

Sustainable HVAC Options



From left to right: Alex Lanari, Gus Johanson, Benjamin Lema, Rayann Ali



TEAM 14

INDUSTRY REPRESENTATIVE

Timothy Hoseck

Ryan O'Gorman

FACULTY ADVISOR

Matt Metzger

PROJECT SUMMARY:

We analyzed sustainable heating, ventilation, and air conditioning (HVAC) options for the community center in Eagan, MN. Building owners and operators often hesitate to consider sustainable options for HVAC systems due to the high upfront costs. The current system for the Eagan Community Center uses air handling units (AHUs) with natural gas-fired heating and chilled water cooling. The sustainable design includes a combination of chilled beams, variable refrigerant flow, and geothermal technology.

DESIGN GOAL:

The goal of the project is to design a sustainable HVAC system that emphasizes durability, cost-effectiveness, and reliability. The return on investment of the new design is evaluated over a 25-year period.

DESIGN CONSTRAINTS:

- Sustainable HVAC system for the Eagan Community Center
- Life cycle cost analysis of the designed system
- Feasibility study of system on site
- Recommendations for equipment and well placement on the site



Team's building simulation model of building



Eagan Community Center