

Boston Medical Center: A Commitment to Energy Conservation & Efficiency

BMC by the numbers

280,000
MEMBER
HEALTH
PLAN

MORE THAN
5,000
EMPLOYEES

NETWORK OF
15
COMMUNITY
HEALTH
CENTERS

496 BED
TEACHING
HOSPITAL



LARGEST
PROVIDER OF
TRAUMA AND
EMERGENCY
SERVICES IN
NEW ENGLAND

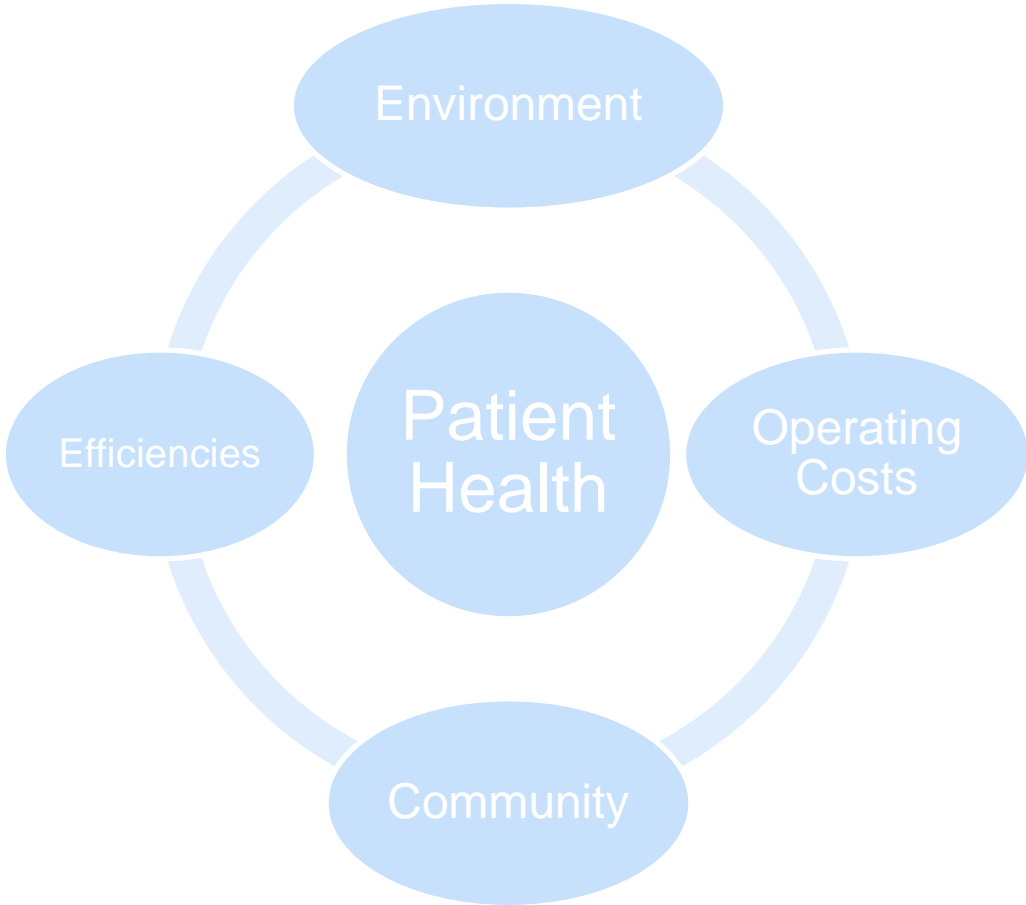
860,000
OUTPATIENT
VISITS
PER YEAR

PRIMARY
TEACHING
HOSPITAL OF
B.U. SCHOOL
OF MEDICINE

NEW
ENGLAND'S
LARGEST
SAFETY-NET
HOSPITAL



Guiding Principles



Health Care Industry Responsibility

- **It is the right thing to do**
 - We are in the business of keeping people healthy and emissions/pollutants can be a deterrent to people's health
- **Hospitals are huge energy users because they operate 24/7 and use energy to power research, equipment (etc)**
 - Lots of opportunity for energy rebates
 - According to an EnergyStar report - every \$1 hospital saves in energy = \$20 in revenue
- **We have an opportunity to make a difference**
 - Better supply chain management practices
 - Smart systems and processes – “There is harm in the more.”
 - In an effort to protect patients from infection we have created a lot of waste (i.e. device packaging and cleaning)
 - Care closer to home resulting in reduction in travel/parking
- **Role for medical device industry to create products with less power needs similar to what happened with consumer industry with appliances like refrigerators and washing machines.**
 - Example - dialysis machines use lots of power

Why Energy Conservation & Efficiency at BMC?

- Energy competes with other hospital priorities
- Every dollar a nonprofit hospital saves on energy has the equivalent impact on operating margin as increasing revenues by \$20 (EPA Energy Star program)
- We have an engaged workforce committed to keeping people healthy and doing no harm and we have an opportunity to harness their interest to achieve our collective goals.

BMC's Energy Saving Milestones

- BMC combined 2012+2013 Energy Savings Goal = 4,500,000 kilowatt hours
- BMC Planned 2012+2013 Energy Savings = 8,391,000 kilowatt hours (186%)
- BMC 2013+2014 Annual Operating Savings = **\$2,056,069**
- 2014 Planned Energy Savings = 3,000,000 KWH
- 2014 Planned Annual Operating Savings = \$842,268
- By the end of 2014 BMC will have saved enough energy to power the Menino building for one year OR provide energy to 465 average homes for 1 year.
- BMC's 2013 & 2014 energy savings would equate to a **\$41,121,380 Revenue Increase**

What BMC is Doing

- Green Ribbon Commission
- Utility Management
- Campus Redesign
- Resiliency Planning
- Evaluating New Technologies and Processes

Green Ribbon Commission

- **Three Sectors**
 - Healthcare (co-chairs are BMC President & CEO Kate Walsh & Partners HealthCare President & CEO Gary Gottlieb)
 - Higher Education
 - Commercial & Industrial
- **Purpose**
 - Facilitate the Reduction of Greenhouse Gas Emissions by
 - Recruiting Institutions to commit to the Pacesetter Agreement
 - Sharing Data & Best Practices
 - Facilitate cooperative efforts between Utilities & Institutions
- **Goal**
 - Reduce Greenhouse Gas Emissions by 45% by 2020

Utility Management

- In 2012 BMC signed a three year Memorandum of Agreement with NStar to reduce energy use.
- Through targeted conservation efforts throughout the campus such as reconfiguring the Chilled Water Loop, optimizing the Power Plant, Lighting retrofits in DOB Garage and Moakley and the retro-commissioning of our HVAC systems BMC was able to more than double the goal set for 2012.
- BMC's conservation efforts in 2012 resulted in a \$988,745 rebate from NStar, one of the biggest rebates they have issued.
- BMC used a portion of the rebate to invest in reaching our 2013 goals and is on track to exceed the 2013 goal and should receive between \$650-700k in rebates for 2013.
- Our 2013 energy conservation measures included Installing Energy Efficient Controls in Menino and Newton, upgrades to systems in Menino and new air duct risers in Yawkey.

Campus Redesign

Campus Redesign is an important opportunity to institute new efficiencies and model energy alternatives that will simultaneously benefit our patients, our environment and our resiliency.

The redesign will include:

- **Selecting efficient equipment installed for maximum benefit**
- **Design and specify building management system to insure:**
 - Zone occupancy layouts
 - System performance monitoring and alarming
 - Ease of maintenance
- **Patient Room Design**
 - Integrating new clinical operations tools
 - Designing rooms for easy cleaning
 - Designed to minimize noise

The campus redesign will also reduce our energy carbon footprint by 14% and will eliminate 3,432 truck deliveries and 10,860 transfers annually.

The energy efficiencies gained through campus redesign is projected to reduce annual energy costs by approximately \$2.3M.

Resiliency/Disaster Planning

- All hospitals have a responsibility to focus on resiliency and disaster planning and as the region's major trauma provider BMC takes this responsibility very seriously.
- Campus redesign offers a unique opportunity to provide a robust and efficient operation in good times as well as during disaster events.
- Our current disaster planning includes:
 - Diesel generators on each of the four buildings forming a grid that will be able to divert power, Radiological equipment cooling and other HVAC services to Menino as needed.
 - For long term power outages, with fuel truck access, the four building grid system will be able to supply additional equipment power beyond the conventional Critical Power needs.
 - To insure against local flooding of our campus electrical utility equipment we are planning to move it onto the Menino roof, high above any flood waters.

Evaluating New Initiatives & Processes

- **Co-Generation**
 - We are exploring the use of a gas fired Co-Generation plant to provide added heat and power during a disaster.
 - A Co-Generation plant would also be cleaner and a lower cost energy for BMC.
 - Because it uses natural gas as fuel it will be an additional backup to our rooftop grid system if we cannot receive fuel deliveries during a disaster.
 - One of the challenges we need to consider with a Co-Generation plant is BMC's physical footprint over several city blocks.
- **Develop Universal Carbon Accounting Tool for:**
 - Each food group and production methods
 - Cleaning Materials
 - Clinical & Surgical Supplies
 - Energy Use
- **Sustainable Healthy Food Program**
 - BMC has joined with the Northwest Atlantic Marine Alliance (NAMA) and Health Care WithoutHarm's (HCWH) Healthy Food in Healthcare Program to buy local seafood whenever possible.
 - Changing buying policies to include local seafood results in better economic return for fishermen, healthier regional food systems, more resilient coastal communities and has less impact on the marine ecosystem.