

# **Wisconsin Health System's Energy Retrofit**

## **Program Proposal**

**Developed in support of Wisconsin's Office of Energy Independence**

**National Governor's Association Energy Retrofit Program**

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### **Problem Statement:**

It is estimated that buildings comprise approximately 35-40% of the energy consumption in the United States and are thus responsible for a correspondingly large portion of the nation's fossil fuel green house gas emissions as well as other emissions which have been linked to negative environmental and human health effects. The U.S. Department of Energy has estimated that nearly 8% of the nation's green house gas emissions are directly related to fossil fuel energy consumed by health system facilities. The D.O.E. has also concluded that hospitals are 2.5 times more energy intensive than similarly sized commercial office buildings and also account for approximately 5 billion dollars of annual cost in the United States. This reality is inconsistent with the mission of most health providers since fossil fuel emissions contribute to disease in the population and the associated energy costs are passed along to patients who already have difficulty affording healthcare. The number, size, and energy intensity of Wisconsin's healthcare facilities provides a unique opportunity to significantly reduce fossil fuel emissions and improve focus on energy conservation. Common barriers to implementing energy efficiency projects in Wisconsin healthcare facilities are as follows:

1. Hospitals and health systems typically spend less than 2% of their annual operating budget on energy and tend to focus on larger expenses
2. Most health care executives are not aware of the positive health effects or bottom line impact of improving their energy efficiency
3. Many health systems, especially smaller facilities, lack the technical support staff to identify energy conservation opportunities
4. Many health care facility managers are not equipped to properly justify or gain priority for energy efficiency projects versus other needed projects

5. The vast majority of Wisconsin's hospitals are not-for-profit, tax exempt organizations who cannot qualify for tax incentives often used to encourage and financially justify energy conservation projects
6. Many health systems, especially smaller facilities, lack the technical support staff necessary to implement energy efficiency improvements and maintain a comprehensive energy management program

## **Solution Approach**

The Wisconsin Energy Retrofit team has developed an approach to address each of these barriers. However, the solutions are dependent upon the unique situation of each health system. One factor that may influence an energy retrofit solution choice is the type of health care facility involved. The team segmented these facilities into two major categories to assist with selecting appropriate financial options and they are as follows:

1. Hospital inpatient facilities which are not-for-profit and tax exempt
2. Outpatient facilities such as clinics, private practice offices, etc.

Hospitals are staffed and operate 24 hours per day which creates challenges in scheduling systems to shut down or reduce their energy use. Inpatient facilities are also uniquely challenged with codes that require a high number of outside air exchanges which demands a great deal of electricity and natural gas to manage temperature, humidity, and infection control specifications. Furthermore hospitals utilize very energy intensive equipment such as surgical systems, radiology imaging equipment, etc. to perform their services. Hospitals have unique funding challenges due to their tax exempt status, limiting the available incentives for energy improvements (which are usually in the form of tax credits).

The second category of facilities is not tax-exempt and is subject to property taxes, which may allow for outpatient facilities to participate in some energy incentive programs (such as PACE financing, etc.). Outpatient facilities are commonly closed after normal business hours and have greater opportunity for scheduling systems to shut down or reduce energy use. They are also not subject to the same code requirements for outside air exchanges as in the case of hospitals.

In addition to these differentiating segments, there are other factors affecting individual facilities and health care organizations such as, cash reserves, debt, bond rating, competing internal projects, technical resource availability, etc. Each organization may have unique challenges and financial threshold criteria.

The Wisconsin Energy Retrofit team considered these factors in identifying potential solutions and developed several alternatives in the subsequent proposal that could be used to fit most situations.

### **Proposal:**

The team identified several alternatives to address each of the six barriers listed above which are inhibiting the implementation of energy efficiency projects in Wisconsin healthcare facilities. These alternatives are a blend of existing programs and proposed programs that would drive better adoption of energy efficiency projects within this sector. The proposal is as follows:

### **Barriers 1 and 2:**

Barriers 1 and 2 are primarily a function of awareness. While energy costs typically comprise a small portion of a hospital's operating budget, the expense drops directly to the bottom line. Most non-profit health systems target minimally positive operating margins required to maintain their financial health and bond rating, which is important for their ability to raise capital to fund future improvement projects. Therefore, although energy expenses are small compared to the overall budget, if a significant portion of a facility's energy bill can be eliminated, it would have a substantial impact on operating margin. This is especially true if compared to the investment necessary to drive service growth to achieve the same bottom line impact. In addition, the negative health effects from the burning of fossil fuels, particularly coal-fired electricity production, are not well understood by healthcare professionals. Once informed, these professionals see the contradiction to their mission and often support energy efficiency improvements with enthusiasm. This, combined with business cases enhanced by clearly communicated incentives will improve implementation of energy efficiency projects.

- The team's proposal would be to conduct a state-wide energy awareness campaign for its healthcare organizations. This would include an education and marketing effort primarily targeting health system CEOs and CFOs. The program would need to be proactive in nature and not rely on the same educational forums that exist today. The suggested mechanism for reaching these executives would be to establish relationships and utilize key healthcare executive organizations such as the Wisconsin Hospital Association, Wisconsin Health and Education Facility Authority, and Wisconsin Healthcare Engineering Association, etc. This effort could be coordinated and delivered through several existing educational resource organizations within the Wisconsin infrastructure, such as Focus on Energy or the Energy Center of Wisconsin, etc. The focus would be on establishing the alignment of energy efficiency with the mission of healthcare organizations as well as clarifying the business case for energy efficiency projects and creating awareness of available incentives. Successful case studies, best practice sharing, and transparent benchmarking would be enabled through this effort, thus improving focus.
- The team's recommendation would also be to require each healthcare facility within the state to establish an energy intensity baseline and report these numbers to the State Office of Energy Independence annually. This would help healthcare executives begin to understand the impact of their opportunity. These baselines would be easy and inexpensive to establish, only requiring the annual energy bill (electricity / fossil fuel use) and square footage from each facility to calculate. Benchmarks already exist for comparison in Wisconsin's climate. If a state mandate is not feasible, the team would encourage this measure as a requirement before allocating any special incentives or programs to healthcare facilities for energy improvements. Once a database of facility performance is established and understood it can be used to target opportunities, monitor progress, and encourage additional future improvements. It will also help to validate benefits from energy efficiency incentive programs at healthcare facilities.

### **Barriers 3 & 4:**

Healthcare systems are typically limited with their technical staff to proactively manage energy. Many facilities, especially smaller ones, will often operate in a reactive mode with the objective of keeping their mechanical and electrical systems functional and prioritizing patient safety, patient comfort, and meeting code requirements. Energy efficiency is usually an afterthought and not often managed in a proactive manner with staff dedicated to this responsibility. Facilities staff members often need education or assistance with preparing business cases to competitively present energy efficiency projects to their leadership for resource allocation.

- The team proposes a program to conduct high level energy audits at healthcare facilities within the state. These would not be traditional energy audits, which might take weeks or months to complete for large facilities, but rather a 1–3 day “Treasure Hunt” as is used in the manufacturing sector. This approach would be far less costly, while still establishing the seeds for a healthcare organization’s energy management program. It is recommended that the State provide incentives that cover or significantly discount the modest cost such audits. This investment would likely pay for itself quickly since most initial audits reveal easy, no-cost opportunities that can be implemented immediately. Incentives could be scaled on the magnitude and R.O.I of the identified opportunities resulting from the audit but adoption would likely be much stronger if the audit cost is covered. The audits would be conducted by a combination of members from within the healthcare organization as well as several outside “experts”. The audits would be split into several areas of focus which typically consume large portions of energy such as lighting systems, hot water or steam generation, cool air or chilled water production, ventilation systems, information systems equipment and compressed air. These areas of focus would each have sub-teams assigned to specifically identify energy conservation measures within those systems. The objectives from such an audit would be as follows:

- Facilitation by an experienced and objective expert
- Assist with establishing an energy efficiency baseline
- Identification of “low hanging” fruit energy efficiency opportunities
- Guide business case development for energy conservation measures
- Focus attention of facility executives during the event
- Provide limited follow-up consultation on energy action plan
- Assist and advise on available energy efficiency incentives
- Offer initial guidance for forming an energy conservation program
- Provide methods and motivation for the staff to manage the future energy efficiency of the facility

The audits would have external participants and stakeholders involved which help to provide the expertise necessary to identify opportunities, perform calculations, and build business cases. The audits would be facilitated by an objective, third party expert(s) with experience in energy use in the healthcare sector. It is important that the audit facilitator not have a former or potentially future supplier relationship with the healthcare facility. This will help with the credibility of the event in the eyes of the healthcare facility staff. It will also help to ensure that the systems evaluated are appropriately prioritized and that business case calculations are completed in an objective manner. The audit team roles would be as follows:

- Audit Facilitator(s) (Objective, experienced, not a stakeholder)
  - Coordinate limited preparatory work with facility staff required to perform the audit
  - Assists with gathering outside experts if needed
  - Ensure action plan business case is reasonable
  - Facilitate audit and “report-out” to facility executives
  - Ensure action plan justification is reasonable and comprehensive
  - Provide limited follow-up consultation to support implementation of action plan items

- Team Leaders (Internal facility manager or project leader)
  - Facilitates sub-team activity during audit
  - Documents proposed action items into a standardized report
  - Coordinates business case calculations for action items (benefits & costs)
  - Prepares presentation slide for “report-out”
  - Delivers report to executives at “report-out”
  - May lead action item implementation work as part of follow-up
- Internal Experts (Internal technical staff, skilled trades staff)
  - Shares experience with facility equipment & systems
  - Shares potential opportunities
  - Serves as “on-site” guide for team
  - Assists with action item business case development
  - Assists with implementation of action plan items
- External Experts (Utility rep(s), Focus on Energy rep(s))
  - Provides “fresh eyes” on facility opportunities
  - Assists with objective development of action plan items
  - Benefits from successful improvements to meet external goals
- Equipment / service supplier(s) (OEMs, ESCOs, Architects, Engineers)
  - Provides expertise on energy consuming equipment and systems such as lighting, building automation, HVAC, etc.
  - May have historical or potential supplier relationship with supplier facility
  - Provides “fresh-eyes” on facility opportunities
  - Assists with development of action plan items
  - Provides estimates on costs and benefits for justification
  - Assists with action plan implementation as appropriate
  - Benefits from potential sales resulting from action plan

The energy audit may have as few as 10 participants for a small facility or as many as 30 for a large facility to complete the work promptly. It is also recommended to conduct at least a portion of the audit during evening hours so that wasteful energy consumption can be observed during periods of reduced activity and to prevent interference with normal operations. A small facility (~ 75,000 square feet or smaller) can be completed in one day and larger facilities (~ 1,000,000 square feet or more) in three days.

#### **Barrier 5:**

Tax exempt, not-for-profit hospitals are excluded from qualifying for many existing tax incentives to improve energy efficiency. Most capital projects must compete for priority against other needs such as new clinical equipment, facility renovations, information systems upgrades, etc. The team inquired with a number of hospital executives and facility leaders and received feedback that in most cases, projects that provide a payback on investment in less than two years will often receive priority to be implemented, providing there is capital available. Projects with a payback of 3-10 years will only be resourced if incentives are strong or if other business needs such as safety, maintenance costs, or facility renovation help drive the business case. Many hospitals also have aging buildings that require large capital investments to make significant energy improvements such as converting old controls to programmable electronic systems, aged heating, cooling, and ventilation systems. Furthermore, many hospital facilities were never originally commissioned to ensure that systems operate as designed. Although energy impact from these systems is significant, investment in this infrastructure will often have paybacks that far exceed 3 years based on the energy benefits alone. During the economic crisis, many hospitals have seen a declining volume of patient services that they can bill and a resulting decrease in cash generated from operations. In many cases cash reserves have depleted and thus negatively affected bond ratings for some hospitals. Correspondingly, the bond market, which hospitals use to finance capital projects, has become a bigger hurdle to obtaining acceptable interest rates. All of this has created an environment where hospitals are intensely focused on maintaining a healthy balance sheet with cash while also limiting debt payments to assist with keeping a healthy margin. Focus on Energy rebates and grants assist with meeting these



challenges but often will not bring business cases to a prioritized level, especially on projects with paybacks longer than 3 years.

Clinics and other outpatient facilities have some similar challenges but are not tax-exempt in that they are included on the property tax levy.

- The team proposes several incentive alternatives for varied situations to assist healthcare systems with justifying and implementing energy efficiency projects. Some of these tools already exist and could be better communicated through the proposals listed above. Others would be enhancements to existing incentives or newly formed incentives. The proposed incentives are as follows:
  - Hospitals with no cash for capital and little debt tolerance
    - **Provide grants for deeper discounts on specifically large impact (> 2% of total) energy savings projects such as retrocommissioning, comprehensive lighting retrofits, boiler replacement, chiller replacement, geothermal heat pumps, biomass fuel, or electronic control systems upgrades**
      - Grants would need to reduce paybacks to 2 years in order to be competitively prioritized rather than strictly calculated on energy savings alone
      - Require energy intensity baseline reporting, energy audit, and energy management program launch at subject hospital for qualification
      - Consider reallocating Focus on Energy prescriptive rebate and grant funds away from less impactful smaller items, with already reasonable paybacks, to these larger impact investments
      - Additionally seek Federal grant funds for this purpose

- Hospitals and clinics with no or limited cash for capital projects
  - **Utilize “Off Balance Sheet” financing programs available through ESCOs or Utilities...or adopt a State version**
    - In the case of utility financed, hospital would repay debt through energy bill savings
    - Asset would be external and not impact the hospital balance sheet.
    - Hospital “owns” the asset after the contract is completed
    - Provides for some modest expense savings until debt term is finished.
    - Challenge: not currently offered by many utilities or on some technologies
- Clinics and Outpatient facilities with no or limited cash for capital projects
  - **Participate in PACE financing program with municipality**
    - Facility would repay debt through property tax levy
    - Debt transferrable to future owners of facility
    - Challenge: need a willing municipal partner

## **Barrier 6:**

As mentioned earlier, healthcare systems are challenged with availability of technical staff to proactively manage energy efficiency within their facilities. Even if energy efficiency improvements are implemented, benefits will erode over time if it is not managed. Creating a culture of waste elimination and a comprehensive energy management program are critical to sustaining gains.

- The team proposes that several of the items listed above would create awareness and motivation for prioritizing energy management within health system facilities. In particular, the components that would drive these changes are as follows:
  - Energy awareness campaign targeting Healthcare executives (CEOs & CFOs) to better understand the impact on public health, financial benefits, and incentive programs.
  - Energy audit “Treasure Hunt” program which would have multiple benefits including:
    - Establishing energy baselines
    - Identifying “low hanging fruit” opportunities
    - Generating internal motivation with successful actions
    - Business case development
    - Follow-up action plan
    - Executive focus for beginning an energy management program
    - Building supplier value relationships for on-going technical support of a program to enhance internal staff capabilities
  - Required healthcare facility energy intensity reporting for transparency, opportunity awareness, and monitoring of annual individual and statewide facility progress