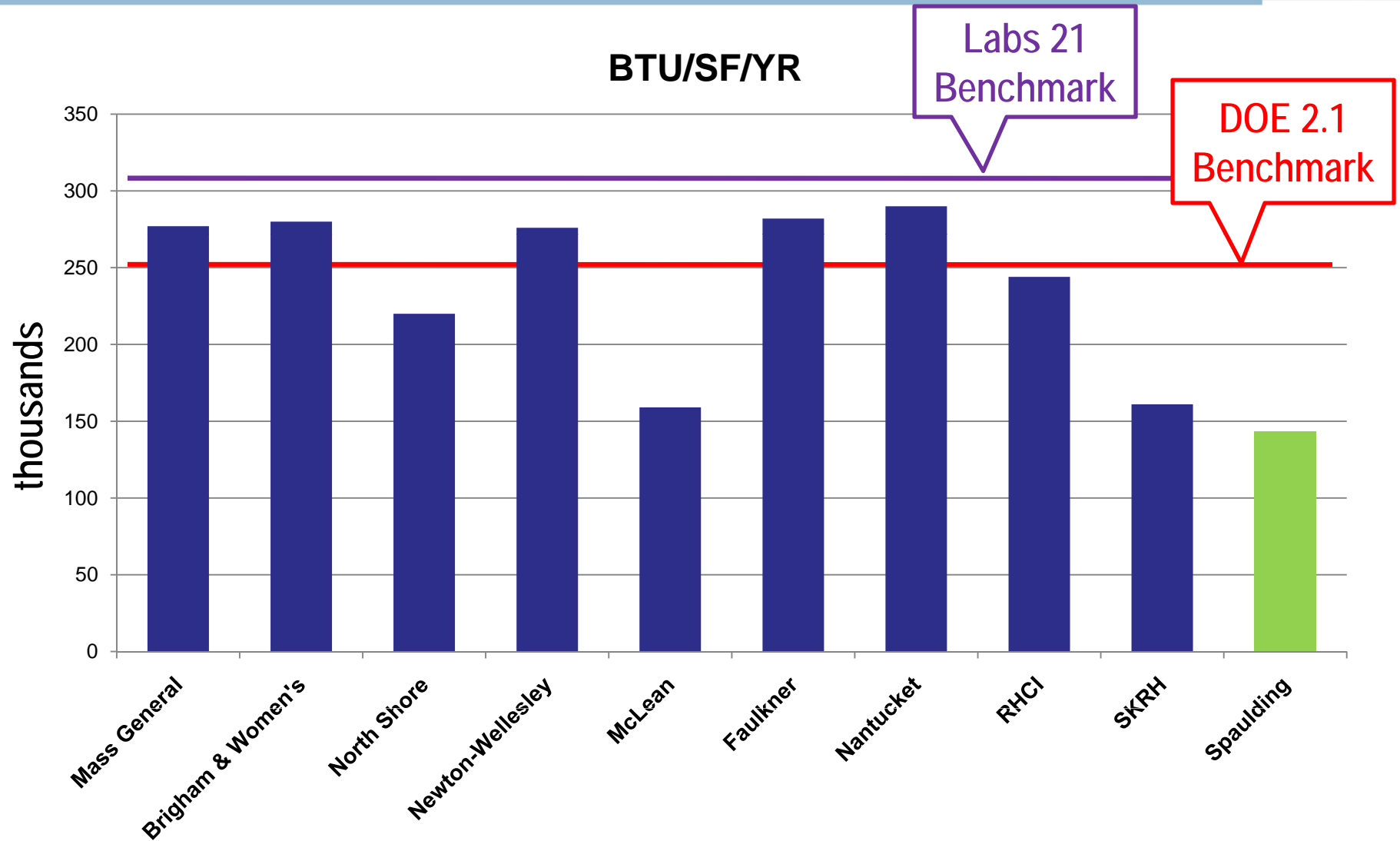
Facility Energy Benchmarking

- DOE Commercial Building Energy Consumption Survey
 - Healthcare Inpatient Facilities: 249,200 BTU/SF/YEAR
 - Healthcare Outpatient Facilities: 94,600 BTU/SF/YEAR
 - Office Spaces: 92,900 BTU/SF/YEAR

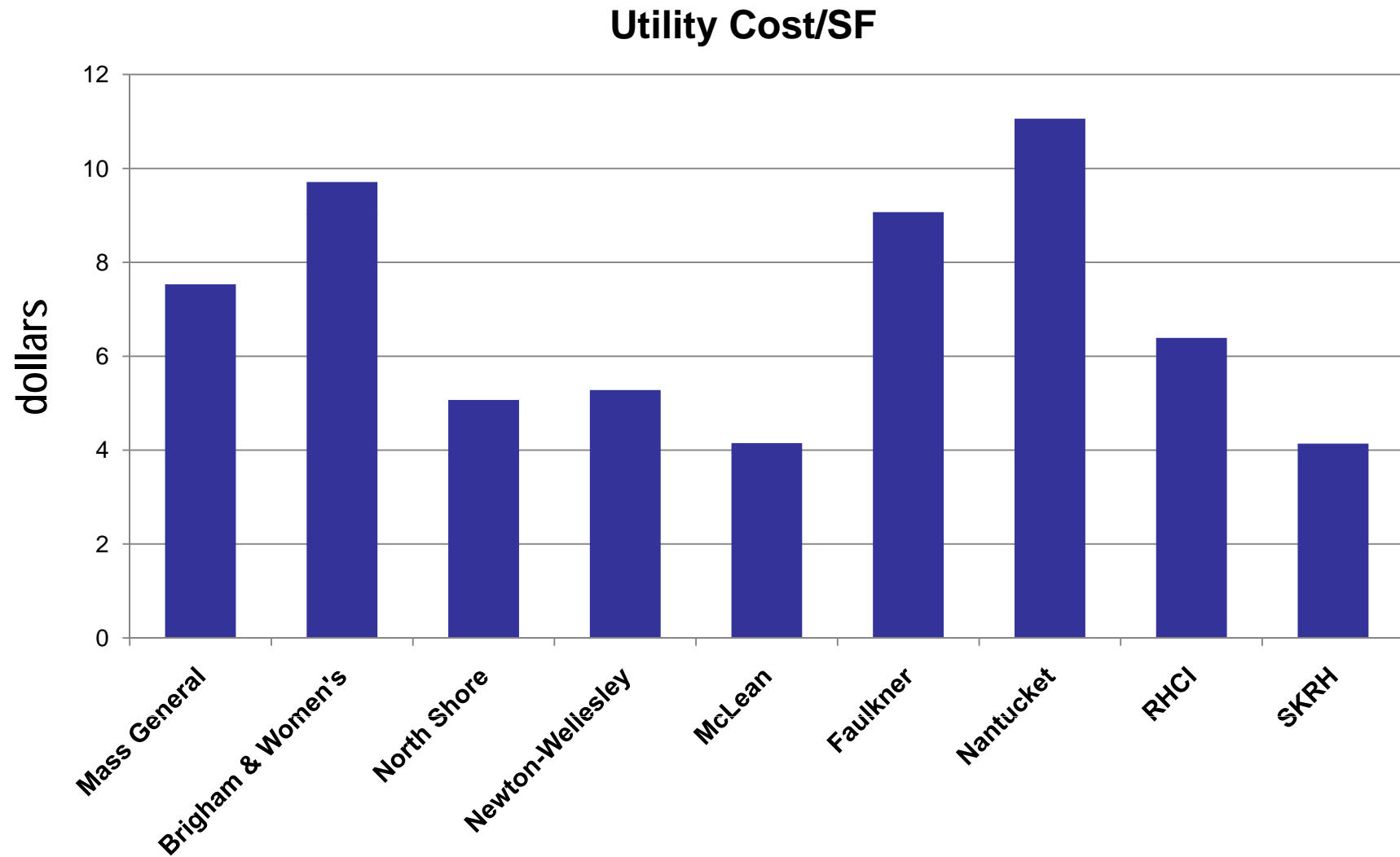
- Labs 21
 - Chemical/Biological Labs –
Northeast: 320,000-420,000
BTU/SF/Year



PHS Facility Comparison of BTU/SF/Year



PHS Facility Comparison of Utility Cost/SF

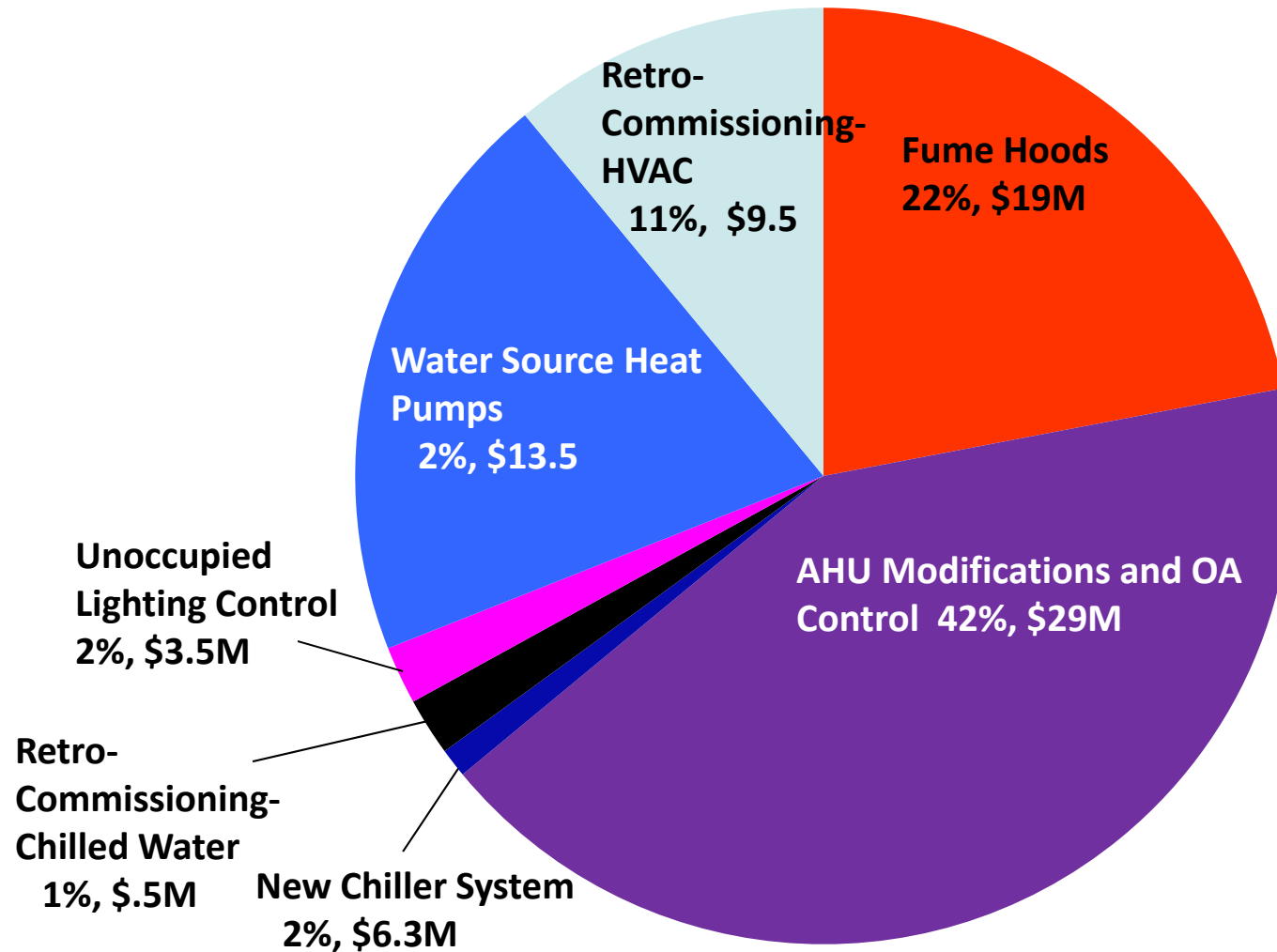


Summary of ECM Projects by Facility

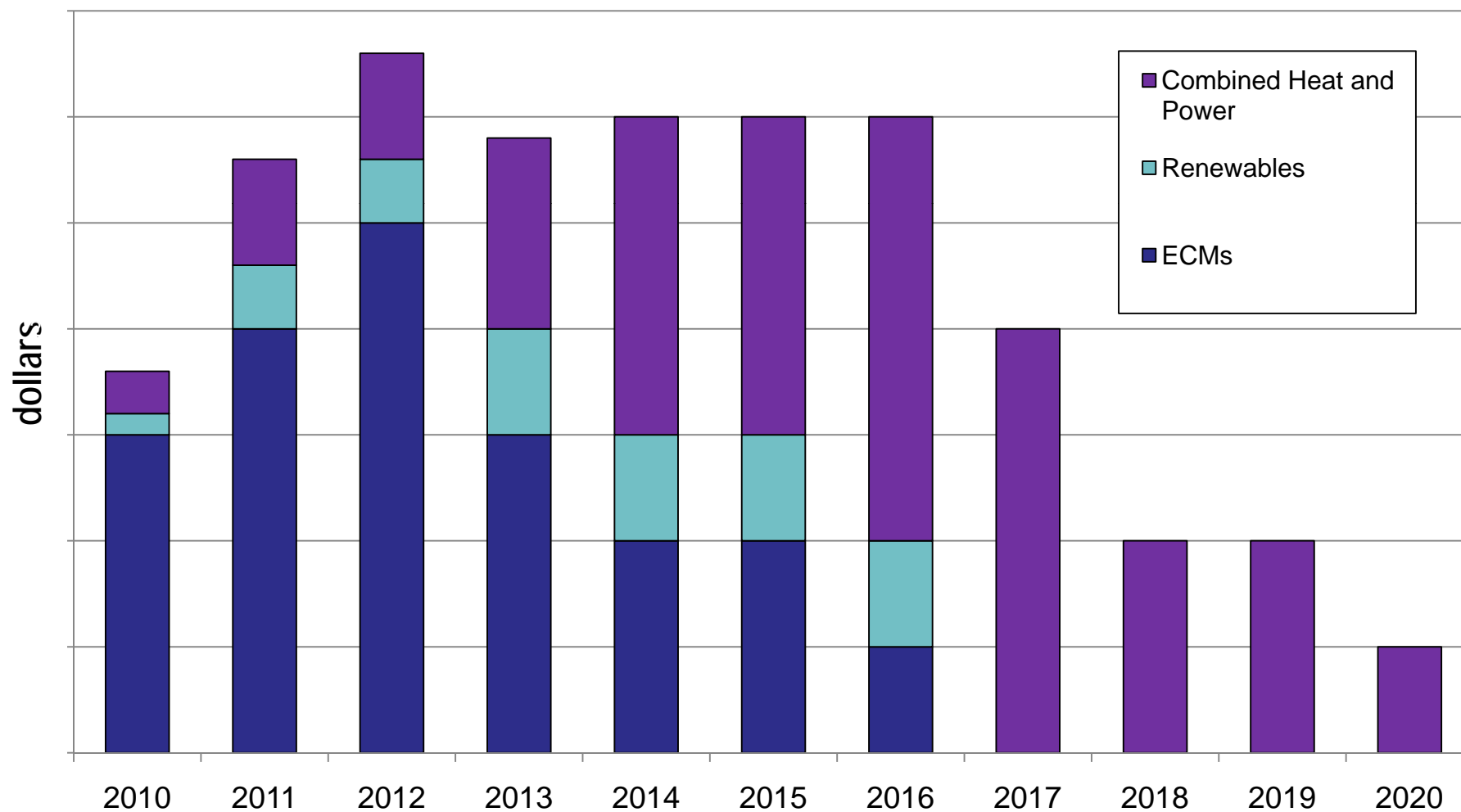
	Fume Hood Projects	Retro-Commissioning (HVAC Systems)	Water Source Heat Pumps	Retro-Commissioning (Chilled Water)	Unoc Lighting Control	New Chiller System	AHU Modifications	Heat Recov/ OA control
MGH	✓	✓	✓	✓	✓		✓	✓
BWH	✓	✓		✓	✓		✓	✓
NSMC		✓	✓	✓	✓		✓	✓
NWH		✓	✓	✓	✓		✓	✓
RHCI		✓	✓	✓	✓	✓	✓	✓
SKRH		✓	✓	✓	✓		✓	✓
MH	✓	✓	✓	✓	✓	✓	✓	✓
NH		✓	✓		✓	✓	✓	✓
FH		✓	✓	✓	✓	✓	✓	✓

26% Energy Reduction for Facilities Analyzed

**TOTAL
ECMs
\$81.3M**

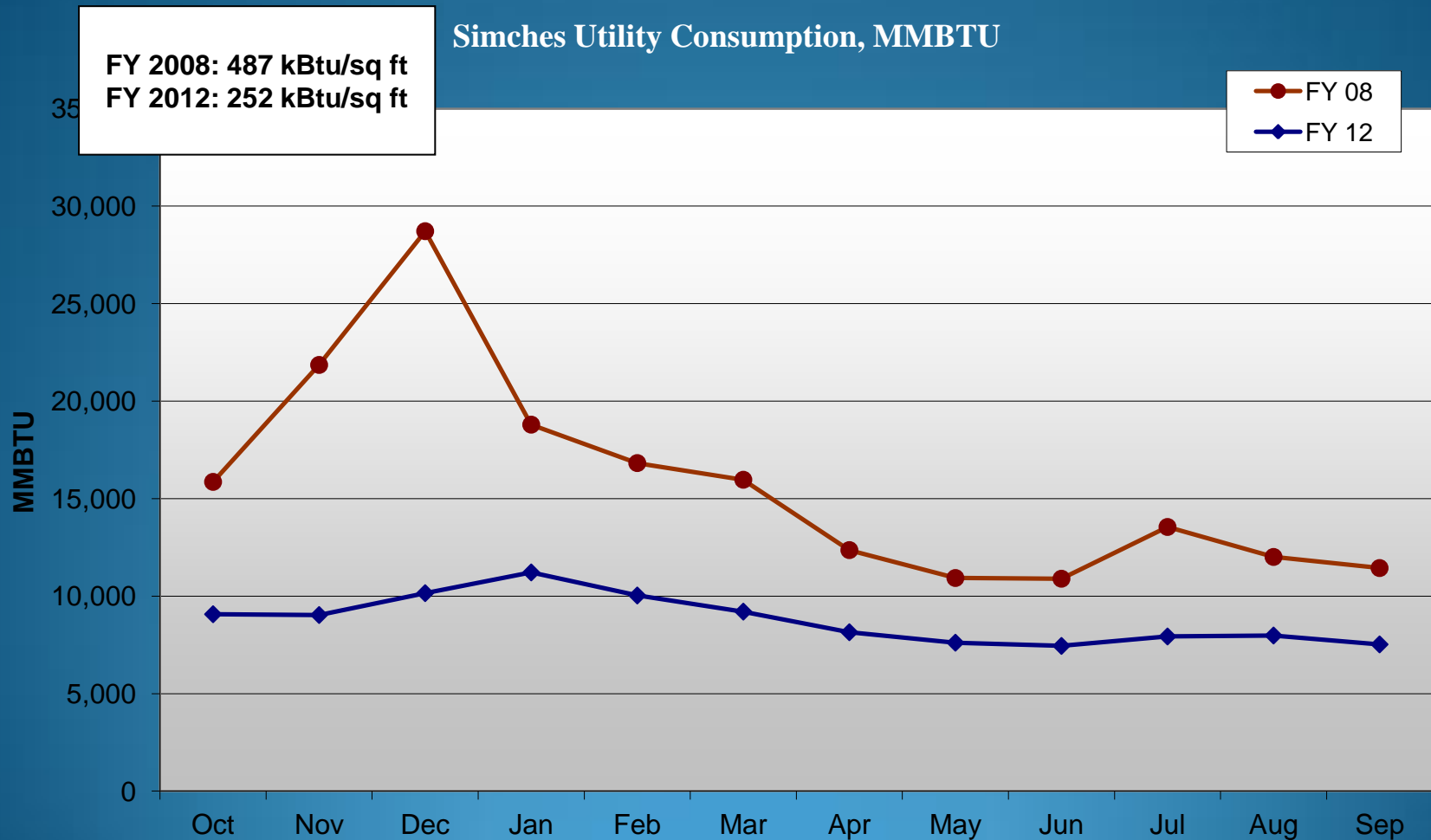


Capital Spending Projection Through 2010

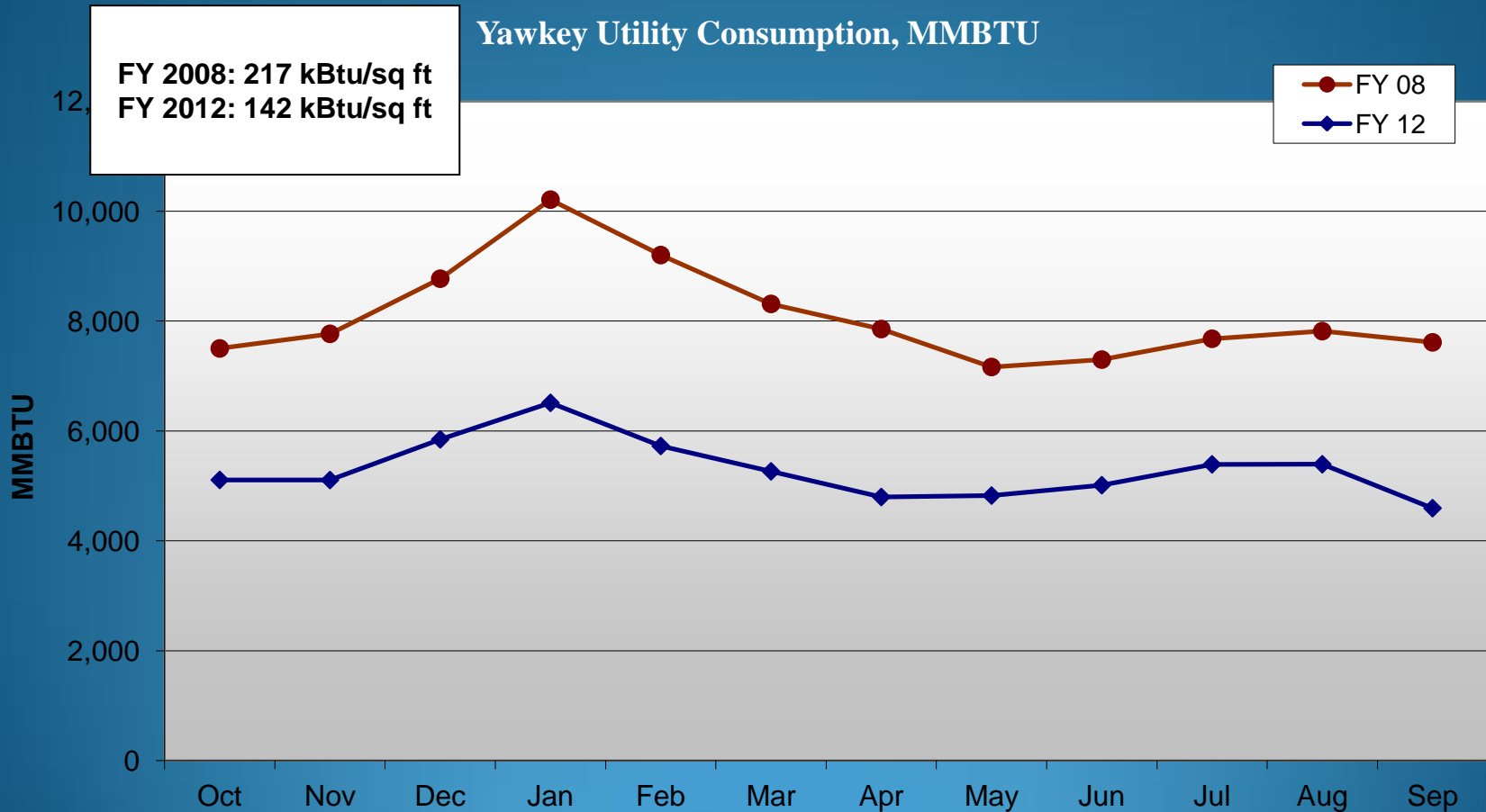


	A	B	C	D	E	F	G	H	I
1									
2									
3									
4		2011							
5							Propose annual investment by the hospital		
6	Hospital	PHS SEMP ECM*	projected savings from current investment *	Projected annual total savings from current combine with previous years*	Total savings accumulate from 2011 to current year*	Propose capital investment by PHS not including Hospital re-investment*	Propose capital reinvestment from hospital capital/operating budget	Propose hospital MV&M investment as part of operating budget	Total hospital investment
7	MGH	\$3,641,663	\$1,342,397	\$0	\$0	\$3,641,663	\$0	\$150,000	\$150,000
8	BWH	\$2,479,788	\$2,120,890	\$0	\$0	\$2,479,788	\$0	\$75,000	\$75,000
9	NSMC/UH	\$813,351	\$241,267	\$0	\$0	\$813,351	\$0	\$75,000	\$75,000
10	NWH	\$608,897	\$240,727	\$0	\$0	\$608,897	\$0	\$75,000	\$75,000
11	FH	\$593,069	\$153,106	\$0	\$0	\$593,069	\$0	\$75,000	\$75,000
12	MH	\$618,135	\$156,042	\$0	\$0	\$618,135	\$0	\$75,000	\$75,000
13	NCH	\$292,696	\$67,480	\$0	\$0	\$292,696	\$0	\$0	\$0
14	RHCI	\$569,201	\$91,214	\$0	\$0	\$569,201	\$0	\$0	\$0
15	SKRH	\$784,460	\$167,874	\$0	\$0	\$784,460	\$0	\$0	\$0
16	Total	\$10,401,260	\$4,580,997	\$0	\$0	\$10,401,260	\$0	\$525,000	\$525,000
17									
18	* Based on December 2009 PHS Strategic Energy Master Plan Study - Today \$.								
19	**Based on December 2009 PHS Strategic Energy Master Plan Study with Escalation 3% per year.								
20	*** Total 5 years Investment by PHS - 2011 to 2015								
21	MV&M = Continuous Measurement ,Verification and Maintaining								
22	Propose hospital MV&M investment as part of operating budget is based on avg. salary; \$225(3 mid level engineer), \$150K(2 mid level engineer), \$1								

Simches



Yawkey Building



Cox Building

Cox Utility Consumption, MMBTU

