



NET ZERO ENERGY BUILDING



Sustainable Energy Fund (SEF) built the first net-zero building in the Lehigh Valley region and one of only a few in Pennsylvania. SEF constructed the Net-Zero Building on a foundation of cost-effective energy efficiency principles that complement solar generation. Through this project, SEF has demonstrated that commercial property owners can build high-efficient, low-impact commercial buildings at market rate.

With an Energy Star score of 97, SEF's NZB is more efficient than 97% of other buildings within its property type. SEF achieved energy efficiency with a tight building envelope and increased insulation, providing superior comfort within the building space. Energy recovery ventilation sustains indoor air quality, and high-efficiency HVAC equipment and an integrated building automation system maintain and manage this comfort to the occupants' preference. A 149kW solar array powers the building, reducing its environmental impact.

Just one benefit of this level of efficiency is a significantly lower Carbon Footprint. The NZB's footprint in 2021 was 33,462 lbs CO₂. For comparison, a typical office building of a similar size would have a carbon footprint of approximately 176,571 lbs CO₂. That's 143,110 lbs less than a typical building of this size, which is equivalent to:

- Carbon sequestered by 84.8 acres of forest
- 14 Passenger vehicles driven for one year
- 7.5 homes' one-year energy use

KEY FIGURES

Energy STAR Score: 97

Energy Use Index (EUI):

Source: 44.7

Site: 19.4

Total Net Energy Used:

87.04 MWh

Total Solar Production:

129.33 MWh

Peak Solar Production:

1.075 MWh

(May 13, 2020)

2020 Carbon Footprint:

33,462 lbs CO₂

FEATURES

Building Tightness: 0.7 Air Changes per Hour
*86% tighter than code

Upgraded Insulation

Upgraded HVAC Equipment:

- **VRFs:** Two variable refrigerant flow (VRF) air-cooled heat recovery units, one 168 kBtu, one 144 kBtu
- **ERVs:** Six 200-540 CFM, up to MERV 13 filtration, up to 90% efficient

Lighting: LED lighting throughout the space

Solar: 149 kW solar array

Building Management System:

- Integrates HVAC and lighting components



WHY NZB?

SEF's NZB offers enhanced comfort and indoor air quality through several of its components. An exceedingly tight building envelope and improved insulation ensure that minimal energy is lost, maintaining indoor comfort levels. Energy recovery ventilators (ERVs) provide fresh air throughout the building with the ability to increase filtration to match occupants' needs in a highly efficient way. These energy saving measures also work to minimize operating costs, saving occupants' money and providing financial stability.