

NET-ZERO ENERGY MADE FRESH DAILY



**DESIGN
ENGINEERS**
MECHANICAL & ELECTRICAL CONSULTANTS

Net-Zero Design Process

1. Site Design
2. Envelope Design
3. Geothermal HVAC
4. Solar Management
5. Sensors & Timers
6. Photovoltaic Array
7. LED Lighting
8. Systems Tuning
9. Certification

Annual Savings & CO2 Offset

Avoided Energy Cost: \$17,810

Offset CO2: 8.4 homes

Measures & Certifications

LEED Gold Certified

Energy Star Rating 98/100

Living Building Challenge:

- Net-Zero Energy Registered

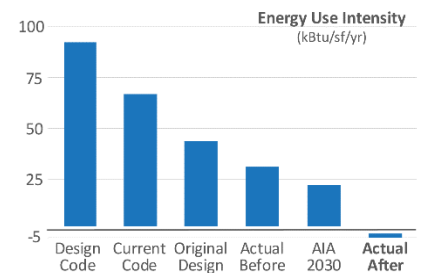


Integrated & Adaptive Design from Day One

Energy-effective buildings use an integrated approach to design, weighing a technology's potential against its impact, up-front cost, and durability to find the best solutions as they arrive.

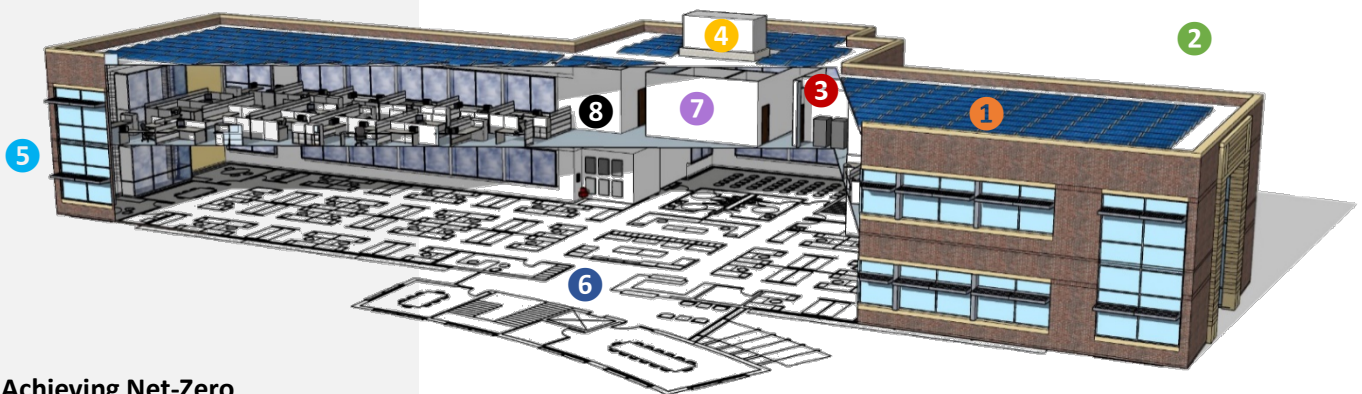
The path to our net zero energy office began with the fundamentals of good design. The building size and orientation maximize north and south glazing, sun shades minimize summer heat gain and maximize winter heat gain, while light shelves direct illuminate the core of the building. A geothermal HVAC system exchanges heat from the earth while heat pumps manage air distribution for combustion-free heating and cooling. An energy recovery unit recaptures heat and moisture typically lost to venting while pre-treating fresh air.

Fine tuning improvements to our HVAC and lighting systems coincided with the installation of a 6,500-sf, 103 kW photovoltaic array on the roof. Hidden from view and silent, it is offsetting 100% of the office's energy use, qualifying the office for Net Zero Energy certification.

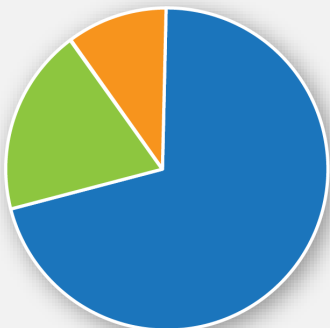


Net-Zero Building Meets Four-Season Climate

The array creates more power in summer than winter and is grid-tied to our utility provider. This flexible relationship helps even-out seasonal utility loads while minimizing system complexity.



Achieving Net-Zero



◆ Conservation ◆ Geothermal ◆ PV

Net-Zero Systems Diagram

- | | |
|--|--|
| <p>1 103 kW Solar Panel Array
360 Panels, 6 Inverters
180 Optimizers</p> <p>3 Heat Pump Network
Zoned water-to-air pump</p> <p>5 Light Shelves & Sun Shades
Interior & exterior harvesting</p> <p>7 LED Lighting Conversion
Under 0.36W/sf</p> | <p>2 Geothermal HVAC
Vertical Ground-heat Exchangers</p> <p>4 Energy Recovery
Total Energy Recovery Unit</p> <p>6 Occupancy Sensors
Ultra-sonic & Infra-red</p> <p>8 Direct Digital Controls
Individual, room-adjustable</p> |
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