

## Energy in Healthcare Fact Sheet

### Accompaniment to Targeting 100 Research Study

May 12, 2010

#### Energy Usage and Carbon Output:

- Healthcare facilities consume four percent of the total energy consumed in the U.S., including all energy used by industry, transportation and buildings. *Energy Information Administration (EIA<sup>1</sup>)*
- Hospitals use 836 trillion BTUs of energy annually and have more than 2.5 times the energy intensity and carbon dioxide emissions of commercial office buildings, producing more than 30 pounds of CO<sub>2</sub> emissions per square foot. *U.S. Dept. of Energy (DOE<sup>2</sup>)*
- One average-sized U.S. hospital produces approximately 18,000 tons of carbon dioxide annually. (*Targeting 100*)
- Definition of Energy Use Index (EUI): Total amount of energy used by a building (electricity and natural gas) per square foot of floor area, measured on an annual basis to establish baseline energy use. The EUI value for a building is used in a similar manner as MPG is used to describe the efficiency of an automobile.
- Average Northwest hospital energy use or EUI, is 270 KBtu/sq.ft.yr. (Commercial Buildings Energy Consumption Survey - CBECS); “Targeting 100” effort aims to reduce energy use in Pacific Northwest hospitals to 100 KBtu/sq.ft.yr.
- As reference, an average office building in the Puget Sound region has an EUI of approximately 90 KBtu.sq.ft.yr. (CBECS). The highest performing new office buildings in Puget Sound have an EUI of less than 40 KBtu/sq.ft.yr. The highest performing office buildings being designed in Puget Sound today have modeled EUI’s of less than 25 KBtu/sq.ft.yr.
- From a sample of Northwest hospitals, approximately 50 percent of the energy used is for heating either water or space (*Targeting 100*).

#### Costs and Savings:

- Savings accrued by energy efficiency strategies are significant, especially when viewed as part of net operating income for a non-profit hospital.
  - For a hospital with a four percent net margin, it takes \$25 of gross revenue to generate \$1 of net operating income. That is, \$25 worth of services must be provided to yield \$1 of profit or net-operating income. (*Targeting 100*)
  - U.S. hospitals spend over \$5 billion annually on energy, often equaling 1 to 3 percent of a typical hospital’s operating budget or an estimated 15 percent of profits. (*DOE<sup>4</sup>*)
- In the U.S., the health sector’s use of electricity adds over \$600 million per year in direct health costs and over \$5 billion in indirect costs. *World Health Organization (WHO<sup>3</sup>)*
- The energy cost savings of the Targeting 100 options over a typical hospital is approximately \$1 million per year. The savings between a new code compliant hospital and the Targeting 100 hospital is approximately \$730,000 per year. (*Targeting 100*)
- Legacy Health is implementing a strategic energy resource plan that has the potential to save \$1.4 million to \$2 million annually.

- For an existing hospital no-and low-cost energy strategies can also yield substantial energy savings. Hospitals can expect between 10-20 percent energy cost reductions from tune-ups and improved operations. Most efficiency investments yield returns of 10 percent or more. (*Legacy Case Study*)

#### Targeting 100 Study Findings:

- Prototypical architectural schemes for newly constructed hospitals (based on BetterBricks initiative research in the Seattle market, from Targeting 100 project) were able to achieve more than a 60 percent reduction in energy use from typical operational examples.
- Using the prototype from above and calculating a whole building utility incentive, a high level of energy efficiency could be achieved for an overall premium of only 2 percent of the total project cost, meeting the 2030 Challenge for 2010. (*Targeting 100*)
- If utility incentives are not available, that figure could increase to 3 percent of up-front capital investment.
- Simple payback: With whole building utility incentives, the first cost investment could be recaptured in less than five years. Without utility incentives, cost investment could be recaptured in less than eight years. (*Targeting 100*)
- If one hospital adopts these strategies, this will save over 7,800 tons of carbon, which is equivalent to taking over 1300 passenger cars off the road or planting over 300,000 trees. This is compared to average operational hospitals in this climate today. (*Targeting 100*)

<sup>1</sup> EIA, 2006 Energy Information Administration (EIA), *Commercial Buildings Energy Consumption Survey (CBECS): Consumption and Expenditures Tables*. "Table C3A". US Department of Energy, 2006.

Architecture 2030. "The 2030 Challenge". [http://www.architecture2030.org/2030\\_challenge/index.html](http://www.architecture2030.org/2030_challenge/index.html).

CBECS 2006 estimates energy consumption of all healthcare buildings at 594 trillion Btu of 6,523 trillion Btu for all buildings, thus 9 percent of all buildings' energy use. Architecture 2030 estimates that buildings use 48 percent of all source energy in the U.S. with industry and transportation sharing the remaining energy. Therefore, healthcare uses 4 percent of all site energy in the U.S.

<sup>2</sup> <http://www.energy.gov/news2009/7363.htm>

<sup>3</sup> [http://www.who.int/globalchange/publications/climatefootprint\\_report.pdf](http://www.who.int/globalchange/publications/climatefootprint_report.pdf)

<sup>4</sup> <http://www.energy.gov/news2009/7363.htm>

#### Contact Information

Sonya Poland, Communications Director  
NBBJ  
206.223.5018  
[spoland@nbbj.com](mailto:spoland@nbbj.com)

Therese Lang, Senior PR Manager  
Coates Kokes for NEEA's BetterBricks Initiative  
503.214.1125  
[therese@coateskokes.com](mailto:therese@coateskokes.com)