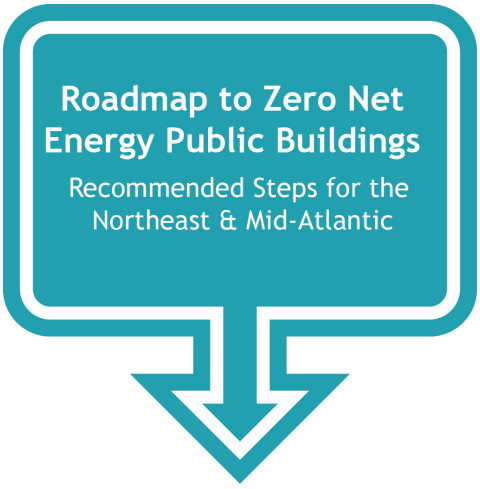

Zero Net Energy Public Buildings - Recommended Steps for the Northeast & Mid-Atlantic

Recognizing the leadership potential of the public sector, Northeast Energy Efficiency Partnerships (NEEP) believes the road to a full-scale deployment of zero net energy buildings starts with the facilities our states and communities construct. This report outlines key steps the public sector can take to facilitate the eventual broad adoption of zero net energy building practices throughout the Northeast and Mid-Atlantic states.

Why Public Buildings?

- **The public sector has a responsibility to "lead by example".**
- **The public sector has a longer investment horizon** and is more likely to be able to accept longer payback periods, and therefore can serve as an incubator for new technologies and alternative design and construction practices.

Critical Next Steps

In order to achieve the intermediate-term changes, NEEP has identified five critical next steps.

Step 1 - Develop a "Path to Highest Performance" Information Campaign

Step 2 - Promote the Continued Development of Exemplary Public Buildings

Step 3 - Prioritize Measurement and Reporting of Public Building Energy Performance

Step 4 - Implement Stretch Building Energy Codes

Step 5 - Create a Revolving Loan Fund or Similar Mechanism to Provide Capital for Energy Investments

What *Is* a Zero Net Energy Building?

A zero net energy building produces as much energy as it consumes over the course of a year – and directs its focus to the simple premise that the path toward zero net energy begins with (1) significant reductions in as-designed building energy consumption, and (2) building operations that ensure as-designed performance. The near-term focus must be on creating conditions and incentives that promote these two goals.

"The leadership potential of the public sector in creating zero net energy buildings is significant. Northeast Energy Efficiency Partnerships recognizes that engaging public clients, designers and policy makers is key to making zero net energy buildings not just a reality but the norm in our communities. I am honored to have been part of this leadership Group , to help identify the strategies included in NEEP's 'Roadmap to Zero Net Energy Public Buildings' and congratulate them on its publication."

Mark Walsh-Cooke PE, Arup Principal and member of the Massachusetts Zero Net Energy Advisory Committee

JOHN W. OLVER TRANSIT CENTER - GREENFIELD, MA
FIRST ZERO-NET-ENERGY TRANSIT CENTER IN THE COUNTRY

Built with federal stimulus funds, this 24,000 sq. ft transit center will produce the energy it uses in a sustainable way: through solar and geothermal sources, and a boiler on site fueled by wood pellets, a lumber-industry by-product. The transit center, which had a construction budget of $12.8 million at the time Governor Patrick broke ground for the project in April 2009, came in at $10.8 million, according to Charles Rose Architects.

Key features:

- 22 geothermal wells buried 405 feet deep
- 98 kilowatt ground-mounted photovoltaic array, 7,300 square feet
- On-site 750 MBH (750,000 Btus per hour) boiler fueled by wood pellets
- Air-conditioning provided by an active “chilled beam” system
- Solar wall preheats fresh air in winter prior to intake
- Second-stage preheating via ground source heat-pump system
- Air-handling unit incorporates variable-speed fans and energy recovery wheel
- Daylight modeling used to determine optimal placement of windows and skylights
- All lighting controlled by system using occupancy sensors, photocells and dimming control
- LED light fixtures provided for parking lots
- Low-flow water fixtures yielding approximately 35% water savings
- Annual energy consumption estimated at 35 kBtu/square foot

Charles Rose Architects, Inc.	Architect
Arup	MEP, FP Engineeers
RSE Associates, Inc.	Structural Engineer
Nitsch Engineering	Civil Engineer
Groundview	Landscape Architect
BET	Building Envelope Consultant

About NEEP

NEEP transforms the way we use and think about energy. We are a non-profit organization that builds partnerships among the efficiency industry, communities, businesses and policymakers in the Northeast and Mid-Atlantic states. Through advocacy, collaboration and education, we accel¬erate energy efficiency and make visible its impacts on the region, the economy, the planet, and future generations.

The High Performance Buildings Project was developed to promote operational energy savings in new and retrofitted buildings throughout the region. NEEP’s vision is that the work done today on High Performance Buildings will pave the way for the development of zero net energy buildings, buildings that consume no more energy than they produce, on a broader scale throughout the region.

For more information please contact:

Carolyn Sarno, Senior Program Manager - csarno@neep.org

Susy Jones, Manager - sjones@neep.org