ENVINITY
BUILDING ENERGY SOLUTIONS

EXISTING BUILDING COMMISSIONING

PROJECT HIGHLIGHTS:

Facility Size:	506,000 SF, 364 beds
Project Duration:	6/20/2014 -9/15/2014
Avoided Cost:	$425,000
Annual Savings:	$318,000/year
Project Cost:	$140,000
Utility Rebate:	$70,000
Simple Payback:	<3 months

"Envinity's hands-on approach is a refreshing take on the role of the consulting engineer,.They have a unique talent for revealing the root cause of trouble calls, generating quick paybacks, and making our maintenance team an integral part of the solution."

Dan Robison,
Director of Facilities Excela Health

Excela Health

EXCELA WESTMORELAND

EXISTING BUILDING COMMISSIONING

In 2013, Westmoreland Hospital was using more energy per square foot than its peers. Excela's facilities team knew they had energy savings potential, but they also had limited funds earmarked for capital improvements.

A Spring 2014 renovation project added new load to the chilled water system, and operators experienced higher than normal cooling tower temperatures. Hospital staff quickly began to price out replacement towers. Dan Robison, Excela's Director of Facilities, asked Envinity to take a closer look at the root cause of existing cooling tower limitations, consider alternatives to replacement, and mitigate the facility's high energy usage.

Through a targeted existing building commissioning effort (EBCx), Envinity worked with Excela's technicians to understand pinch points, identify common maintenance issues, and generate ideas for improvement. After analyzing the data, Envinity guided small adjustments and repairs to free up chilled water capacity, avoid tower replacement, and save 18% on the annual campus-wide utility budget. Specific improvements were as follows:

- **RESOLVED** heating and cooling conflicts at 3 major air handlers
- **DEVELOPED** operating rules for the main chiller plant and a satellite plant
- **REDUCED** chilled water phantom load and increased plant capacity by 15%
- **REPAIRED** leaking control valves and inoperable dampers
- **IMPROVED** modulation of VAV boxes

A payback of less than a year before utility rebates allowed Excela to shift present-year operating budget dollars to pay for capital improvements and produce a net fiscal year budget reduction.

Bypassing chiller replacement avoided $425,000 in capital costs. Energy savings strategies helped Excela to save $318,000 relative to the baseline year.

As seen on the next page, there are disparate reductions between energy and cost for both utilities. Electricity usage decreased by 7%, while electricity cost decreased by only 2%. The overall $/ kWh increased by nearly 20% between the base year and current year. The fact that Excela was still able to reduce costs despite this increase speaks to the amount of energy savings. Gas usage decreased by 18%, while gas cost decreased by 43% The $/MCF decreased by 50% in December of 2015, which explains the high cost savings.

As a result of the EBCx, Westmoreland Hospital saved a total 13% on energy consumption, and 18% on energy costs. Ongoing retro-commissioning at the facility will yield increased savings over time.

EXISTING BUILDING COMMISSIONING
MEASUREMENT AND VERIFICATION REPORT:

Total Project Cost:	$140,000
Rebate Received:	$70,000
Year 1 savings:	$158,000
Year 2 Savings:	$318,000

Weather Normalized Electricity Usage- Current Year vs. Baseline

Month	kWh 2013-2014	kWh 2015-2016	Savings	% Reduction
Sep	1,576,589	1,471,659	104,930	7%
Oct	1,407,429	1,302,121	105,308	7%
Nov	1,363,800	1,258,394	105,406	8%
Dec	1,354,615	1,249,188	105,426	8%
Jan	1,354,615	1,249,188	105,426	8%
Feb	1,353,849	1,248,421	105,428	8%
Mar	1,365,331	1,259,928	105,402	8%
Apr	1,408,195	1,302,888	105,307	7%
May	1,510,762	1,405,685	105,077	7%
Jun	1,682,219	1,577,524	104,694	6%
Jul	1,782,490	1,678,020	104,470	6%
Aug	1,751,873	1,647,334	104,539	6%
TOTAL	**17,911,766**	**16,650,351**	**1,261,415**	**7%**

Electricity Cost- Current Year vs. Baseline

Month	Cost 2013-2014	Cost 2015-2016	Savings	% Reduction
Sep	$96,690	$97,588	$(898)	-1%
Oct	$91,016	$86,061	$4,955	5%
Nov	$85,615	$85,823	$(209)	0%
Dec	$86,471	$74,495	$11,976	14%
Jan	$79,945	$86,799	$(6,853)	-9%
Feb	$74,718	$91,292	$(16,573)	-22%
Mar	$85,539	$85,353	$186	0%
Apr	$83,285	$89,794	$(6,509)	-8%
May	$107,497	$83,472	$24,025	22%
Jun	$108,875	$94,972	$13,904	13%
Jul	$96,297	$99,287	$(2,990)	-3%
Aug	$94,136	$98,101	$(3,965)	-4%
TOTAL	**$1,090,085**	**$1,073,037**	**$17,048**	**2%**

Weather Normalized Gas Usage- Current Year vs. Baseline

Month	MCF 2013-2014	MCF 2015-2016	Savings	% Reduction
Sep	4383	3858	524	12%
Oct	5586	4651	935	17%
Nov	6650	5353	1298	20%
Dec	8051	6275	1776	22%
Jan	8411	6512	1898	23%
Feb	7784	6100	1685	22%
Mar	7101	5650	1452	20%
Apr	5694	4722	972	17%
May	4762	4108	654	14%
Jun	4145	3702	443	11%
Jul	4041	3633	408	10%
Aug	4058	3645	414	10%
TOTAL	**70,667**	**58,210**	**12,457**	**18%**

Gas Cost- Current Year vs. Baseline

Month	Cost 2013-2014	Cost 2015-2016	Savings	% Reduction
Sep	$52,144	$44,694	$7,451	14%
Oct	$54,527	$49,397	$5,130	9%
Nov	$60,421	$52,783	$7,639	13%
Dec	$78,470	$48,648	$29,822	38%
Jan	$79,862	$39,408	$40,453	51%
Feb	$67,355	$34,382	$32,973	49%
Mar	$68,253	$28,291	$39,963	59%
Apr	$56,220	$25,697	$30,524	54%
May	$55,018	$21,450	$33,568	61%
Jun	$49,662	$20,428	$29,234	59%
Jul	$43,834	$20,235	$23,599	54%
Aug	$40,576	$19,360	$21,216	52%
TOTAL	**$706,342**	**$404,771**	**$301,571**	**43%**

Total Energy Usage Reduction: 12.8%

Total Cost Reduction: 18%

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