OPTIMUM ENERGY

HEALTHCARE

CASE STUDY / CENTRAL PLANT OPTIMIZATION

Penn State Health Milton S. Hershey Medical Center

OptimumLOOP® delivers operational efficiencies and beats expected cost savings at a major academic medical center.

LOCATION	FACILITY	ENGAGEMENT	SOLUTIONS
Hershey, Pennsylvania	Three Chiller Plants (14,200 Tons Total)	Continuous Optimization	OptimumLOOP® + OptiCx®

ANNUAL SAVINGS

$300K

per year

Annual operations cost savings, exceeding the $261,000 projection

ENERGY SAVINGS

4.16

GWh per year

Annual electrical energy savings, 1 GWh more than projected

CO2 REDUCTION

3,220

metric tons/year

Annual carbon emissions reduction across three chiller plants

Overview

Since 2009, Penn State Health Milton S. Hershey Medical Center has been implementing a multiphase energy efficiency program. Six years into the program, Kevin Kanoff, the center's campus energy engineer, knew the chiller plants were efficient, but believed they could be improved. Johnson Controls brought in Optimum Energy to perform an engineering site assessment, which proved him correct.

After Optimum Energy completed the installation of its OptiCx® platform and OptimumLOOP® in June 2016, the center's 12 chillers were running at peak efficiency, saving electricity costs, using less water, and reducing carbon emissions. Annual energy savings were almost 4.2 GWh/year, roughly 1 GWh more than expected.

The Challenge: Optimize a Large, Efficient Plant Serving 2.6M Sq Ft and 1.2M Patients Annually

The campus spans 2.6 million sq ft across two hospitals, five institutes, and Penn State College of Medicine, serving 1.2 million patients and 10,000 employees via three chiller plants with 14,200 tons of cooling. Prior efficiency programs had already cut campus energy intensity by 20 percent, and Kanoff needed further gains from plants that were already considered well-run.

The Solution: Holistic Real-Time Optimization Across Three Plants With Relational Control

Optimum Energy's OptimumLOOP® relational control optimizes the plant holistically, automatically staging all chillers and the chilled-water storage tank as an integrated whole, choosing the best option based on equipment efficiency and demand for cooling.

Johnson Controls paved the way by installing variable-speed drives on pumps and fans, adding power meters and sensors, and fully automating the plant. Optimum Energy worked closely with the center's IT staff to ensure all data going to OptiCx® would be absolutely secure.

- Central Plant: 8 chillers + 1.4M gallon chilled-water storage tank as integrated whole
- 2 satellite plants (2 chillers each) included in campus-wide optimization
- OptiCx® platform for continuous monitoring with full data security

Results

OptimumLOOP® reduced the center's energy intensity by 4%, bringing the campuswide reduction to 24% over 2009 levels. Verified results showed 4.16 GWh saved annually, $300,000 in year-one savings, and a one-time $416,000 utility incentive.

DETAILS

Penn State Health Milton S. Hershey Medical Center

A major academic medical center in Hershey, PA, with 2.6 million sq ft of conditioned space across two hospitals, five institutes, and Penn State College of Medicine, serving 1.2M+ patients annually.

PLANT DETAILS

- Central Plant: 8 chillers + 1.4M gallon chilled-water storage tank
- 2 satellite plants, 2 chillers each
- 14,200 tons total capacity
- 24.8 million ton-hours annually
- Variable-speed drives on all pumps and fans
- OptimumLOOP® + OptiCx® across all three plants

PERFORMANCE RESULTS (ANNUAL)

Energy Savings	4.16 GWh/yr (vs. 3.4 GWh projected)
CO2 Reduction	3,220 tons/yr
Water Savings	1.44M+ gallons/yr
Campus Energy Intensity Reduction	4% (24% since 2009)

FINANCIAL RESULTS

Annual Operations Savings	$300,000
Utility Incentive	$416,000 (one-time)
ROI	4.3 years

> *"Through this project, we are more aware of energy efficiency and savings. It's helping the team see the bigger picture, we're not just providing chilled water, but we're doing it as efficiently as possible and, ultimately, saving money."*
>
> — Kevin Kanoff, Campus Energy Engineer, Penn State Health Hershey Medical Center

Annual savings reflect verified measurement-and-verification results from the electric utility's independent evaluator following OptimumLOOP® deployment in June 2016. The $416,000 utility incentive is a one-time payment from the facility's electric utility.