Methodist University Hospital Shorb Tower Operating Room Optimization Case Study

OPTIMUM ENERGY

Proving What's Possible: Optimizing Critical Healthcare Environments Without Compromise

Methodist Le Bonheur Healthcare

Memphis, TN

Healthcare
Industry

New Partnership
Years with Optimum

$148,000
Project Cost

$80,000
Year 1 Utility Savings

Executive Summary

When Methodist University Hospital's new Shorb Tower opened in 2021, it featured state-of-the-art hardware, advanced controls, and progressive design—yet it was never optimized or commissioned to operate at maximum efficiency. The hospital partnered with Optimum Energy to optimize 18 operating rooms, four air handling units, and one ventilation air handler in this nine-story, 450,000-square-foot facility. The project was completed ahead of schedule without a single disruption to patient care or surgical operations, delivering $80,000 in year-one utility savings on a $148,000 project investment.

Project Details & Scope

Facility: Methodist University Hospital Shorb Tower, Memphis, TN

Building Size: 450,000 square feet, 9-story patient tower

Completion Year: 2020 (building); 2025 (optimization project)

Operating Rooms: 18 rooms optimized

Air Handling Units: 4 AHUs + 1 ventilation AHU

Control System: Johnson Controls Metasys BAS

HVAC Configuration: Single duct variable volume AHUs with VAV terminal units and hot water reheat

Project Investment: $148,000

Year 1 Utility Savings: $80,000

Simple Payback: 1.85 years

Timeline: Completed ahead of schedule

Patient Care Disruptions: Zero

The Core Challenge: 24/7 Occupied Mode Operation

Methodist University Hospital faced a significant energy efficiency problem in their newly opened Shorb Tower: all 18 operating rooms were programmed to remain in "occupied" mode 24 hours a day, 7 days a week. This approach consumed unnecessary energy and reduced system flexibility despite the facility having all the necessary hardware and control capabilities to support occupied and unoccupied sequencing.

The specific issues included:

- **Constant Ventilation Rates:** Operating rooms maintained full airflow and temperature control even when vacant, wasting substantial energy during non-surgical hours
- **Simultaneous Heating and Cooling:** The operating rooms and surrounding areas experienced considerable simultaneous heating and cooling—a major red flag indicating control system inefficiencies
- **Unrealized Infrastructure Potential:** The hospital already possessed state-of-the-art hardware, advanced controls, and progressive design, but these systems had never been commissioned to operate at maximum efficiency

Key stakeholder perspective: Steven Atkins, Director of Facilities at Methodist University Hospital, identified the constant state of operations in his systems that signaled deeper operational inefficiencies across the facility.

Financial, Operational & Strategic Impacts

The 24/7 occupied mode operation created multiple cascading problems that affected Methodist University Hospital's bottom line and operational effectiveness:

Financial Impact

- **Wasted Energy Costs:** Valuable savings were left on the table from day one of the tower's operation
- **Unnecessary Utility Expenditures:** Running full HVAC loads 24/7 in critical spaces that were only utilized during scheduled surgical hours represented significant ongoing operational waste
- **Missed ROI on Capital Investment:** The $275 million campus transformation project included sophisticated building systems that weren't delivering their promised efficiency benefits

Operational Challenges

- **Reduced System Flexibility:** Constant occupied-mode operation reduced the HVAC system's ability to respond dynamically to actual facility needs
- **Maintenance Burden:** Continuous operation of air handling equipment accelerated wear and increased maintenance requirements
- **Suboptimal Control Sequences:** The Johnson Controls BAS (Building Automation System) was capable of sophisticated control strategies but wasn't programmed to leverage them

Environmental and Sustainability Goals

As part of Methodist Le Bonheur Healthcare's broader sustainability initiatives, the inefficient operation of this flagship facility undermined environmental responsibility commitments and limited the organization's ability to demonstrate leadership in healthcare energy management.

Evaluation of Implementation Strategies

Methodist University Hospital and Optimum Energy evaluated several approaches before landing on the final implementation strategy:

Option A: Status Quo (Do Nothing)

- **Rationale:** Maintain 24/7 occupied mode to eliminate any perceived risk to patient care
- **Drawback:** Continue wasting $80,000+ annually in utility costs; fail to realize the potential of existing infrastructure

Option B: Optimum Energy's Collaborative Retro-Commissioning Approach *(Selected Solution)*

- **Rationale:** Leverage existing hardware and control capabilities through software reprogramming and custom sequence development; use staged pilot testing to prove safety before full rollout; maintain close collaboration with surgical staff and facilities team
- **Benefits:**
  - Low capital investment ($148,000 project cost)
  - Fast payback (under 2 years based on $80,000 annual savings)
  - Zero disruption to patient care
  - Unlocked functionality already paid for in original construction
  - Comprehensive scope including space validation, terminal unit reprogramming, air handler reprogramming, pressure controls, and occupied/unoccupied control strategies

"From day one, we knew something wasn't right—simultaneous heating and cooling in a brand-new facility was a big red flag. Optimum Energy didn't just identify the problem—they partnered with us to solve it in a way that respected our clinical environment. Their team proved that efficiency and patient safety can go hand in hand."

— Steven Atkins, Director of Facilities, Methodist University Hospital

The Methodist University Hospital Shorb Tower operating room optimization project demonstrates what's possible when healthcare organizations partner with specialized energy service providers to unlock the full potential of existing infrastructure. By addressing 24/7 occupied-mode inefficiencies through a collaborative, risk-mitigated approach, Methodist achieved meaningful cost savings and improved operational flexibility—without compromising patient safety.

Completed two months ahead of schedule with zero disruption to care, the $148,000 project now delivers $80,000 in annual savings and establishes a strong foundation for continued campus-wide optimization, raising the bar for healthcare energy management.