

# Get More, Use Less! How to Improve Creighton

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Is your building LEED Certified? Does it still consume a ton of energy throughout the day? Would you like to decrease the energy use, yet increase the comfort levels? If you answered yes to one or more of these questions, Passive House is right for you!

Passivhaus is a building movement first developed in Germany aiming to reduce the ecological footprint of buildings. It is a standard for energy efficiency, creating buildings that require little energy for heating or cooling, through several strategies dealing with ventilation and thermal envelopes. *RAS*

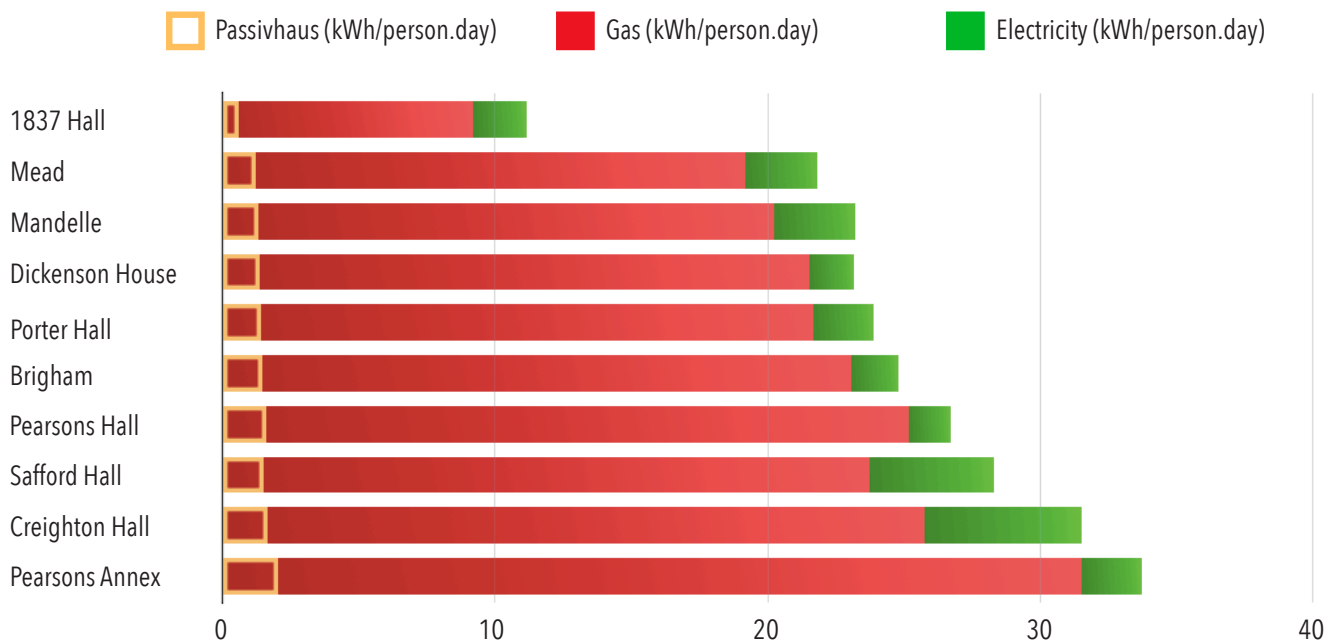
## Creighton Hall at Mount Holyoke

- Built in 2008, Creighton is the newest resident hall on campus. *JAL*
- Creighton is 76,000 Squarefeet. *JAL*
- It is currently Gold Leadership in Energy and Environmental Design (LEED) certified. *JAL*
- According to Mount Holyoke's website, Creighton Hall uses 45% less energy and 30 % less water than allowed by Massachusetts building code. *JAL*
- It houses 176 students and does not have a dining hall. *JAL*



## Green Strategies in Creighton Hall

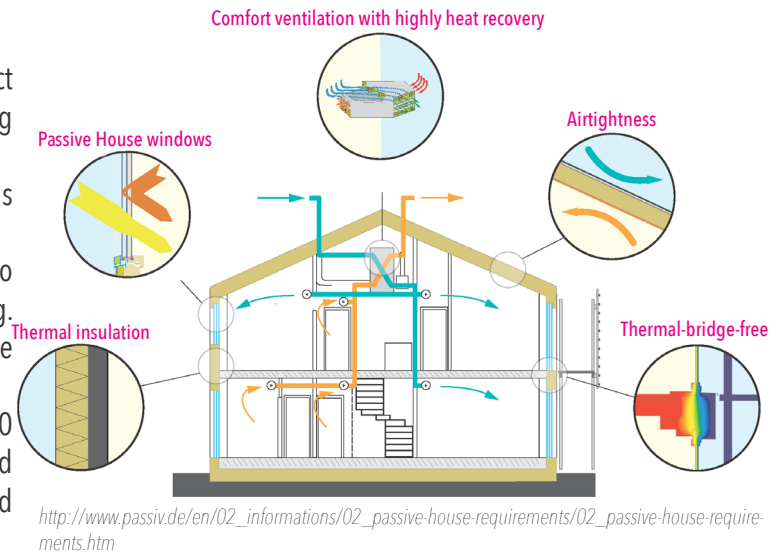
- LEED points were earned for several credits including storm water management, light pollution reduction, reduced disturbance to existing land conditions, and more. *RAS*
- 20% of the materials used in construction were local, with bamboo and cork flooring employed as two renewable materials. *RAS*
- 93% of the construction waste produced while building Creighton was recycled. *RAS*
- Energy efficiency lighting and CO2 monitoring are both implemented into the building. *RAS*
- Although it is LEED certified, Creighton Hall still consumes a lot more energy than most residential buildings on campus. *JAL*



Energy Use of Dorms without Dining Halls

## Approaches/Strategies

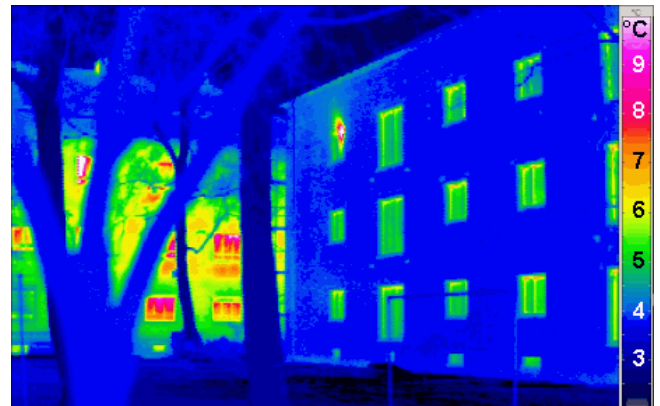
- Prevent heat loss by minimizing the thermal bridge effect in high heat transfer areas (corners, edges...) and reducing thermal insulation. *PN*
- In addition to avoiding thermal bridging, an alternative is using materials with minimal thermal conductivity. *PN*
- Airtightness prevents undesirable air flow that may lead to mould, structural damage and heat loss in a leaky building. Sealing of the envelope should be continuous through the building. *PN*
- For a typical window size, frames accounts for 30 to 40 percent of the window area. Windows with slimmer and more insulated frames would maximize solar gains and minimize thermal gas. *PN*
- Ventilation should be designed and controlled carefully. Moist air should be extracted from the bathrooms and kitchen and go through an air transfer zone, and then the fresh air should flow through the living space and bedrooms. The layout of the windows also plays an important role in the effectiveness of natural ventilation. *PN*
- Space Heating Demand should not exceed 15 kWh annually OR 10W (peak demand) per square meter of usable living space. *PN*



## Benefits

- High level of insulation provides a more comfortable environment. *JAL*
- Well insulated window frames and glazing allows better use of space. *JAL*
- Thermal bridge free design and construction saves energy.
- An airtight building envelope prevents draftiness. *JAL*
- Ventilation with highly efficient heating or energy recovery provides excellent indoor air quality. *JAL*

The thermogram on the right shows the heat escape in the passive house (airtight and thermal bridge free) on the foreground and the normal house on the background. The temperature bar is provided on the right. *PN*



Passivhaus Institut - Copied to Commons from <http://en.wikipedia.org>. Original source Passivhaus Institut, Germany - <http://www.passiv.de>

## Resources:

- Creighton Hall: <https://www.mtholyoke.edu/facilities/nrh>  
<https://www.mtholyoke.edu/reslife/creighton-hall>
- Heat Brochure: [https://www.mtholyoke.edu/sites/default/files/facilities/docs/heat\\_brochure\\_NRH\\_vv.pdf](https://www.mtholyoke.edu/sites/default/files/facilities/docs/heat_brochure_NRH_vv.pdf)
- Passive House: Passivhaus Institut: <http://www.passiv.de/>