Liberal Arts & Sciences Building Restoration

University of Massachusetts Dartmouth

November 18, 2025

UMass Dartmouth Project Team

Mark A Fuller, Chancellor

Ramprasad Balasubramanian, Provost and Vice Chancellor for Academic Affairs

David A Gingerella, Vice Chancellor for Administration and Finance

Christine Doyle, Chief Financial Officer

Kimberly Scott, Vice Chancellor for Student Affairs

Philip W Scher, Dean of the College of Arts and Sciences

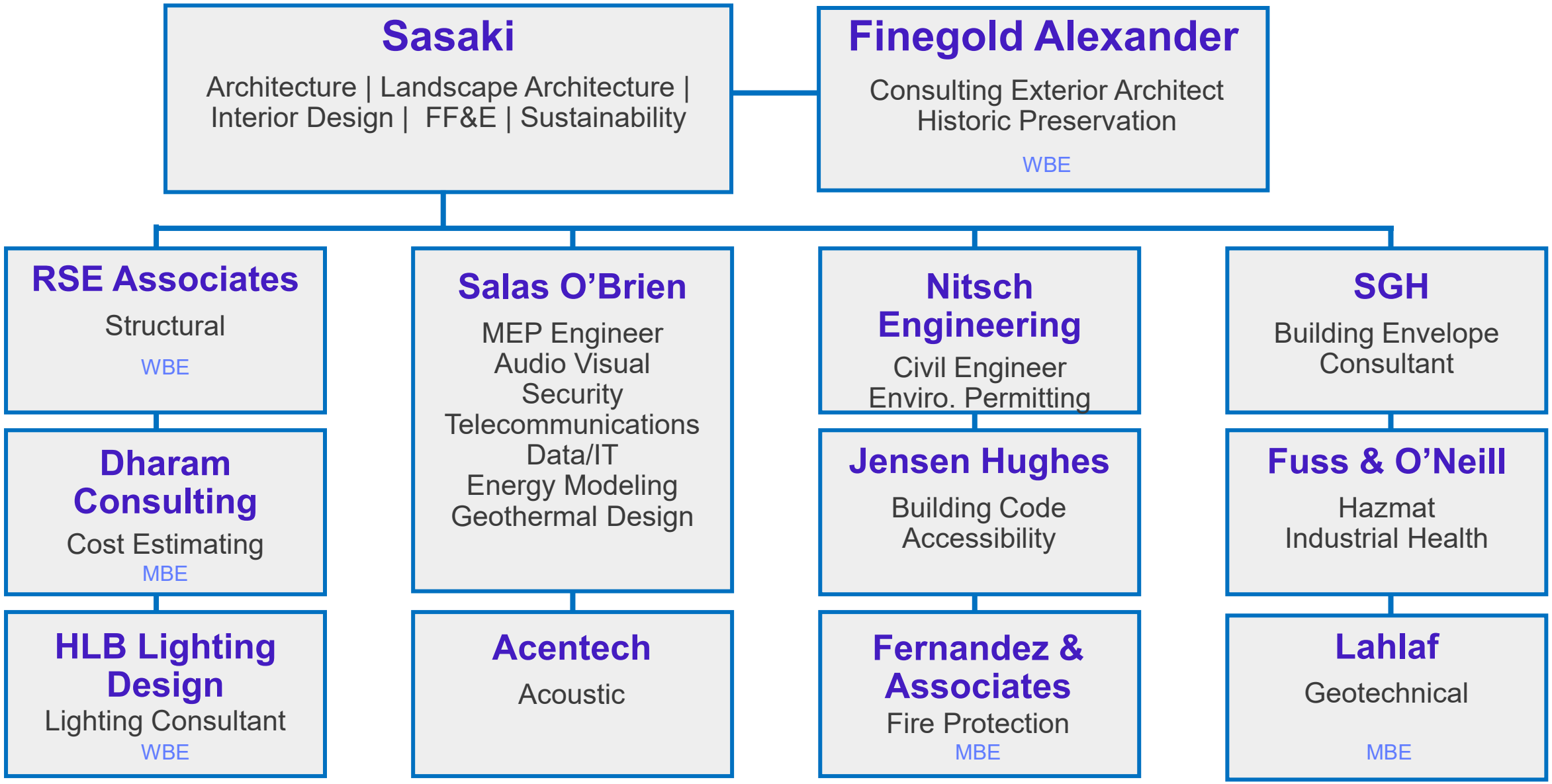
Robyn Piggott, Chief of Staff / Executive Director of Strategic Communication

UMass | Dartmouth

LARTS Project Team

- UMBA
- DCAMM
- UMass Dartmouth
- Leftfield, LLC - Owner's Project Manager (OPM)
- Sasaki Architects w/Consulting Architect Finegold Alexander Architects
  - Includes 11 Engineering & Consultant firms
- Construction Manager (CM) – BOND
- Commissioning Agent (CxA) – Hallam/Gale

Project Design Team



LARTS Building

- Constructed 1964-1966
- The original campus was largely the singular vision of Paul Rudolph with Desmond & Lord.
- The Brutalist style uses highly textured concrete to create massive, rhythmic forms and unusual building geometries.
- The LARTS building was the first building constructed and is considered historically significant.
- The building is the academic workhorse of the campus and needs comprehensive maintenance, repairs, and updates.
- LARTS houses 34 classrooms, 173 offices, several student-support centers, academic departments, and common space in its 120,500 square feet.

UMass Dartmouth Group 1 Building
Construction 1964 - 1966

Project Goals

This project seeks to protect the architectural integrity of this historic building while modernizing its performance.

The building will comply with Executive Order 594.

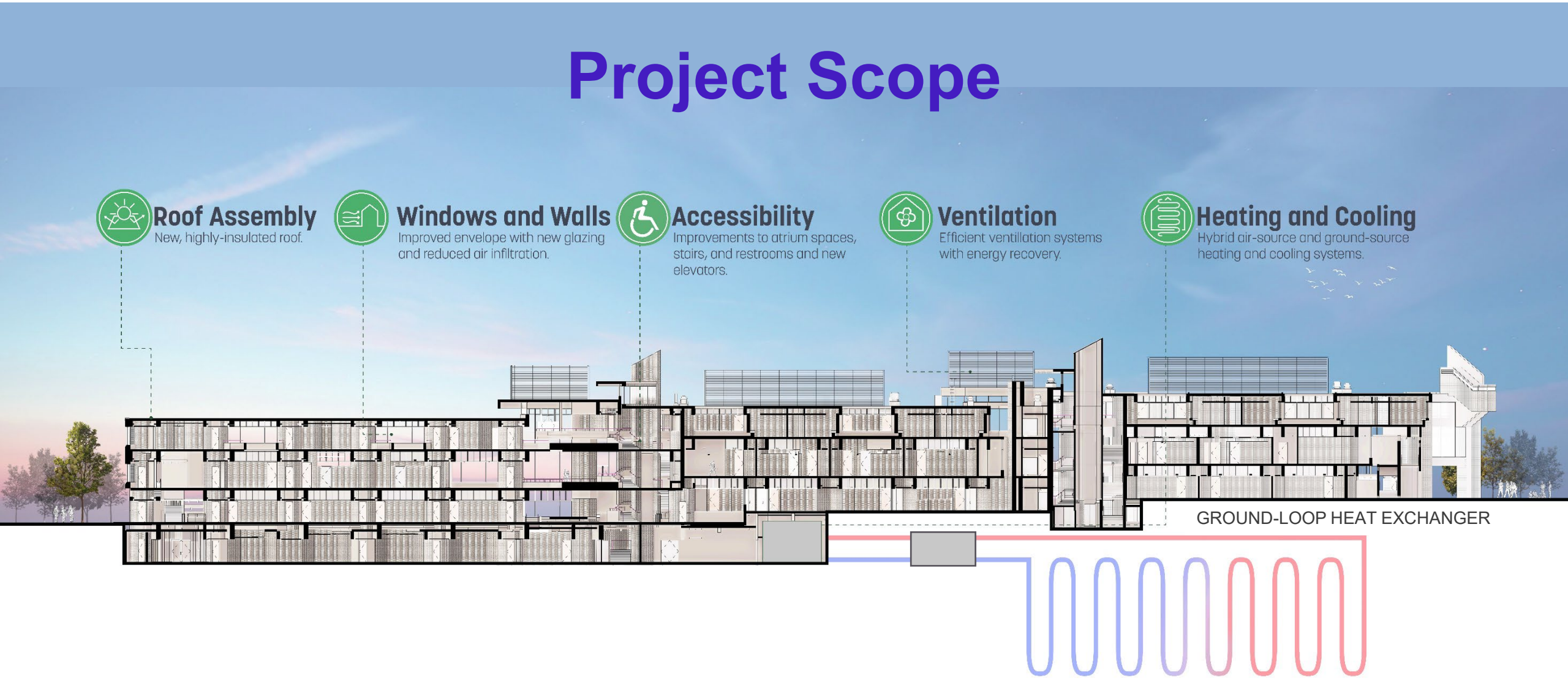
Enhancements to the student, faculty, and staff experience include:

- **Sustainability, Energy, and Systems upgrades to improve our carbon footprint and meet new green-building codes and standards**
- **Life-safety and code-related upgrades**
- **Accessibility upgrades**
- **Envelope and interior restoration to this historic building**

$99M Project Budget to accommodate all of the construction scope as well as moving, storage, etc.

UMass Dartmouth Group 1 Building
Construction 1964 - 1966

Project Scope



- Dry and comfortable
- New, insulated windows; new window coverings
- Fresh feel

- More inclusive, welcoming, and user-friendly
- Safer and code-compliant

- Executive Order 594: Shift to clean energy for public buildings and campuses
- LARTS is an important part of UMass Dartmouth's strategy

Existing Conditions

Building Envelope:

- Single pane, steel-frame windows
- Masonry walls – no insulation
- EPDM rubber roof with R-19 insulation

HVAC System:

- Steam to hot water 2-pipe perimeter heat
- No air conditioning
- Operable windows for passive ventilation

Major Modifications

Building Envelope:

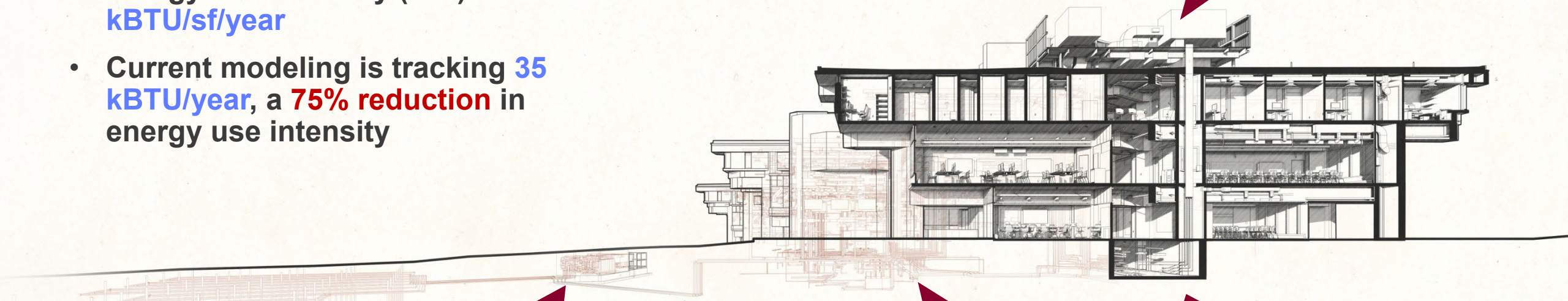
- Triple pane, thermally-broken windows
- Masonry walls restored; interior insulation + air barrier added
- TPO roof with R-40 insulation

HVAC System:

- 4-pipe fan-coil units and hydronic perimeter radiation for heating and cooling
- Ventilation separate from heating and cooling
- Ground-source heat pumps (geothermal) to reduce loads
- New lighting and controls

New Building Systems Overview

- The existing building has an energy use intensity (EUI) of 132 kBTU/sf/year
- Current modeling is tracking 35 kBTU/year, a 75% reduction in energy use intensity



DEDICATED OUTDOOR-AIR SYSTEMS

AIR-COOLED CHILLER AND GROUND-SOURCE HEAT PUMPS

GROUND-LOOP HEAT EXCHANGER

ALL-ELECTRIC SYSTEMS

NEW DISTRIBUTION WITHIN EXISTING HISTORICINTERIORS

TARGET: TRACKING HIGH LEED SILVER

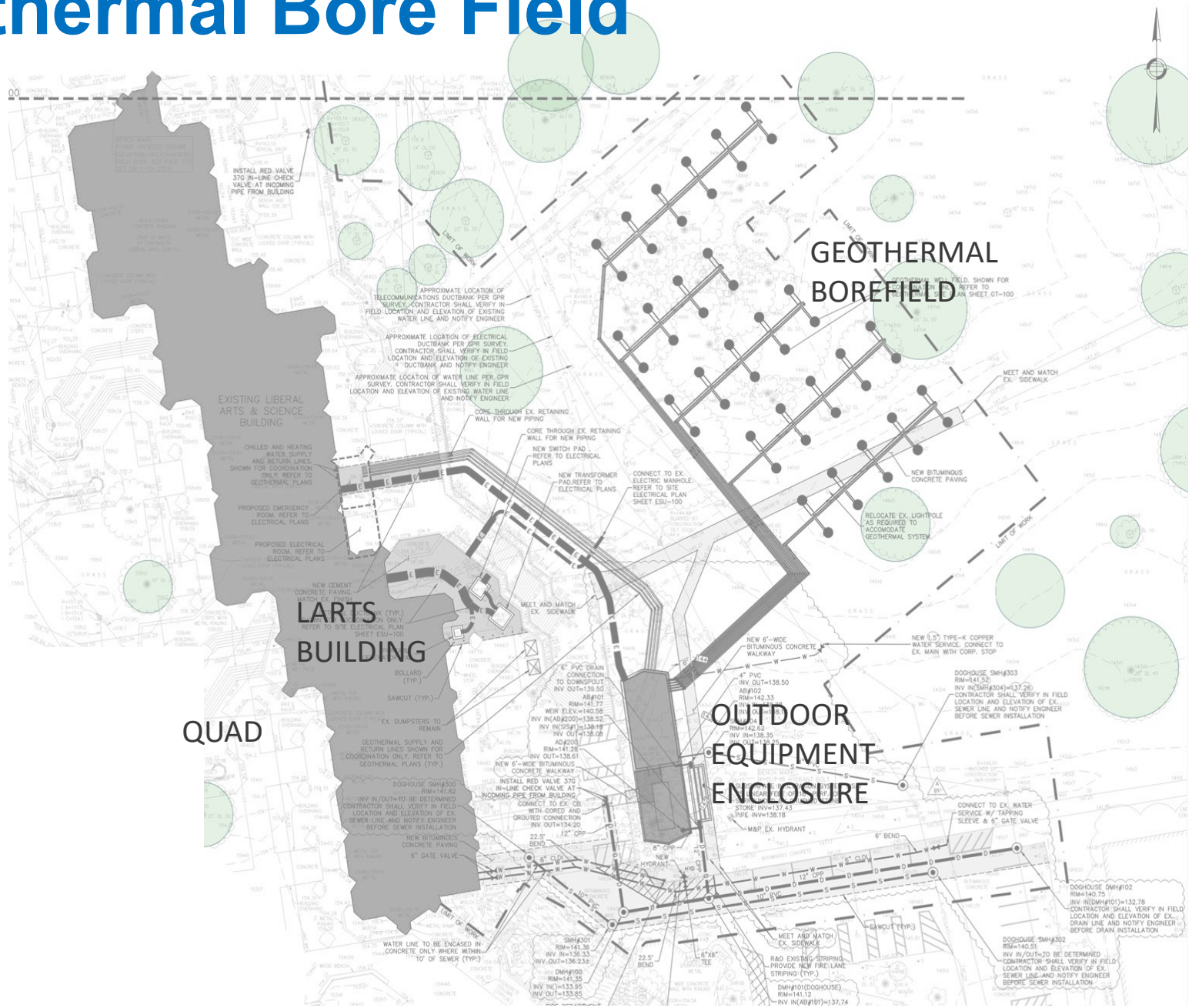
New Building Systems Detail

- Hybrid of air-cooled chiller and ground-source heat pumps, with existing steam as a backup system
- Geothermal (ground-source heat pump) system to support the HVAC.
- 4-pipe fan-coil units and hydronic perimeter radiation to provide local conditioning
- Ventilation systems to provide ventilation separate from heating and cooling
- All-electric systems help ready the campus to phase out the steam plant and take advantage of a cleaner grid
- New lighting and controls to meet current energy-use goals

Geothermal Bore Field

Ground-source heat pumps circulate water in 650’-deep wells. The natural temperature of the earth warms the water in the winter and cools it in the summer. This water is circulated through the heating & cooling systems in the building.

- **50 bores at 650’ deep**
- **No visible elements at the surface**
- **Location selected to support future expansion of campus geo capacity AND future building sites**



Energy Modeling

Assumptions

- Building Area: 122,020 Square Feet
- Diversified Occupancy: 2,109 People
- Climate Data based on location
- Cooling Setpoint/Setback: 75°F / 81°F
- Heating Setpoint/Setback: 70°F / 64°F

Results

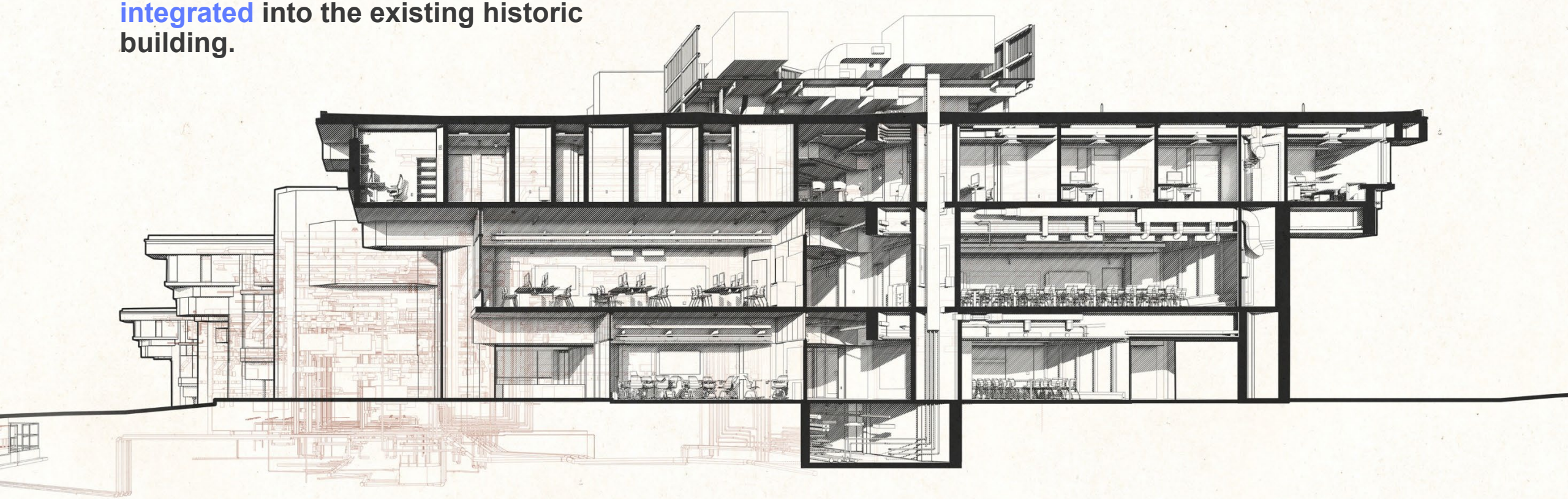
- Predicted EUI = 35 kBTU/sf/year
- 75% reduction to previous EUI
- 29% reduction in energy costs
- 63% annual carbon reduction; much of this is grid emissions which are largely offset by the campus power-purchase agreement

Appendix

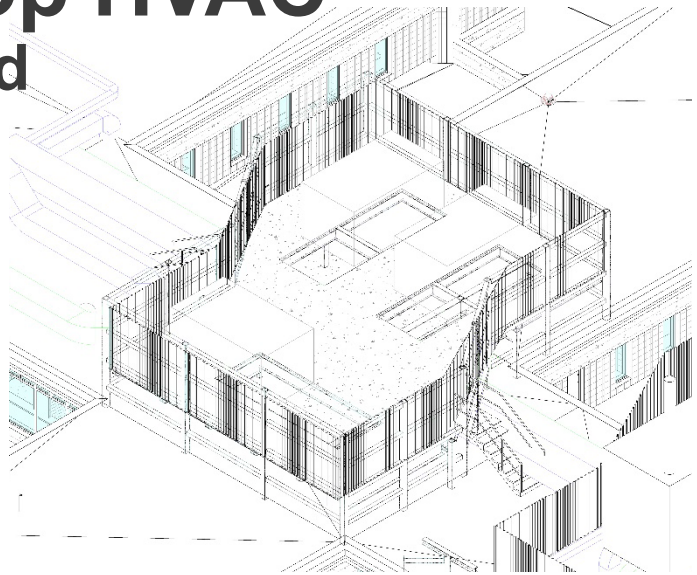
More Detail

Systems Integration

A key part of the design will be the sensitive way these systems are integrated into the existing historic building.



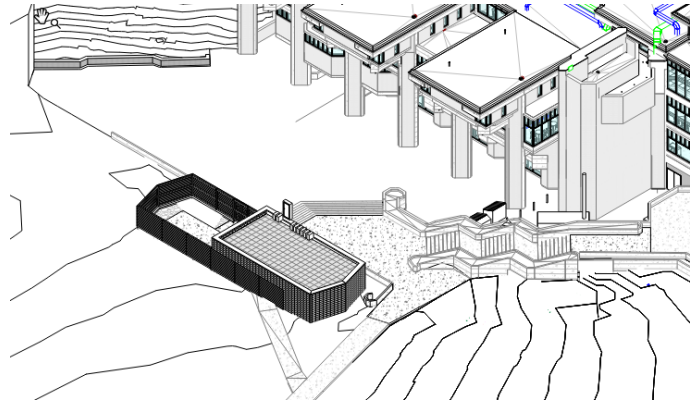
Rooftop HVAC
Screened



Equipment is supported on elevated walking platforms to transfer loads to existing structure

Outdoor equipment enclosure

- Air-cooled chiller and geothermal equipment will be contained in a new, freestanding outbuilding and enclosure
- The design will complement the existing architecture while remaining distinct
- Materials include custom fluted concrete block and preweathered wood screening



Building Systems Detail

- New hybrid heating and cooling systems, utilizing a hybrid of air-cooled chiller and ground-source heat pumps, with existing steam as a backup system
- Geothermal (ground-source heat pump) wellfield to support the HVAC. Ground-source heat pumps circulate water in deep (650’) wells. The natural temperature of the earth warms the water in the winter and cools it in the summer. This water is then circulated through the heating & cooling systems in the building
- 4-pipe fan-coil units and hydronic perimeter radiation to provide local conditioning
- Ventilation systems to provide ventilation separate from heating and cooling
- Electrical system upgrades to support the electrification of HVAC. All-electric systems help ready the campus to phase out the steam plant and take advantage of a cleaner grid
- New main and emergency electrical rooms, new switchgear
- A new emergency generator
- New lighting and controls to meet current energy-use goals
- New tel/data systems
- A new hybrid heat-pump electric domestic hot water generation system
- Replacement of roof drains, storm drain piping (as necessary) and addition of secondary drainage at selected roofs

Energy Modeling Assumptions

General Building Info

- **Building Area: 122,020 Square Feet**
- **Diversified Occupancy: 2,109 People**

Climate Data

- **Weather Data File: USA_MA_New.Bedford.Rgnl.AP.725065_TMY3**
- **Cooling Design Day: 88.3/73.8°F DB/WB**
- **Heating Design Day: 7.5°F DB**

Interior Setpoints

- **Cooling Setpoint/Setback: 75°F / 81°F**
- **Heating Setpoint/Setback: 70°F / 64°F**
- **No Active Humidification or Humidity Control**

Energy Modeling Results

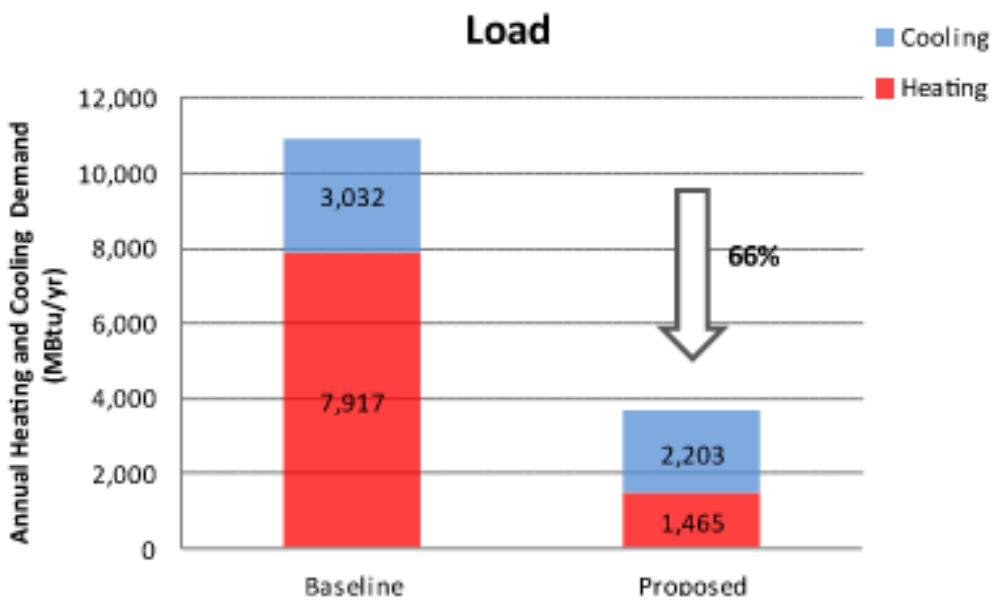
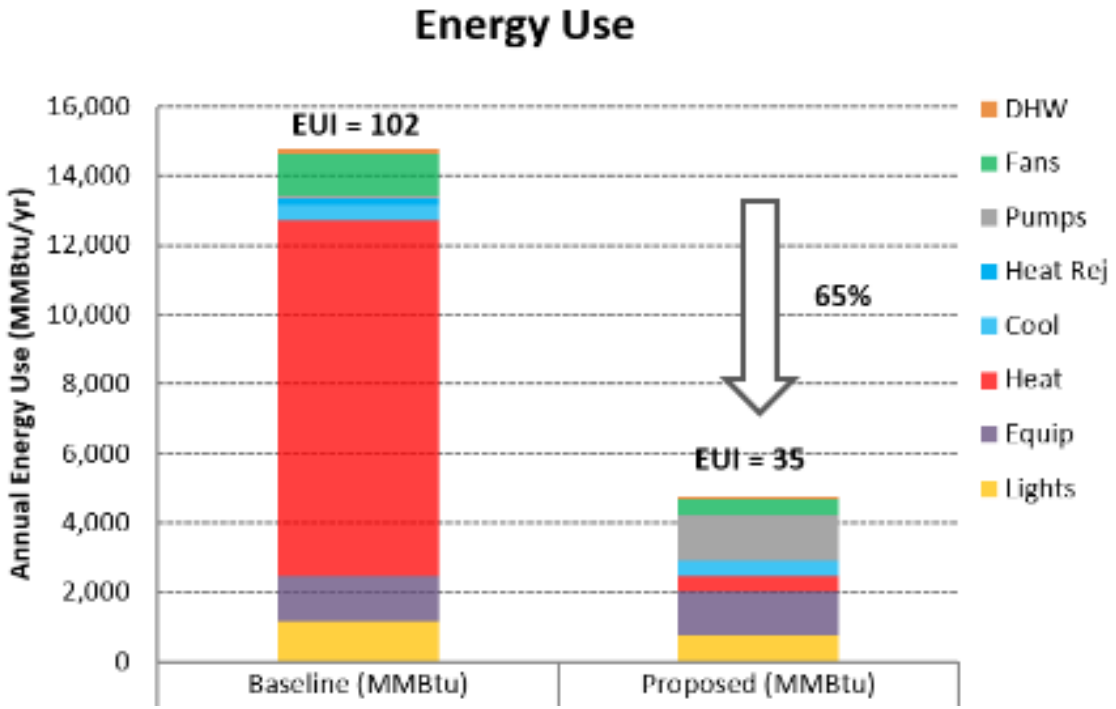
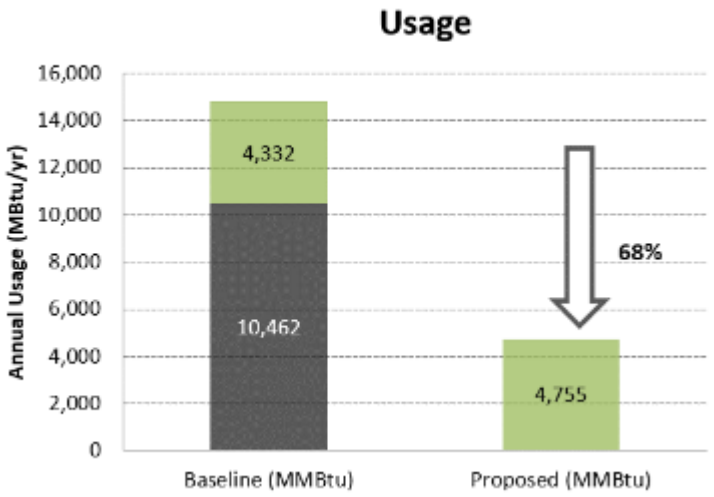
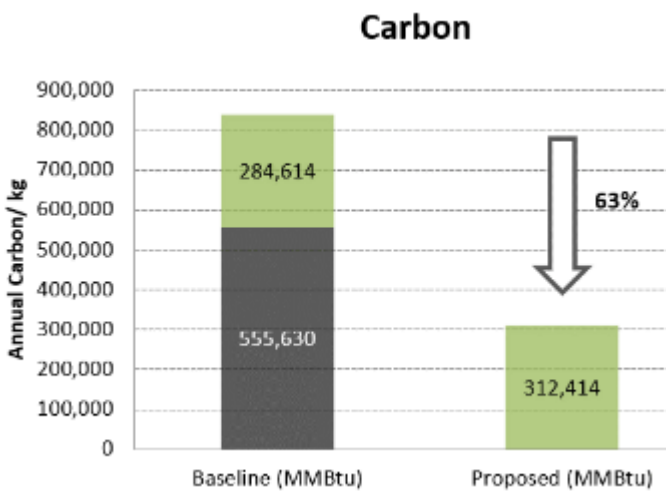


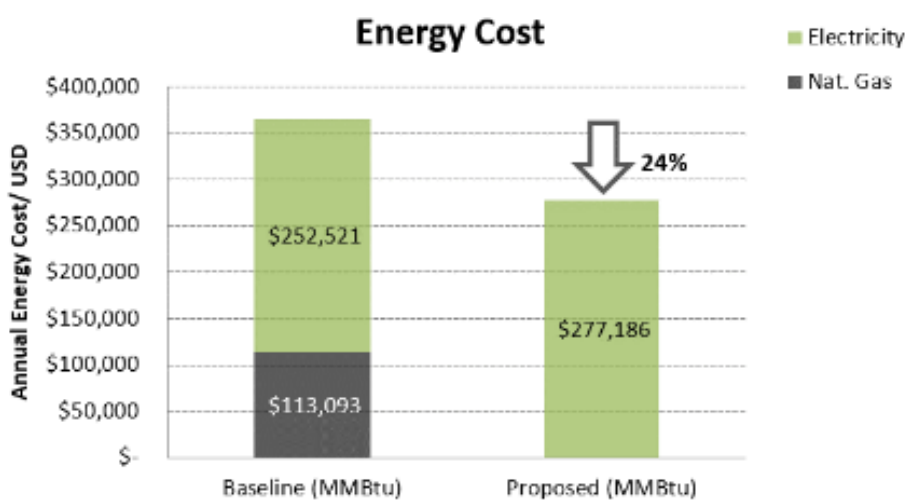
Figure 3. Load Comparison



Energy Modeling Results





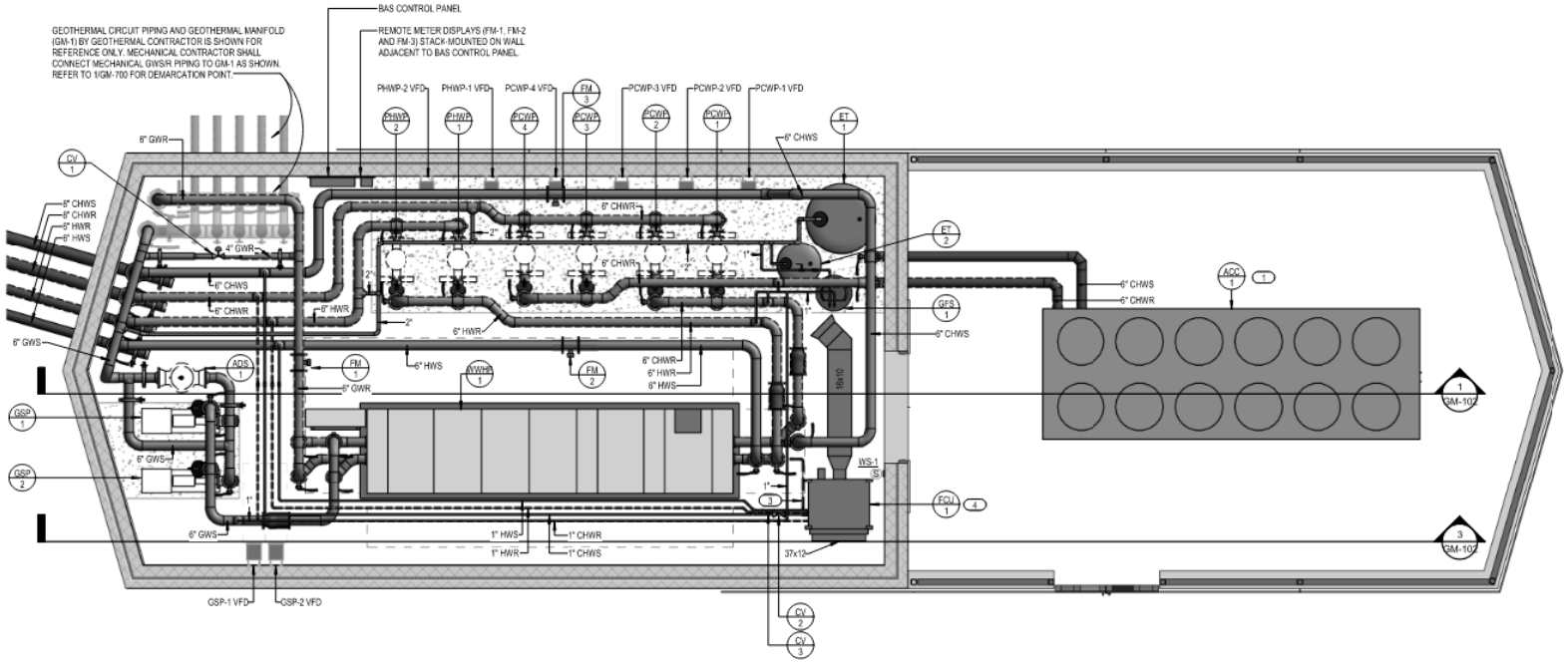


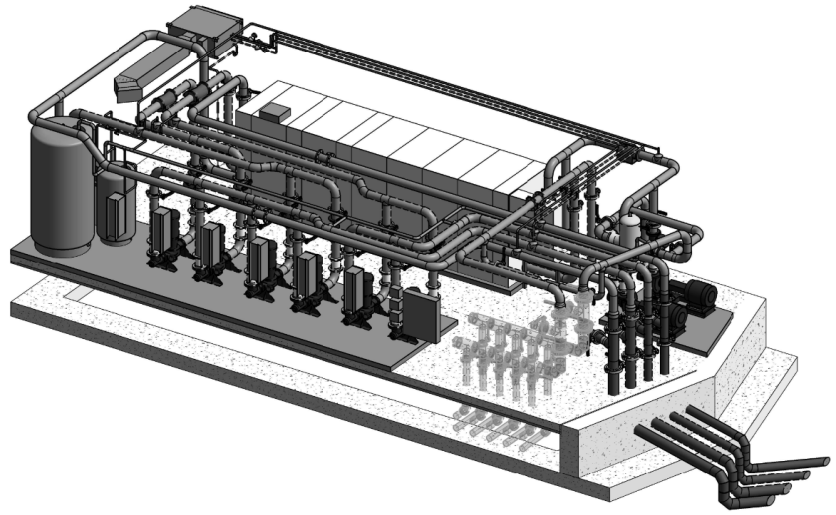
Geothermal System

Exterior mechanical equipment enclosure housing:

- **150 ton cooling (2,730 MBH heating) water-to-water heat pump array**
- **Primary hot water, chilled water and geo-source water pumps**
- **System expansion tanks and air separator**
- **Pump VFDs**
- **Geothermal system circuit manifold**

Associated 150 ton air-cooled chiller to supplement geothermal cooling system

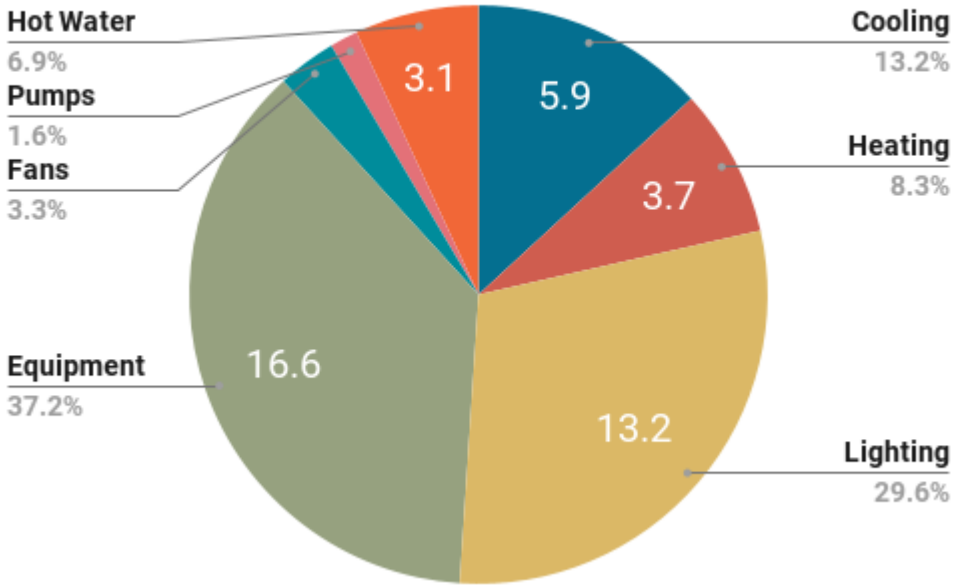




Geothermal Costs and Benefits

- Hybrid design for heating and cooling utilizing air-cooled chiller and ground-source heat pumps
- Borefield cost: approx. $2.6M^
- 65% EUI Reduction compared to a Baseline Building*
- 75% EUI reduction compared to Existing Conditions before renovation
- Reduced heating utility costs compared to a similar design utilizing only air-source heat pumps
- The project is pursuing geothermal incentives through MassSave and the Inflation Reduction Act

Estimated EUI Distribution (As Designed)



^ Based on 90% CD Cost Estimate by BOND
* Based on Design Development Energy Model