

# MERCY HOSPITAL— IOWA CITY

## FACILITY BACKGROUND

Mercy Hospital in Iowa City started out in 1873 as a small 20-bed hospital. Since then, Mercy has grown tremendously and now has 234 licensed patient beds and employs more than 1,000 staff. Mercy Iowa City has branched out to provide services in other areas of eastern Iowa, but the main in-patient building remains the heart of the hospital.



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### PROJECT BACKGROUND

An Environmental Management System (EMS) is already in place to monitor and control several aspects of energy use around the hospital, such as HVAC and outdoor lighting. Mercy Iowa City is no stranger to green practices and uses them frequently. Many of the standard pollution prevention practices from the IDNR have already been researched and implemented in the hospital.

### INCENTIVES TO CHANGE

Despite excellent practices, Mercy’s natural gas and electric bills each exceed \$600,000 per year. Two new boilers will be installed by October 2008 to replace an older, inefficient boiler. The new boilers should alleviate much of the strain on the natural gas usage, though options to reduce the need for steam are also sought. To reduce electrical consumption, lighting was identified as a key area for research and improvement.

## RESULTS

**Lighting Upgrades:** According to the U.S. Energy Information Administration, healthcare facilities use about 44 percent of their electricity for lighting. While efficient T8 fluorescent lights are the most common type of fixture in the hospital, hundreds of T12 fluorescent, incandescent, halogen, and sodium vapor lamps can be upgraded for significant cost savings and improved lighting quality.

**Lighting Management:** The main contributor to the large amount of lighting use is not inefficient fixtures, but lights that are continuously lit. While some lights must be on continuously due to code, the majority can be managed through occupancy sensors or policies for when lighting should be turned off.

**Standby Energy:** Numerous equipment from office hardware such as computers, printers and fax machines, to vending machines use significant amounts of electricity even when not in use. Electrical management hardware, software and new policies can reduce this unnecessary use of electricity.

**9V Rechargeable Batteries:** Over 5,700 alkaline 9V batteries are used and thrown away every year, mainly

from transmitters that monitor heart conditions. High capacity lithium-ion rechargeable batteries can replace the alkaline 9V battery one-for-one, with a payback of less than four months.

**Hand Dryers:** Mercy currently uses 32 tons of single-fold paper towels every year. New high-airflow hand dryers have a similar drying time to paper towels, while providing better germicidal conditions and enormous cost savings due to decreased material, waste and labor. Industrial roll paper towels also provide substantial savings over single-fold paper towels and allow users to choose between paper and a hand dryer.

**Mechanical Insulation:** Many pipe fittings, controls, and attachments have little or no insulation. More efficient insulation, new manufacturing techniques, and sky-high gas prices make insulation very cost-effective. Most of the insulation would have a payback of less than one year, but would provide benefits for decades.

**Peak Reduction/Ice Chiller:** Over 30 percent of Mercy’s electricity bill is generated from peak charges. Cutting or moving energy usage during peak times will cut costs as well as produce cleaner and more efficient energy. Replacing two older chillers with two new chillers and an ice storage system can alleviate the expensive peaks during the summer by as much as 20 percent. The replacement chillers can also incorporate new technologies such as an integrated VFD and no-oil operation for much more efficient starting, partial loads, and full loads.



| Air Pollutants Diverted in Tons |                       | Green House Gases Diverted in Tons (CO2 Equivalent) |                       |
|---------------------------------|-----------------------|---|-----------------------|
|                                 | Total for all sectors |   | Total for all sectors |
| SO2                             | 3.33                  | CO2   | 613.9                 |
| CO                              | 0.341                 | CH4   | 23.12                 |
| NOX                             | 1.58                  | N2O   | 0.308                 |
| VOC                             | 0.0549                | CFCS  | 7.564                 |
| PM                              | 0.0824                |   |                       |

| PROJECT                    | ANNUAL COST SAVINGS | ENVIRONMENTAL RESULTS     | STATUS      |
|----------------------------|---------------------|---------------------------|-------------|
| LIGHTING UPGRADES          | \$28,502            | 399,660 KWH               | IN PROGRESS |
| LIGHTING MANAGEMENT        | \$7,195             | 104,000 KWH               | IN PROGRESS |
| STANDBY ENERGY             | \$5,641             | 109,000 KWH               | IN PROGRESS |
| 9V RECHARGEABLE BATTERIES  | \$3,424             | 0.32 TONS DIVERTED        | TESTING     |
| HAND DRYERS                | \$10,567            | 11 TONS DIVERTED          | IN PROGRESS |
| MECHANICAL INSULATION      | \$6,163             | 7,627 THERMS              | RECOMMENDED |
| PEAK REDUCTION/ICE CHILLER | \$71,681            | NOT DIRECTLY QUANTIFIABLE | RECOMMENDED |