

Commercial - DEEP ENERGY RETROFIT



Lake Region Community Services implements IBEA energy cost savings measures through a deep energy retrofit with Bruss Construction and Peterson Engineering - Laconia, NH

Building Overview

LRCS purchased the federally registered historic Federal Office Building in downtown Laconia, NH to bring staff and services under one roof. The building was constructed for the U.S. Forest Service in 1939. In its heyday, it was a bustling government facility for numerous agencies; when LRCS purchased the building in 2010, however, it housed just a skeleton crew of a few government workers and maintenance staff. LRCS contracted with Integrated Building Energy Associates (IBEA) to conduct a building and mechanical systems inventory and evaluation as well as explore opportunities for renewable energy. The building and mechanical systems were well maintained, but the HVAC was in desperate need of a 21st century upgrade. IBEA partnered with Bruss Construction and Petersen Engineering of Portsmouth to develop a project that would protect the historic nature of the Federal Building as well as provide a comfortable, energy efficient operations center for LRCS.

Results

The Federal Office Building was well maintained, but it had not been updated since the 1960s. As a registered historic building, altering the exterior façade was out of the question. However, upgrading an indoor garage to office space complete with conference and kitchen facilities was doable. IBEA recommended adding rigid foam board insulation over the existing garage slab in preparation for a new slab. Rigid foam board and spray foam

were also included in the construction specifications for the concrete block and brick walls. The 14,000 square foot roof assembly received eight inches of polyisocyanurate foam board insulation and a white rubber membrane roofing to better reflect sunlight off the building. Mechanical design included state of the art air source heat pumps for heating and cooling as well as energy recovery ventilators for optimum indoor air quality. LRCS was able to remove an old roof top cooling tower as well as a natural gas boiler. One of the original natural gas boilers remained as a backup heating.

Impact

IBEA delivered a project package with a 14% internal rate of return. \$250,500 net life cycle savings and 32% source energy reduction. Bruss Construction increased the R-value of the roof by 73% with the use of polyisocyanurate foam board, increased the efficiency of the heating equipment by 57% and reined in uncontrolled ventilation with energy recovery ventilators. With a 27% increase in office space, energy costs are expected to be 29% less.

- 54% Energy savings (kWh)
- 29% Energy costs savings (\$)
- 27% Emissions reductions (CO2 lbs/yr)
- 40,416 square foot - Commercial office and life skills services building
- Energy project cost: \$982,626

