

Duke Sustainability

Keohane 4E

Building Information

Tenant: Housing, Dining & Residence Life

Architect: William Rawn Associates, Architects, Inc.

Purpose: Residence Hall/Common Room

Footprint: 75,000 sq ft



Keohane 4E has been designed to meet a set of stringent sustainable goals and is built to LEED™ standards. Motivated by Duke University's stated commitment to building environmentally conscious buildings, the project team incorporated numerous sustainable technologies and design elements into Keohane 4E. [Read more](#) about the sustainability features of Keohane 4E.

Sustainable Site Features

The Keohane 4E project site is developed to minimize the building area footprint and to maximize open space. The landscape design maintains and adds to the existing natural shade while local plant materials eliminate the need for permanent irrigation systems. Bicycle parking is also provided for the building.

Water Efficiency

Keohane 4E incorporates a 35 percent water use reduction. Apartments, bathrooms and laundry have water efficient appliances, low-flow faucets, and dual-flush toilets.

Energy Efficiency

Keohane 4E's design optimizes energy performance to achieve a 12% reduction in overall energy use. The building uses highly efficient air handling units, fans, pumps, and occupancy sensors to step down air conditioning in unoccupied space and to turn off lights. Environmentally-friendly and efficient coolants aid in energy use reduction, while Duke University's Central Plant facility provides energy efficient water and steam for heating and cooling.

Design, inspection, independent review, and commissioning of the exterior envelope enhanced and controlled the completion of a highly developed and efficient thermal envelope. The exterior envelope exceeds standard insulation values, is constructed to eliminate airflow leakage, and has been monitored during construction to adherence to details and weather tightness. Low-E glass coatings on the insulated windows and the ceramic-fitted glass walls reflect heat away from the curtain wall in the summer months and reflect radiant heat indoors in the winter months.

Indoor Air Quality

The carpet and sheet vinyl adhesives, sealants and paints were chosen because they have very low or no VOC emissions. The building is non-smoking and entry mats reduce environmental transfer of contaminants. Every room has direct local heating and lighting control, as well as ample natural daylight and unobstructed view to the exterior.

Resource Management

Up to 75% of the waste from the building site was recycled or salvaged with a waste management program. Up to 20% of the materials in the design contain post-consumer or post-industrial recycled content.

Innovation in Sustainability

Duke University housing has developed and implemented a documented green housekeeping program for Keohane 4E which includes training for all staff and certified low impact green cleaning products.

Together with online data from “Sustainable Duke” residents, visitors and guests have access to information explaining the sustainable aspects of the facility.