



# Passive House for Commercial Projects



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In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

“This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors** continuing education requirements.”

For additional continuing education approvals, please see your credit tracking card.

# Learning Objectives

- Introduction and relevant work
- The Passive House building energy standard
- Passive House in the context of a commercial projects
- Impact of the Passive House standard on:
  - Design, Systems, Components, Construction
  - Costing
- Benefits and Opportunities

Stephan  
Tanner



Tim  
Eian



high performance architecture

**intep**

Building Performance, Measured Results

# Milestones



“BioHaus”  
First certified Passive House  
in North America





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Intep - Integrated Planning LLC

## Energy and Carbon Framework

Embodied Energy Benchmark Framework for  
Low to Mid Rise Residential Buildings in B.C.  
Baseline Presentation

Minneapolis/Vancouver, 16. October 2012

# Impact of Passive House State of South Dakota



# Passive House Retrofit Hongqiao Lvyuan, Shanghai

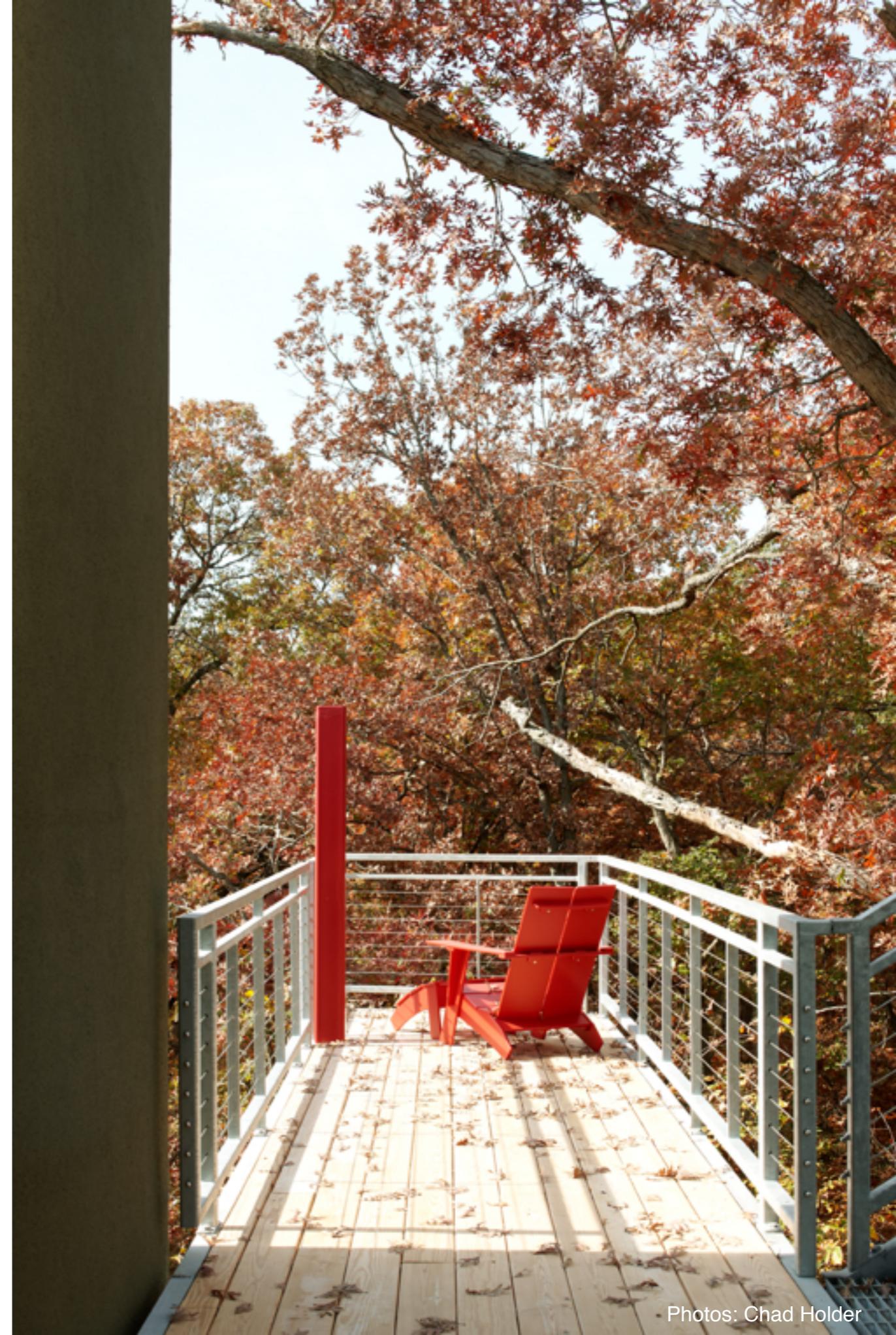


Quality-Approved  
Energy Retrofit with  
Passive House Components  
Dr. Wolfgang Feist

















5605

LIVING WELL IN THE TWIN CITIES

# spaces

AUGUST/SEPTEMBER 2013

## ECO-CHIC ISSUE

5605

### NEW GROUND

Minneapolis  
boasts its first  
Passivhaus  
super-efficient  
home

### PLUS

- \* Green  
inside & out
- \* Testing  
tech cleaning  
gadgets

#### IN EVERY ISSUE

GREAT  
PLACES  
TO EAT  
SHOP PLAY



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les a  
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hile  
ervises.







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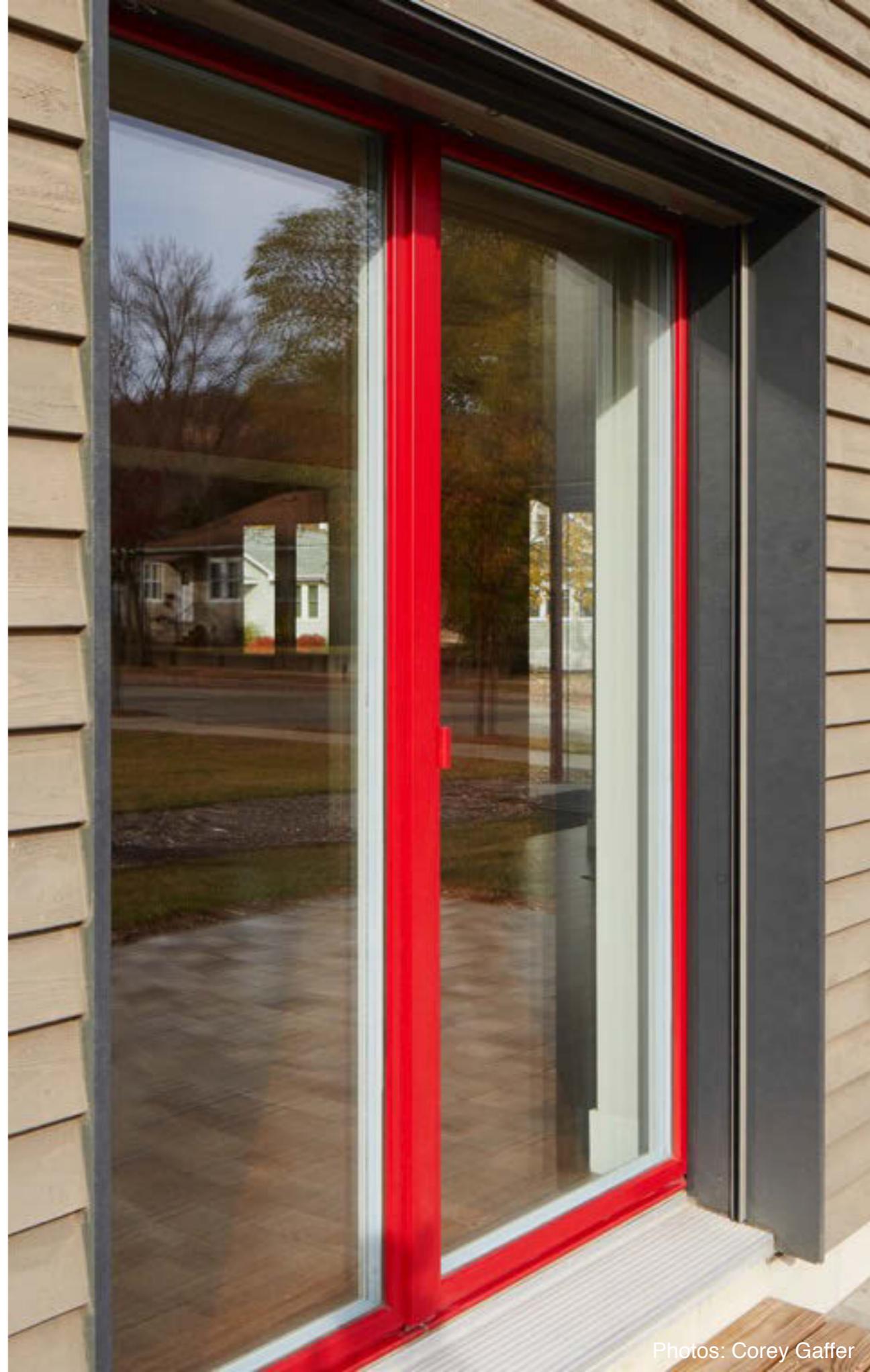
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and 32,880 kWh produced = net-energy positive operation.





# Passivhaus - Passive House



“A rigorous, voluntary building energy standard focusing on highest energy efficiency and quality of life at low operating cost.”

The Passive House Standard is the most rigorous building energy standard in the world. Consultants, projects or building components that have obtained the right to carry the logo have committed themselves to design excellence and the Passive House energy performance criteria.

# Global Standard



Think globally, build locally.

# Global Adoption



# Third-Party Certified

## Certification Documentation



Category	Value	Target
Space heating	14	15
Space cooling	0.0	0.0
Primary Energy	120	120
Airtightness	0.5	0.5

This building has been awarded the Certified Passive House by the Passive House Institute.



This certification is based solely on the design data and is checked and approved by the Passive House Institute for the purpose of certification. The Passive House Institute hereby certifies that the building's energy balances are in accordance with the above.

Certificate-ID: 9689\_PH\_PH\_20141017\_AM



## Certificate

The Passive House Institute awards the seal "Certified Passive House" to the following building:

24th Street Passive House #1, 748 34th St. North, La Crosse, WI 54601, USA

Client: Western Technical College  
499 7th St. North, La Crosse, WI 54602, USA

Architect: Integrated Planning LLC  
901 23rd Ave NE, Minneapolis, MN 55418, USA

Building: Integrated Planning LLC  
Services: 901 23rd Ave NE, Minneapolis, MN 55418, USA



This building was designed to meet Passive House criteria as defined by the Passive House Institute. With appropriate on-site implementation, this building will have the following characteristics:

- Excellent thermal insulation and optimized connection details with respect to building envelope. The heating demand or heating load will be limited to **15 kWh per m<sup>2</sup> of living area and year** or a heating load of 10 W/m<sup>2</sup>.
- When outdoor temperatures are high, thermal comfort can be ensured with passive cooling. Minimal energy demand for cooling and dehumidification according to the location-specific requirements.
- A highly airtight building envelope, which eliminates draughts and reduces the heating demand. The air change rate through the envelope at a 50 Pascal pressure difference, as verified according to ISO 9972, is less than **0.6 air changes per hour with respect to the building's living space**.
- A controlled ventilation system with high quality filters, highly efficient heat recovery, ensuring excellent indoor air quality with low energy consumption.
- A total primary energy demand for heating, domestic hot water, ventilation and electricity during normal use of less than **120 kWh per m<sup>2</sup> of living area and year**.

This certificate is to be used only in combination with the associated certification documentation, which describes the exact characteristics of the building.

Passive Houses offer high comfort throughout the year and can be heated, for example, by heating/cooling the supply air. Even in times of cold outdoor temperatures, the interior surface temperatures of a Passive House is evenly warm on the inside and the internal surface temperatures are high. Due to the highly airtight envelope, draughts are eliminated. The ventilation system constantly provides fresh air of excellent quality. Energy consumption for heating, domestic hot water, ventilation and electricity during normal use is very low. Thanks to this, Passive Houses offer high comfort in a Passive House are very low. Moreover, the climate impact of Passive Houses is very low. Furthermore, the climate impact of Passive Houses is very low. Moreover, the climate impact of Passive Houses is very low.

Issued:  
Darmstadt, 11.10.2014  
*Wolfgang Feist*  
Dr. Wolfgang Feist

Certificate-ID: 9689\_PH\_PH\_20141017\_AM



## Certified Passive House

### Passive House Institute



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