

# BUILDING PERFORMANCE

## CASE STUDY #3

### BUILDING INFORMATION

Year Built: 2000

Size: 88K sq. ft.

Mixed use – office (70%),  
laboratory/research (30%)

Special areas: Data Center,  
Cafeteria

Located: Billerica, MA

This building exhibited no outward symptoms of hidden issues, and was considered to be a comfortable building by occupants and non-problematic by the facilities staff.

### PERFORMANCE OPTIMIZATION – METHODS AND FINDINGS

An operational benchmark was established based on original design drawings, staff interviews, and electric and gas utility data analysis. Building performance was measured in many areas including temperature (indoor and outdoor) and energy use (continuous load data) for many pieces of equipment. The control strategy was studied in depth and compared to both design specifications and to best practices.

Many issues were uncovered affecting building energy performance. Control sequences were found to be deficient in many instances, and there were many overrides in place that affected much of the equipment operation during off-hours. Settings were changed affecting much of the HVAC system including rooftop units, economizer, chillers, pumps, and hot and cold water temperature schedules. Design specifications were found to be incorrect from an energy standpoint, and changes could safely be made to improve performance. Issues were noted in laboratory exhausts causing pressurization imbalances that might provide a significant future opportunity, but were not pursued in the initial study.

### RESULTS

Cost to perform optimization study and issue findings:	\$17,000
Cost to correct all issues noted (except laboratory):	~\$5,000
Total Project Cost:	\$22,000
Energy Cost Savings Per Year:	\$30,000
Simple Payback:	<9 mos.