



<b>Energy Conservation Measures</b>	<b>Projected Annual Savings</b>
Heating: Eliminate uncontrolled outdoor ventilation, upgrading to premium AFUE furnaces, reduction in blower costs.....	\$5,715
Cooling: Upgrade to 16 SEER.....	\$1,912
Ventilation: Controlling exhaust fans.....	\$1,746
<b>TOTAL PROJECTED SAVINGS.....</b>	<b>\$9,373</b>
Emissions Reductions.....	121,697 lbs/year of CO2

**Challenges/  
Business Need:**

The 18,000 square foot building – originally built in 1987 – has served as the NHADA headquarters for 25 years. During those years, the building was renovated to accommodate a new 3,000 square foot daycare center. NHADA is diligent in reducing energy use and helping members to reduce dependence on energy. When NHADA hired IBEA to evaluate the building envelope and building systems, emphasis was on increasing occupant comfort and managing long-term energy use. The building envelope had thermal losses throughout the attic and the building systems (heating, cooling and ventilation) were nearing the end of their useful life. With even a small change in building use, the building systems could not adequately support comfortable conditions and occupants were frustrated with hot summer and cold winter conditions.

**IBEA'S Role:**

IBEA contracted with the owner, Retail Merchants Association of NH, to provide the owner with an energy evaluation. The evaluation included:

- health and safety review
- building envelope survey
- HVAC inventory
- air infiltration testing
- analysis

IBEA also used infra-red imaging to better understand the amount of air leakage from the attic. Using data, IBEA designed an energy model of the building envelope and systems to generate energy conservation measures (ECM's) that would deliver the greatest energy savings to the owner while providing better occupant comfort. IBEA calculated savings potential by moving the air and thermal barriers from the acoustic tile ceiling (poor location) to the underside of the roof, installing 98% AFUE natural gas furnaces and 16 SEER air conditioning condensers, and finally optimizing ventilation needs with energy recovery ventilators.

**Strategy &  
Goals:**

IBEA pinpointed energy losses to the attic, uncontrolled ventilation of air and the need for HVAC system replacement. IBEA's implementation strategy involved phasing the project over several months to avoid disruption to the owner's and occupants operating schedule. The owner's goals for implementation included:

- lowering operating costs
- maximizing available outside financial resources
- increasing indoor comfort
- minimal disturbance on the day-to-day operations

**Impact:**

IBEA delivered a project that increased the R-value of the attic by 38% with the use of open cell spray foam, increased the efficiency of the heating equipment by 23% and cooling equipment by 25% and reined in uncontrolled ventilation with energy recovery ventilators. The owner and occupants saw no impacts on day-to-day operations as the measures were implemented, which exceeded expectations.