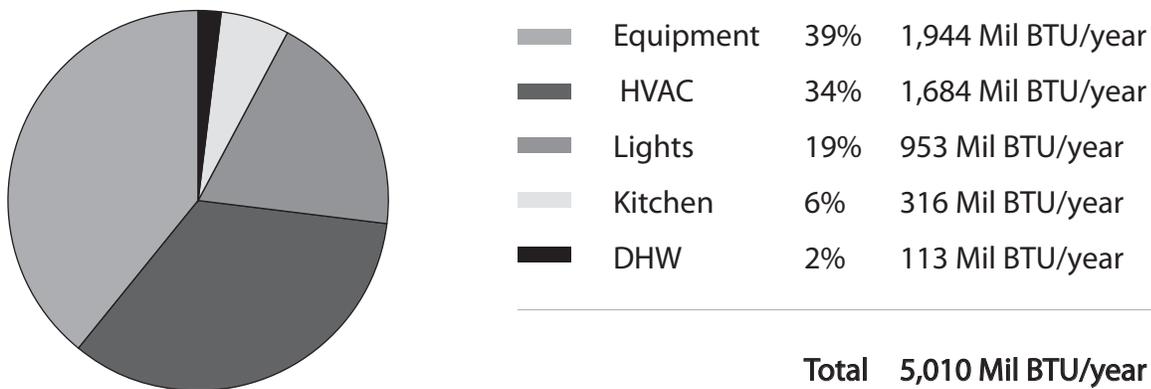


ENERGY MODEL

The Cambridge Academy is targeting an energy efficient energy building. The project will earn 12 of the 19 Optimize Energy Performance credits with a rigorous energy reduction strategy partnered with on-site solar generation.

Energy Model Results: A design development level energy model has been developed based on the basic geometry developed at the design development phase with updated information regarding lighting, daylighting and HVAC systems. The model also incorporates the detailed information about occupancy, schedules and user equipment gained through the net zero energy workshops.

The current predicting annual energy use of the academy is as follows:



Energy Model Process: The energy model being used to estimate the annual energy use for the new Academy has been created using the software program eQUEST, version 3-64. This program utilizes the DOE-2.2 simulation engine developed by the US Department of Energy and the California Public Utilities Corporation. The program calculates building energy use on an hourly basis for 8,760 hours per year (full year) and utilizes typical meteorological year (TMY) weather data. TMY weather data is average weather data based on approximately 30 years of weather data for a given location.

The inputs for the program have been generated based on the building geometry, materials and systems under design for the project as well as information about occupancy, building schedules and use gathered as part of building tours, interviews and focus group meetings. All of the above information is used to create a virtual model of the building that is then analyzed for energy use based on the weather conditions in a typical year.

Every effort has been made to gather and include as much detailed information as possible about the building, building occupancy patterns and schedules, system operating schedules, equipment and equipment use in order to develop as realistic an estimate of annual energy use as possible. This detailed information was gathered through the net zero energy schematic design process .

Comparison to ASHRAE 90.1-2007 Baseline:

A preliminary comparison to an ASHRAE 90.1 baseline has been completed for the *Cambridge Academy*. The baseline building was developed following the energy modeling protocols established in Appendix G of ASHRAE Standard 90.1 - 2007. This is the same methodology used to determine energy performance for new buildings and major renovation projects in the LEED Green Building Rating System. The following is the preliminary ASHRAE 90.1 baseline building energy use intensity (site) as well as a comparison to the predicted energy use intensity of the design without contingency:

- Preliminary baseline building energy use intensity (site): **75 to 80 kbtu/sf/year**
- Percent energy use reduction of design vs. baseline building: **40% reduction**