

carbon copy operations

gaining back resolution with O&M
benchmarking and operator
training



benchmarking:

comparing facility management
department **staffing** and **costs** to
national standards and peers

Meet Chet Howard.



case study:

Arkansas Children's Hospital

Quintile Break Points - Worked Hours with Trims

		Quintile Worked Hours per Unit of Service Break Points						FTE Variance		
Department Description	Floor Area	Q1	Q2	Median	Q3	Q4	Q5	To Next Quintile (-)	Above Median (-)	To Median (+/-)
	GSF	P20	P40	P50	P60	P80	Max			
Plant Ops No Breakout	1,689,088	0.05	0.05	0.06	0.06	0.1	0.11	-3.6	-36.3	-36.3

cut 36 FTEs!
(approx. 50 percent)



case study:

Arkansas Children's Hospital

Non-Salary Expense Comparison

Plant Operations with No Breakout

Hospital	GSF	Leased GSF	Total Adj Exp per UOS	Non-Salary Exp per UOS	Outsrvcd Services	Other Purch Services	Other Supplies Exp	Med Supplies Exp	Other Exp
1	1,731,271	0	1.8	0.2	0.00	0	243,299	31,409	5,517
2	42,056	356,624	104.8	4.8	2,151.71	1,544	78,535	23,909	97,230
3	1,295,172	0	3.2	1	0.00	1,234,037	40,235	1,241	33,125
4	1,243,514	274,716	5.4	1.5	245,011.30	197,766	1,019,806	9,916	436,808
5	1,689,088	25,889	4.7	1.5	53,279.29	2,010,582	358,262	1,947	27,139
6	1,448,136	0	1.5	0.2	0.00	300,170	38,193	8,794	2,830
7	1,556,893	106,265	2.7	1.6	0.00	2,313,983	139,669	1,259	47,721
8	3,785,363	810,243	2.4	1.2	0.00	2,567,523	1,193,498	259,627	353,670
9	1,459,607	361,286	4.2	1	220.00	911,565	429,366	22,038	158,616
10	820,000	0	2.2	0.5	0.00	120	082,118	522	1,018

The image features a large, light brown egg on the left and a much smaller, similar egg on the right, both resting on a light brown surface against a matching background. Two teal-colored rectangular boxes with white text are overlaid on the image. One box is positioned to the right of the large egg, and the other is to the left of the small egg.

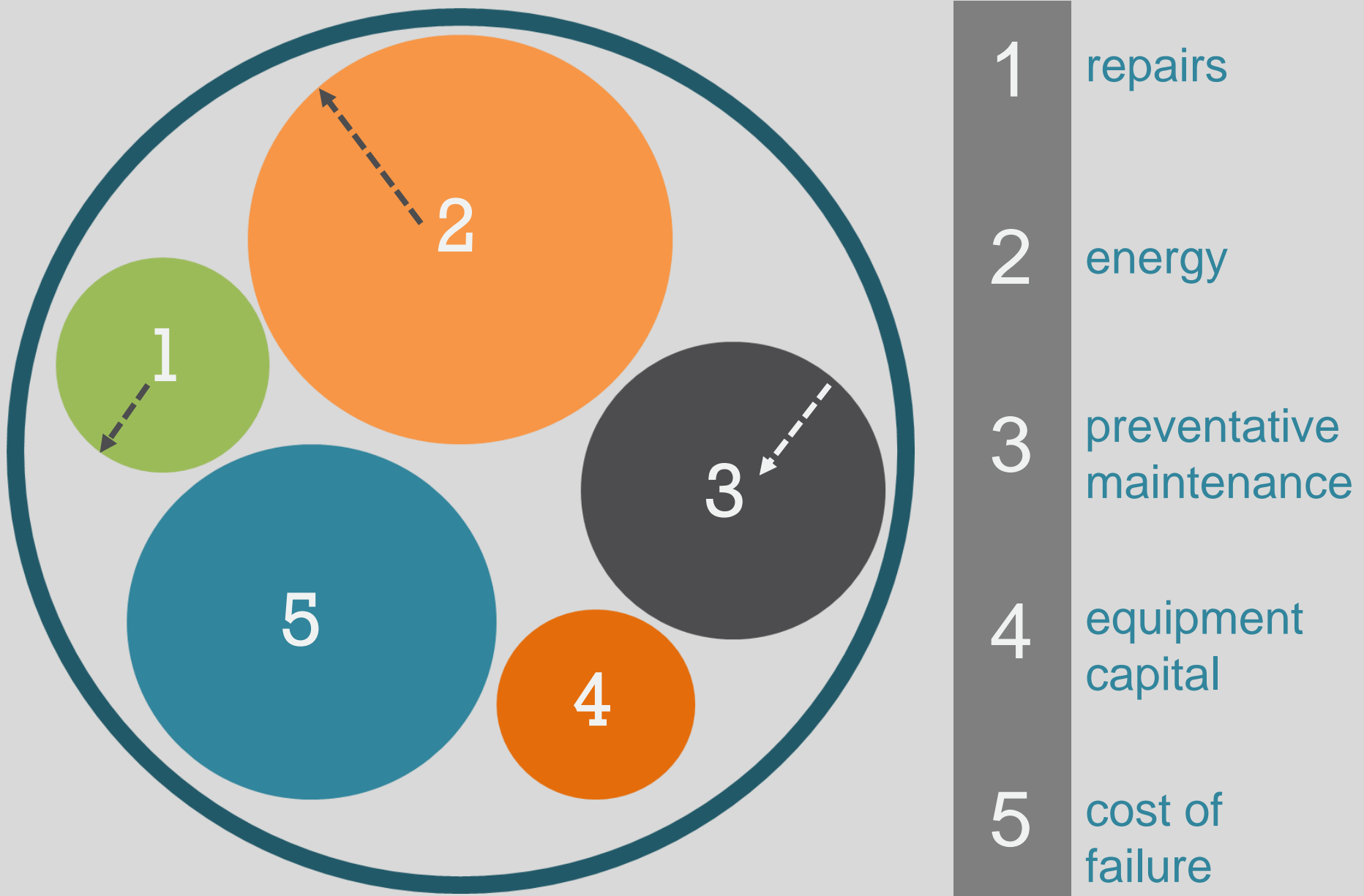
ASHE versus Pact
comparison

36 versus 8



resourcing balance

total cost of ownership/operation (TOC)

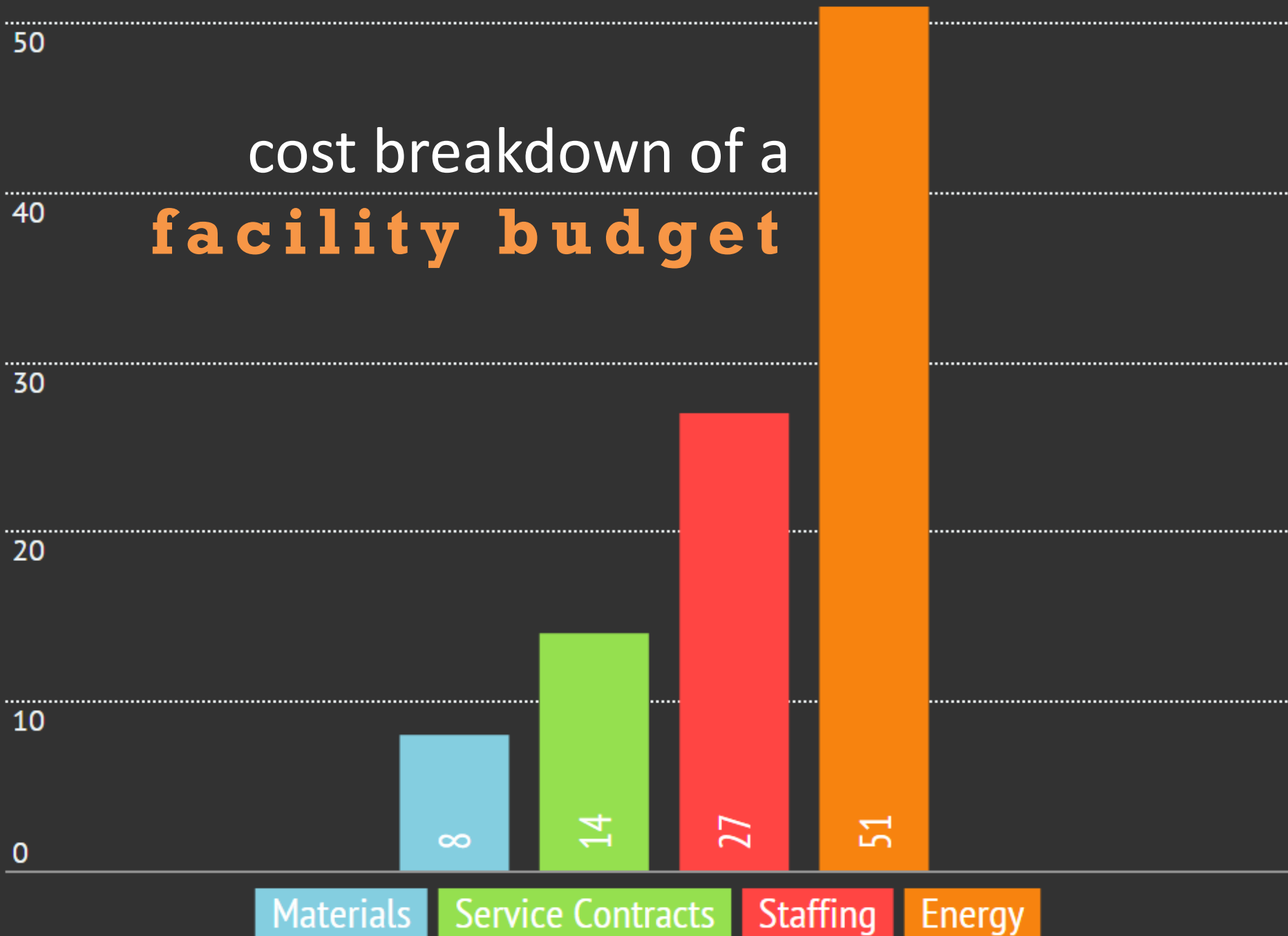


four pieces of
the pie:

materials
service contracts
staffing
energy



cost breakdown of a **facility budget**



what can we **impact?**



the
answer
is
energy



retro-commissioning: optimizing the performance of energy systems



Daily Measurement and Verification Scorecard

St. Vincent's Hospital - Clay County, FL

Monday, March 31, 2014

M&V Period Start 12/11/2013

Daily Weather Data

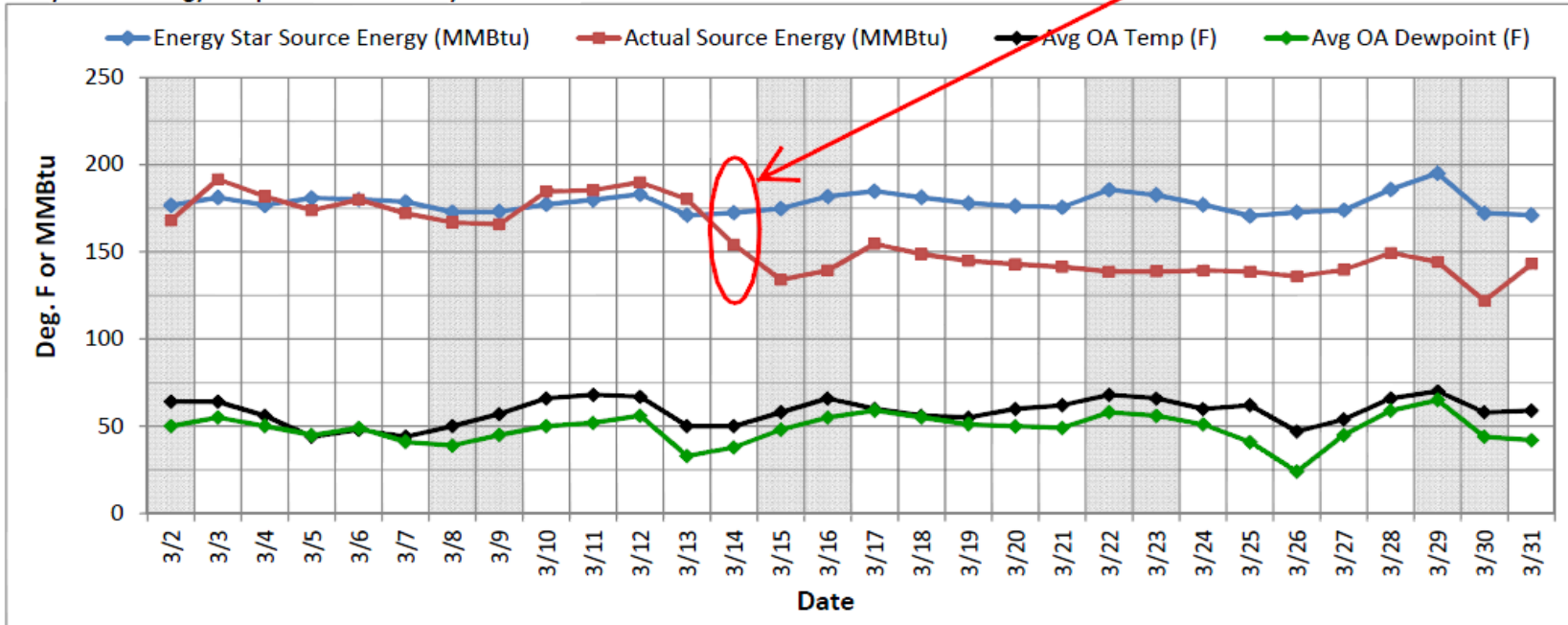
Parameter	Units	Low	Average	High
Outside Air Dry Bulb Temperature	F	41	59	77
Outside Air Dewpoint Temperature	F	32	42	50

Daily Energy Data

Parameter	Units	Energy Star Baseline	Actual	Difference
Daily Electricity Consumption	kWh	13,267	11,681	-12%
Daily Natural Gas Consumption	MMBtu	27.5	17.0	-38%
Daily Source Energy Consumption	MMBtu	171	143	-16%
Month to Date Avg. Source Energy Consumption	MMBtu	178	157	-12%
M&V Period Avg. Source Energy Consumption	MMBtu	179	178	-1%

BAS Programming Changes

Daily Source Energy Comparison - Last 30 Days



implementation effects

quick show of hands





... and did you see savings
from this effort?

what about

now




who
wants
to

pay
again?!



pieced together
approach



A magnifying glass with a black handle and a silver-colored rim is positioned on a dark asphalt road. The lens is resting on a white painted line on the road. The background is a blurred view of a road stretching into the distance under a bright sky. A semi-transparent teal banner is overlaid across the middle of the image, containing text.

strategic energy plan:
comprehensive long range plan to
upgrade energy systems over 30-40 years

shortcuts and ad hoc certifications



A close-up photograph of a person's arm and hand gripping a barbell. The person is wearing a black sleeveless shirt, black shorts, a black weightlifting belt, and a white wristband with blue and yellow stripes. The background is a blurred gym setting with other people and equipment. The text "effective operator training" is overlaid on the right side of the image.

effective
operator
training



five **simple** steps

1. pre-training assessment
2. curriculum development
3. e-learning programs
4. classroom and field instruction
5. exit exam to verify retention



data
management





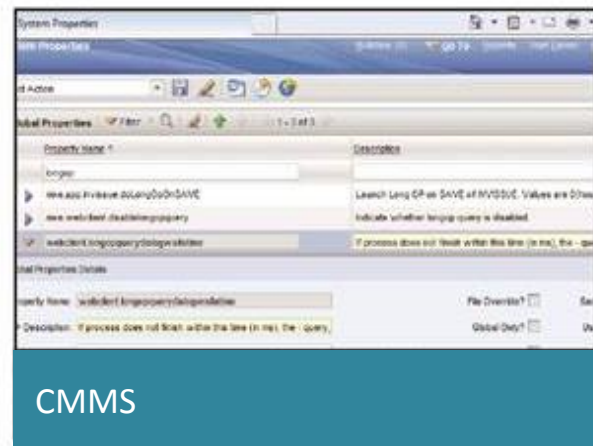
building information modeling



people



geographic information system



CMMS

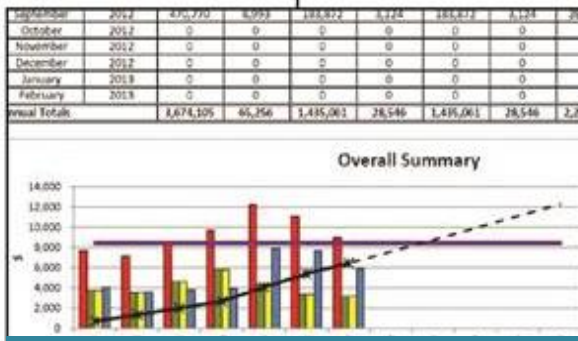


RFID tags

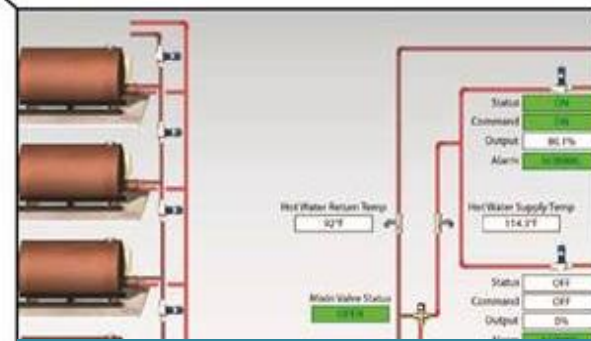
FM dashboard



computer aided facility management



energy management system



building automation system

Daily Measurement & Verification Scorecard - Page 1

Hospital Name	
Address Line 1	
Current Month:	June

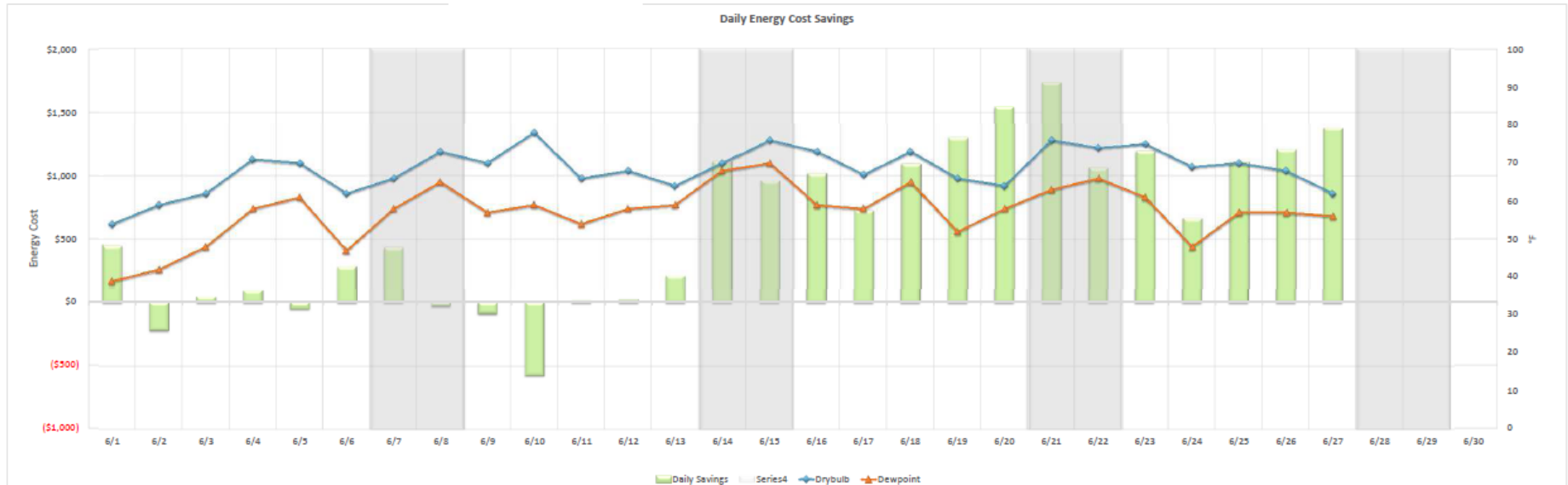
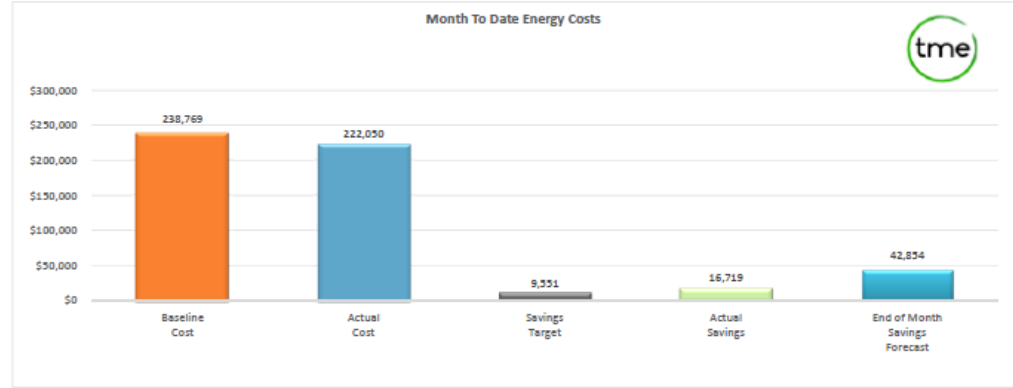
Weather Summary	
Avg Drybulb Temperature	68.4
Avg Dewpoint Temperature	57.1

Current Month Use Summary

Item	Units	Baseline Use	Actual Use	Savings Target	Actual Savings	Reduction %
Elec DTE 000083006	kWh	2,529,930	2,353,215	101,197	176,715	7.0
NG 14344-957	kcf	7,539	7,005	302	534	7.1
Total Energy Use	kBtu	15,888,629	14,771,482	635,545	1,117,147	7.0

Current Month Cost Summary

Item	Units	Baseline Cost	Actual Cost	Savings Target	Actual Savings	Reduction %
Elec DTE 000083006	\$	194,834	181,225	7,793	13,609	7.0
NG 14344-957	\$	43,936	40,825	1,757	3,110	7.1
Total Energy Costs	\$	238,769	222,050	9,551	16,719	7.0



Developed by TME, LLC

August 27, 2015

the M & V scorecard



hope for the **best**

remote support services



rewind & recap

Chet Howard is a hero.
resourcing balance
4 pieces of the benchmarking pie
sustainable energy savings
Challenge the status quo.

