

THE FACILITY FILES

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Building Program Annual Operating Budget For A High-Performance Patient Room

This month's column is a continuation of July's, with a focus on the building program's initiative to create and benchmark high-performance patient rooms to the more traditional patient room operation and maintenance. For a building program to be successful and sustainable, it is imperative that the program include an operating budget as well as a construction budget. Fifteen to 20% of the cost of a building is first cost, and that remaining 80% or more of the cost to own a building is in the operation of the building over its life. The following is a sample of what the HVAC annual operating budget add-on to the current hospital operating budget along the infection control beta-test site data collection reporting could look like at the conceptual phase of four new hybrid patient rooms on a high-performance patient floor infection control (IC) corridor.

When designing a renovated patient care space within a hospital facility the design engineer should refresh her memory relative to this Basis of Design by first going to *ASHRAE Handbook 2015 Applications* and read chapters 8 (health care facilities), chapters 36 through 43 relative to building operation and management, chapter 59 (HVAC security), and chapter 61 (codes and standards). In addition, the design engineer should take into account ASHRAE Standard 170-2013, Ventilation of Health Care Facilities. For this project, the design team is also planning to follow the pharmaceutical industry's design guidelines for clean room design.

With all these design guidelines from ASHRAE, the engineer should then meet with the hospital's facility management/maintenance manager for the hospital's computerized maintenance management system responsible for patient room custodial work orders and HVAC equipment preventive maintenance work orders, as well as the IC manager to complete this conceptual-phase O&M budget. Because these patient rooms are an extension of the hybrid corridor project beta-test site to improve infection control, the HVAC engineer will need to budget her time to work closely with both facility management, IC department, housekeeping, IC tablet computer programmer, and the third-party IC commissioning consultant and TAB consultant to assist in developing the first year's operating budget to monitor, measure, and report on the IC project success. The budget estimate is reflected below and will be an additional operating cost to collect and analyze the data throughout the first year of occupancy.

Unlike commercial buildings, hospitals are built for 30+ years of sustainability, so an annual operating budget is critical to the long-term success and investment of each building program project. For this month's Facility Files and based on the Back2Basics test, the operating budget will focus solely on the 16-patient room central HVAC system, associated exhaust system, energy recovery system, and the associated semi-annual air balancing verification based on the IC computer program.

It should be noted that the CDC in a 2002 report estimated the number of hospital acquired infections (HAIs) in U.S. hospitals, adjusted to include federal facilities, at approximately 1.7 million. An integral part of a hospital's HVAC O&M department operating budget should include the IC policy and procedure compliance when performing their work.

The following is a sample of what the HVAC annual operating budget for a beta-test site renovation of the patient rooms HVAC system could look like at the conceptual phase of a building program project.

Administrative (Prorated for the patient room)		
SALARIES, WAGES & BENEFITS (in fee)		
• Employee salaries & wages	(1) O&M managers	\$ 97,300
• Taxes, health care, etc.	(1) Maintenance tech	\$ 25,000
• Retirement & benefits		\$ 2,500
OUTSOURCED OPERATION & MAINTENANCE		
• Project management		\$ 0
• Vendor salaries & wages		\$ 0
• Supplies		\$ 0
SERVICE CONTRACTS		
• Refrigeration equipment	Not applicable for this project	\$ 0
• Heating equipment	Not applicable for this project	\$ 0
• Filters replacement	Replace twice a year (AHU only)	\$ 3,000
• Emergency generator	None within building	\$ 0
CONSULTANTS		
• IC computer programmer		\$ 5,000
• IC commissioning physician		\$ 10,000
• TAB technician		\$ 5,000
INFORMATION TECHNOLOGY		
• CMMS system PM work orders		\$ 1,000
• Handheld devices	Not for this space	\$ 0
EXPENSES		
NOT APPLICABLE FOR THIS PROJECT		
UTILITIES (\$8.50/sq ft)		
• Electricity		\$ 21,000
• Chilled water		\$ 21,000
• Hot water/gas		\$ 12,000
TOTAL ANNUAL OPERATING COST:		\$ 202,800
TOTAL ANNUAL OPERATING COST/Sq Ft		\$ 25.30