

Attachment A: Project Background

Project Name: Chemistry HVAC Replacement and Improvements

Project Type: Demolition & Replacement

Project Location: 578 S. Shaw Lane

Project Budget: \$60-\$70M

Anticipated Construction Start: November 2027

Target Completion: Design 8-12 Months

Project Area: Mechanical Rooms, Interstitial Space

1. Executive Summary / Project Vision

Michigan State University (MSU) seeks to implement comprehensive HVAC replacement and system improvements within the Chemistry Building to support the University's academic, research, and laboratory environments. This project will modernize outdated mechanical infrastructure and deliver a more efficient, reliable, and sustainable building system capable of meeting current and future performance requirements for one of MSU's research-intensive facilities.

The existing HVAC systems in the Chemistry Building have reached the end of their useful life and no longer provide adequate environmental control for modern laboratory operations. Aging equipment, inconsistent airflow, and limited system capacity present challenges for maintaining critical laboratory conditions and achieving desired energy efficiency.

Upgrading and replacing the HVAC systems will provide MSU with a long-term solution that enhances building performance, improves occupant safety and comfort, and supports high-quality research and teaching activities. The project will introduce modern mechanical equipment, improved air-handling and distribution, upgraded controls, and energy-efficient technologies designed to reduce operating costs and environmental impact.

The Chemistry HVAC Replacement and Improvements project represents a critical investment in MSU's research infrastructure, ensuring that faculty, students, and research personnel have access to safe, dependable, and high-performing laboratory environments. This modernization will position the Chemistry Building to support advanced scientific work, accommodate future programmatic growth, and maintain MSU's commitment to sustainability and academic excellence.

2. Scope of Work

The project will include:

- Design the project to accommodate phased construction, evaluating each phase for constructability and potential impacts on building operations.
- Add additional capacity to core water and air systems where space allows.

- Perform point-cloud scanning and field verification of existing mechanical room conditions. Translate existing conditions into a three-dimensional, Building Information Model (BIM) and associated drawings identifying all systems within the space at LOD 400.
- Assessment and verification of wind entrainment effects on all existing, newly established and relocated supply and exhaust systems.
- New systems to be established:
 - A new Heating Ventilation and Air Conditioning (HVAC) unit (HVAC-9) in the subbasement room B3 to supplement the common supply air plenum currently served by HVAC-1 and HVAC-2.
 - Scope to include dividing Room B3 into both a mechanical room and a separate chemical storage room.
 - A low-temperature hot water heating system sized to serve the new and upgraded HVAC units.
 - An energy recovery loop routed from the penthouse exhaust systems and connected to HVAC systems.
 - Building fire suppression system complete including: distribution piping, pump station and control.
- Develop a logistics plan consisting of detailed sequencing, duration, calendar, and critical path to demolish and replace HVAC-1, HVAC-2.
- Replace HVAC-3 with 2 units with 1 lab focused and one auditorium common space focused.
- Demolish and replace HVAC-4, providing increased capacity within the existing footprint and connecting it to the energy recovery system.
- Replace laboratory high-plume exhaust fans, evaluate making new roof-mounted fan assemblies.
- Upgrade HVAC-5 and HVAC-6 with low-temperature hot water heating coils and integrate both units into the energy recovery system.
- Correct inefficiencies within HVAC-1 & HVAC-2 common air plenum, including removal of abandoned piping systems.
- The project may also incorporate selective building finish upgrades and limited programmatic reconfiguration where necessary to support HVAC system improvements and overall building performance.
- Arc Flash Study – to determine incident energy levels and establish appropriate PPE categories, ensuring personnel safety and compliance with NFPA 70E. Produce MSU standard arch flash labels shall be included in a documented study produced by the engineer of record.
- Short-Circuit Evaluation Study – to calculate available fault current at all major distribution equipment and verify that equipment interrupting ratings and protective devices are properly rated and coordinated. Short-circuit evaluation study shall include fault duty evaluation, time current curves (TCC's) and breaker settings report. The study shall be produced by the engineer of record.
- Emergency Generator Evaluation – to assess generator spare capacity, loading, starting currents, fuel system performance, and the generator's ability to support life-safety, legally required, and optional standby equipment branch loads in accordance with code requirements.

3. Continuous Operational Requirements

- The Chemistry Building will remain occupied during construction, and the project shall be designed and executed using a carefully phased approach that maintains continuous laboratory operations and required environmental conditions.
- Phased Implementation Strategy - The A/E team shall develop a detailed phasing and sequencing plan during Pre-Design and refine it through Design. The plan shall:
 - Identify work zones, swing spaces, and temporary system configurations.
 - Sequence HVAC replacements to maintain environmental control in occupied laboratories and support areas.
 - Minimize disruption to teaching schedules, research continuity, and building access.
 - Address transitions between existing and new systems without loss of required airflow, pressurization, or temperature control.
- System redundancy with incorporated capacity for future growth.

4. Team Qualification Requirements

MSU is seeking a design partner with demonstrated expertise in phased HVAC replacements and upgrades. The selected partner should be experienced in developing design solutions that provide support for building functions throughout each construction phase, ensuring minimal disruption to ongoing operations.

5. Design Services Delineation

Base Design Services

- MEP & Fire Protection Engineering
- Architectural Design in support of MEP & Fire Protection Systems Engineering, Code, MiOSHA and other applicable Life Safety requirements.
- Structural Engineering in support of MEP & Fire Protection Systems Engineering
- Fire Alarm and Life Safety Code Review (including BFS submission)

6. Final Deliverables

- The selected A/E team will enter into a Professional Services Agreement to provide design services from investigation of existing conditions through completion of construction documents.
- The final construction documents shall communicate the detailed project scope and phases.
- A logistics plan defining comprised of drawings, narratives, phasing, and schedule.
- A detailed construction estimate accounting for the estimated construction cost, and phasing strategy, temporary costs, general conditions, fees, permits, and other associated costs.
- Deliverables from this phase shall serve as the basis for establishing the overall project budget and aligning required funding to construct the project.

Construction Administration – Selection is tentative upon completion of design.

7. Budget & Schedule

Current Total Project: \$60–\$70M (inclusive of design, construction, MEP, fees, and contingencies).

Milestone Schedule:

MSU Board of Trustees (BOT) Authorization to Plan (Step 1)	June 13, 2025
A/E RFP Issued	February 12, 2026
<i>Site Visit</i>	<i>February 26</i>
Proposals Due	March 5, 2026
<i>Selection Committee Review Meeting</i>	<i>March 11, 2026</i>
<i>A/E Team Notification</i>	<i>March 12, 2026</i>
<i>A/E Team Interviews</i>	<i>April 6, 2026</i>
<i>A/E Team Kickoff Meeting</i>	<i>April 29, 2026</i>
<i>Design Begins</i>	<i>April 30, 2026</i>
Construction Documents	January 2027
CM RFP Issued (Tentative)	January 2027
MSU Internal Committees (Tentative)	
CIPWIG (Tentative)	February/March 2027
ECBFS (Tentative)	March/April 2027
MSU BOT Authorization to Proceed Step 2 (Tentative)	June/October 2027
Construction Begins (Tentative)	Fall 27 / Spring 28
Construction Duration (Tentative)	36 - 72 Months