

# Net-Zero Energy Retrofit of a Community Office Building

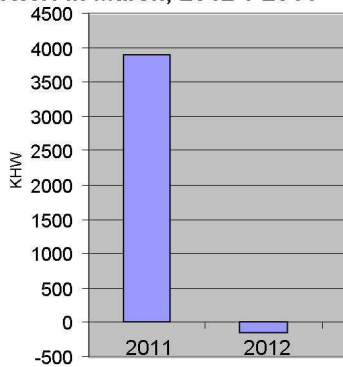
The Plymouth Energy Commission, Town of Plymouth, and Plymouth Village Water and Sewer District submitted a proposal to US Department of Energy for a net-zero energy retrofit of the Water and Sewer Office. **The goal was annual net-zero energy use in an electrically heated building.**



Office building retrofitted as a net-zero energy building. Project added 4" of insulation for energy reduction plus 9 KW of solar photo-voltaic panels for electric generation (PV installation by Revision Energy of Liberty, Maine).

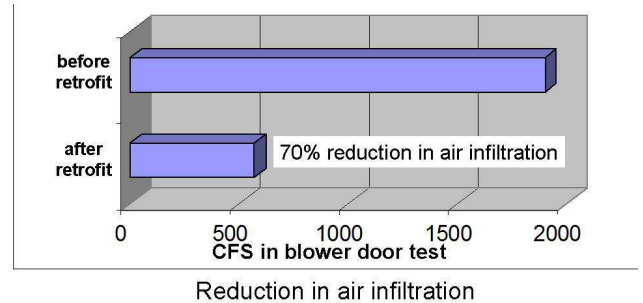
The retro-fit was completed in early January, 2012. As of mid-March the 1,400 square foot building is already better than net-zero in electrical

KWH in March, 2012 v 2011



consumption, generating 140 KWH more than used in the February-March NHEC billing cycle. The 9.4 KW solar PV has generated more than 2 MWH in three months.

The occupants report greatly increased comfort after the retrofit due to a 70% reduction in air infiltration as measured by before and after blower door tests.



Two layers of 2" rigid insulation on exterior for energy reduction. Ceiling: cellulose+2" expanding foam (R-80)

This demonstration project was funded by an ARRA grant, NH Office of Energy and Planning, Department of Energy, and the NH Electric Coop and Plymouth Village Water and Sewer District. The grant proposal was written by Steve Kahl and Bob Reals, Plymouth Energy Commission

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