

REQUEST FOR PROPOSAL

UNIVERSITY OF MICHIGAN

NORTH CAMPUS UTILITY MASTER PLAN

AEC Project No. P00020008

Introduction and Description

The University of Michigan (U-M) is seeking a consulting firm (or team, hereafter, consultant) to develop a [North Campus](#) Utility Master Plan (NCUMP), under the direction of a U-M Architecture, Engineering and Construction (AEC) Design Manager (DM) and in conjunction with the U-M NCUMP Steering Committee and other stakeholders. The NCUMP will be informed by a wide variety of reference information and include near and long-term recommendations associated with the expansion, consolidation, modification and capital renewal of utilities infrastructure, with an emphasis on electricity, natural gas, and central heating and cooling equipment and distribution. The NCUMP will also include recommendations associated with energy load reductions in new and existing buildings served by these utilities.

U-M adopted carbon neutrality goals in May of 2021, following completion of an extensive report generated by the U-M President's Commission on Carbon Neutrality (PCCN). The [PCCN report](#) and ensuing carbon neutral goals were a key catalyst for initiating the NCUMP. Recommendations from the PCCN report and project goals for the NCUMP are discussed in the *Background and Assumptions* section below.

A [North Campus Master Plan](#) was adopted and published in 2008. U-M is preparing to update this plan in conjunction with a separate, broader Integrated Campus Master Plan (IMP), which will be conducted concurrent with the NCUMP. The NCUMP consultant will collaborate with the IMP team to ensure alignment of the NCUMP and IMP.

U-M intends that the NCUMP offer a broad perspective, include creative approaches and be developed in a collaborative, multi-phased manner. The *Scope of Work* section within this RFP describes potential work scope and phases, with the expectation that the consultant will refine the scope and phases in collaboration with the NCUMP Steering Committee.

Background and Assumptions

The NCUMP will address U-M's North Campus (NC) located within the City of Ann Arbor that includes roughly 1000 mostly contiguous acres, numerous buildings of various building types and ages, parking lots, roadways and open space (some green space, some undeveloped woodlands). The site is divided into nine zones, as described in the U-M AEC Planner's Office *North Campus Overview* (see appendix).

The PCCN Report and associated appendices point to achieving carbon neutrality by 2040 campus-wide, primarily through energy load reductions and implementation of GeoExchange heat pumps. While the

NCUMP should consider the PCCN recommendations, alternative approaches to achieving project goals are encouraged to be considered as well.

Project Goals:

- Develop best-value recommended path (near term actions and long-term strategy) for utility infrastructure for transforming the U-M North Campus to carbon neutral by 2040.
- Define utility corridors to be used by new and existing utilities over the coming 50 years.
- Identify potential energy plant concepts, locations and required capacities, including potential GeoExchange fields, and allowing for potential new development, aligned with evolving U-M Integrated Master Plan.
- Ensure utility systems reliability and resilience.
- Inform project scope, timing and cost for near-term projects addressed in the Utilities Capital Plans.

Existing Infrastructure Summary

Buildings:

- Constructed between the early 1950s and 2022.
- Variety of construction types, building uses.
- Total ~8M square feet.

Heating:

- Virtually all heating is performed by burning natural gas, either at gas-fired HVAC equipment, or at steam or heating hot water boilers.
- While some boiler plants serve more than one building, most of U-M NC is not served by a district heating system. The North Campus Research Complex (NCRC) is the exception, with virtually all heat on the 2M+ square foot complex being fed by a steam heating plant located in Building 0080.
- U-M NC includes virtually no solar thermal.
- The Leinweber Building is currently in CD design, and includes heating coming from the Hayward GeoExchange Plant (with heat recovery chillers). A portion of U-M NC residential areas is in the programming phase for redevelopment, and is expected to include GeoExchange heat.

Cooling:

- Most buildings on U-M NC include air conditioning (AC). Some student residences do not include AC.
- AC comes primarily from chillers, though U-M NC includes some direct expansion cooling as well (AHUs, mini-splits, etc.) Most chillers are electrically driven, though NCRC has some steam driven chillers.
- U-M NC includes two significant district cooling systems: a two-headed plant at NCRC (Buildings 0080 and 0800), and the North Campus Chiller Plant (NCCP). Both include significant underground chilled water distribution.

Power

- NCRC includes some natural gas-fired combustion turbine electrical generation.
- Most buildings include natural gas-fired emergency generators.
- Primary distribution is obtained from DTE via double-ended switching stations for 4.8 and 13.2 kV distribution.
- Most electrical power distribution consists of underground duct banks containing 4.8kV and 13.2kV feeders.

- Typically each building contains its own single or double-ended substations for building distribution at 120/208 or 277/480 Volts

Underground utility systems

- U-M maintains a GIS system for all underground piping and duct banks located in U-M NC.

Reference Drawings

- U-M has an extensive but not always comprehensive collection of drawings and building data. Consultant field verification will be required where warranted.

Projected Infrastructure 2040 and Beyond

Buildings

- Many buildings that exist in 2022 will remain in service, others will be demolished and sites potentially redeveloped in alignment with the Integrated Master Plan. Existing buildings that remain will see varying degrees of energy upgrades and renovations.
- Total development of the U-M NC might approach 20M square feet, but there is no clear timeline in which that might occur.

Heating:

- Building heat will not likely rely on burning of natural gas or other fossil fuels.

Cooling

- Virtually all buildings will include air conditioning.
- Virtually all building cooling will be electrically driven.

Scope of Study

U-M is seeking a consultant that will bring an innovative, creative approach to this assignment and will utilize the response to this RFP as one indicator of a firm's approach to innovative thinking.

Accordingly, the following represents the anticipated preliminary Scope of Work. Respondents are encouraged to offer alternative scope items, approaches and methodologies that address the overall goals of the assignment. We are encouraging creativity within a framework. It is expected that the selected consultant will verify and refine the final scope of work with U-M once the project is initiated. The NCUMP and the IMP will be created in a highly coordinated and consultative manner. The selected team will be expected to attend a number of meetings and consultation events. At this time, the specific consultation events in which the selected team is expected to participate include the following:

- Milestone meetings with the NCUMP Steering Committee (12)
- Selected interviews and small group review meetings (approx. 16)
- Consultant Team Workshops (4)
- Key Stakeholder Liaison Group Meetings (2)
- Campus Open Houses (2)
- Senior Administration and IMP Steering Committee Meetings (as required)

Phase One – Campus Understanding and Analysis (Establishing a Baseline):

Outlined in this initial phase is what U-M anticipates will be required to gain an understanding of how energy is used in buildings and plants on NC to allow a baseline for the development of recommendations.

- Review existing documentation and complete a reconnaissance for the current state and condition of in scope utilities and buildings HVAC infrastructure. Explore and assess existing plants and distribution assets:
 - Chillers, Chiller Plants and Chilled Water Distribution
 - Boilers, Steam distribution and Heating Hot Water Distribution
 - GeoEx Plant
 - Electrical Generation, Primary feeds, MV distribution, and Substations
 - Existing Utility Corridors
- Review existing documentation and existing relevant University policies to understand drivers, constraints, and guidance:
 - 2008 Campus Plan, 9 sub-campus areas within North Campus
 - Unpublished Campus Plan Updates (2009-2016)
 - FCA Database
 - Existing 10-year Capital Plans
 - PCCN Report, Appendices, and Carbon Goals
 - U-M Design Guidelines
 - Existing F&O structure
 - Context with the City of Ann Arbor
- Interview key University stakeholders and representatives to gain an understanding by sub-campus of building type, use, and how utilities are currently provided and fill in any information gaps.
- Refine and Affirm Project Goals

Prepare an Existing Conditions and Best Practices report that synthesizes relevant studies, identifies data/information gaps, and provides an approach to addressing any gaps. This report will summarize opportunities, limitations, and critical needs, and frame key issues that require further investigation during subsequent phases of work. Outline servicing strategies and technologies that may be considered by the University for each utility and provide an assessment of the benefits and limitations of each. Finally, this report should also include draft criteria for evaluating potential new carbon reduction opportunities.

Phase Two – Establishing the Vision:

In this phase of work, the strategies and technologies outlined in the Best Practices report will be further explored in consideration of the needs and issues outlined. The NCUMP consultant will clearly define the existing conditions, then post a full range of possibilities for the future development of the energy utility infrastructure. Working with the NCUMP Steering Committee and the broader IMP team, the NCUMP consultant will lead an exploration of the range of energy utility possibilities. Using the draft evaluation criteria defined in Phase One, the NCUMP team will guide U-M in establishing an overall strategic direction – or Vision – for each utility system for each of the nine sub-campuses. This may be done in a series of workshops or in an alternative consultative format.

In this phase, it is anticipated that the consultant will need to perform the following:

- Develop an appropriate load analysis for each thermal utility for campus planning scenarios (current and future state) to include approximate dates for the addition of new or changing loads. Note: This is expected to be an iterative analysis as the campus planning process moves forward.

- Develop key design principles for the energy infrastructure that are relevant to and may inform the development of the IMP. The design principles should address, but not be limited to: inter-building connectivity, intra-building connectivity, capacity, reliability and redundancy.
- Identify demand side targets and opportunities. This includes reduction of energy use for existing buildings as well as optimization of current heating and cooling infrastructure.
- Evaluate district vs discrete systems taking scalability into account as renovations, new construction and system expansion occurs. Define regions for each utility, buildings/areas that might stand-alone.
- Review of emerging technologies such as waste-to-energy, fuel cells, and other renewable sources with associated recommendations for their role within the NCUMP, to include an assessment of both capital and operational costs.
- Recommendations regarding the introduction of alternative energy sources and utility management, as appropriate.
- Structure and facilitate a focused discussion and process with the NCUMP Steering Committee in which a full range of potential strategic planning directions for each utility is considered.

Prepare a Utilities Infrastructure Vision statement and supporting narrative.

Phase Three – Preliminary Recommendations:

Building upon the work completed in Phases One and Two, the effort in Phase Three will put forward detailed planning recommendations for each utility addressing both the renewal of existing infrastructure and the development of new infrastructure and services. The recommendations will have regard for the primary principles of efficiency (including energy efficiency), reliability and redundancy.

The NCUMP team will review the options developed as part of the IMP planning process and provide input on any issues relating to the provision of utilities within the IMP, and assist the NCUMP Steering Committee in defining the preferred direction for the development of the final IMP and associated utility infrastructure recommendations.

For those projects identified as part of the initial 10 year capital program, defined in each of the IMP plan options, the NCUMP team will provide preliminary recommendations for any major utility upgrades and/or new services, noting key milestones, any necessary enabling projects and establishing planning-level capital cost estimates.

For any new infrastructure and services beyond the 10 year capital program, the NCUMP team will also include preliminary recommendations on any further technical studies required to support the detailed development of specific utilities and/or options to support the long term program. Such studies may include the development of detailed feasibility plans outlining technical scope; development and implementation timelines; enabling projects; regulatory requirements/approvals; alternative financing strategies and a planning-level budget for each potential future technical study.

The preliminary NCUMP recommendations will be coordinated with the IMP, highlighting the specific IMP initiatives they will support.

Phase Three deliverables are anticipated to address or provide the following:

- Analysis of North campus energy and utility costs such as the conversion from steam to hot water, including detailed cost benefit analysis, proposed phasing schedule, building NCUMP impacts, operational NCUMP impacts and long-term carbon and energy NCUMP impact. A proposed systematic approach for lifecycle maintenance and improvements to the energy systems.
- Comprehensive incremental scaleable energy strategy with recommendations for new plant technologies to enhance energy conservation including capital cost, on-going operational NCUMP impacts, life cycle costs and sensitivity studies.
- A 10-year infrastructure upgrade plan that can directly inform the Capital Plan for items over \$100K and the Major Maintenance plan for items less than \$500K. Group upgrades by type, e.g. steam system, chilled water, electrical, HVAC, etc.
- Informed updates to existing [U-M Design Guidelines](#) to ensure new work is consistent with the long term strategy.

Phase Four – Finalize NCUMP:

Phase Four will incorporate and document the preliminary utility planning recommendations and analysis that results from Phase Three, within a Draft and Final NCUMP.

Phase Four deliverables must address or provide the following:

- Detailed and coordinated utility plans to support those projects identified within the draft and final IMP. Plans are to identify utility/facility type, location, approximate size and be supported by a narrative that outlines potential phasing, enabling projects and cost (capital and operating).
- Detailed recommendations for future electrical capacity and infrastructure that complements the recommendations and existing infrastructure.
- Detailed recommendations for maintaining minimal heating in the campus buildings should a sustained electrical utility failure occur.
- Comprehensive tabulation of all the options studied to include capital cost, operating costs, (maintenance, energy, labor, water treatment, etc.), annual CO2 emissions, reliability rating, (i.e N+1), 30 year net present value, and qualitative benefits and negatives.

All plans and recommendations are to be consolidated within an overall draft and final NCUMP.

Written and user friendly Graphical communications to summarize the analysis and recommendations. Facilitate communication of the NCUMP to campus stakeholders.

Consultant Selection Process and Criteria

U-M will review proposals, potentially narrow the pool of candidates, interview several consultants, and ultimately select a consultant based on the following criteria.

- Firm's philosophy and approach. Relevancy and success of company's comparable projects.
- Team Experience: Individual proposed team members' experience in working on similar projects. Proposed team project manager's experience and record of accomplishment in leading projects of this size and complexity.

- Workload/schedule Compliance: Ability to make this project a priority and to meet project objectives in a timely and efficient manner. Demonstrate adequate financial, planning and execution resources.
- Proposed scope and phasing of consultant services.
- Consultant fee.
- Written and Graphical Communications: Strong experience and ability to summarize analysis and recommendations in written descriptions and user-friendly graphics.

Format of Proposal Response

Prospective consultants shall submit proposals that address the scope as identified in the RFP including the firm's approach, methodology, and recommendations for conducting the NCUMP. This should be unique to each firm submitting responses to allow U-M to evaluate who has the best approach for conducting this study. Responses should also include:

- Include the individuals, both inside and outside the submitting firm, who would contribute to this project during programming, and during possible future phases of work. Describe their roles. Provide an experience summary that is relevant to this project for each individual, as well as a short list of references for the three people in each organization with the greatest proposed project responsibility.
- Provide a list of current and future projects to which each proposed team member is currently committed. This list should provide the project title, current phase, and expected duration of team member commitment.
- Submit up to five significant projects in which the submitting firm is now involved or which the submitting firm has completed within the past six years. Projects selected should in some way relate to the scope of work of this project in terms of programming, planning, and/or design. Provide illustrations of the projects. Describe the role and responsibilities of the submitting firm on each project. Describe the cost performance of each project in comparison to the initial project budget. Provide a reference name and telephone number for each project.
- Provide a detailed description of the consultant's proposed approach for the NCUMP, including individual tasks, key decisions, milestones, and anticipated support required by U-M.
- For purposes of public disclosure, provide a statement revealing the names of anyone in any of the proposing project organizations that have or will have a teaching appointment at U-M during the period of this project.
- Submit proposed study schedule from award to completion, with detailed breakdown of intermediate milestones.

Preliminary Project Time Frame

Anticipated Design, Documentation, and Construction timetable:

Proposals due	3 pm July 15, 2022
Firm interviews	Week of August 1, 2022
Selection of firm (negotiation of fee schedule/timing)	August 2022
Project Kickoff	September 2022
Final NCUMP (draft)	September 2023

Other Considerations

Responding consultants are advised that RFP submissions received are likely to demonstrate a diverse range of experiences, qualifications, approaches, and, therefore, may not be readily comparable to one another. As a result, notwithstanding the general evaluation criteria set out above and the University of Michigan may exercise a broad range of discretion in evaluating and/or short-listing responding consultants. The evaluation may be based on both subjective and objective criteria.

In its sole discretion, the University of Michigan may contact any one or more references of any one or more responding consultant firms/teams, and such references may affect the evaluation of the responding consultant in question.

The University of Michigan reserves the right to not proceed with this assignment; to proceed with a full consultant team and work program as submitted; or to proceed with only certain elements of a consultant team or work program submitted, at their sole discretion. The University of Michigan reserves the right to combine portions of responding consultant teams or work programs.

No assumption should be made that the submission evaluators have any knowledge of the experience, expertise and performance of the responding consultant or its team member on projects or assignments other than those submitted by the responding consultant.

Confidentiality

The RFP may contain Owner information that is sensitive and confidential on matters such as Owner's budgeting, programming, and scheduling. Accordingly, the Design Professional agrees by accepting receipt of this RFP, that it will not share the RFP or any other information contained in the RFP, such as building drawings, documentation or utilities information, with any third party other than those considered as part of the proposed project team. The Design Professional will limit the use of, and access to, the RFP and the information contained in the RFP to its employees and agents whose use or access is necessary to the Design Professional's response to the RFP. The Design Professional's submission of a proposal in response to this RFP, indicates among other things, the Design Professional's agreement to be bound by this restriction.

Please note that the University of Michigan reserves the right, in its own interest, to accept or reject any proposals.

6/13/2022

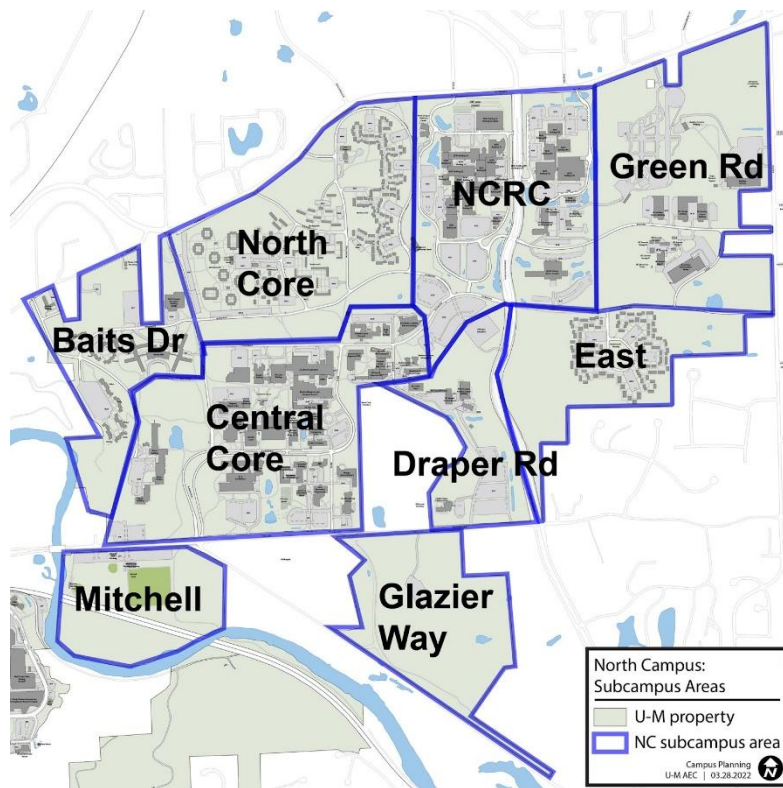
Deanna Mabry, RA, NCARB, MBA - Associate Director of Design
University of Michigan
Architecture, Engineering and Construction

Attachment: Appendix

Appendix

Overview of North Campus Sub-Campuses

North Campus can be divided into the following nine following distinct sub-campus areas:



Central Core Area: This area contains North Campus’s academic instruction buildings, many research spaces, performance venues, and public goods spaces such as Pierpont Commons and the Duderstadt Center in a moderately dense area at the heart of North Campus. Future development capacity largely centers around infill and redevelopment opportunities. These buildings are primarily heated with distributed boilers (both steam and hot water) and have an existing district CHW system. The Ann Arbor campus’s first geothermal facility is being constructed off Hayward Street along with the new Leinweber Computer Science and Information Building.

Mitchell Field Area: Located at the southwest corner of North Campus adjacent to the Huron River, the Medical Center Campus, and the Nichols Arboretum, this area is bisected by the Ann Arbor Railroad line with recreation fields and a large commuter parking lot to the North and undeveloped woodland to the south along the river.

Baits Drive Area: At the far west edge of North Campus, this area contains a very large undergraduate dormitory (Bursley Hall) as well as low-density apartment style undergraduate housing (Baits Housing). It also includes the North Campus Recreation Building, two large parking lots, and a steep-sloped wooded area along the Huron River.

North Core Area: Adjacent to Plymouth Road, this area consists mostly of older low-density apartment style undergraduate and family housing, separated from the Central Core by a large undeveloped wooded lot. The area along Murfin Road is being redeveloped with denser undergraduate housing supported by a geothermal field.

North Campus Research Complex (NCRC) Area: This area straddling Huron Parkway largely consists of a 2.1 million square foot former-pharmaceutical research complex purchased in 2009 which is supported by its own power and heating plants. The complex is surrounded by several large parking lots including the North Campus's only parking structure. The area also includes a transportation research facility and administration space for Michigan Medicine.

Draper Road Area: Adjacent to Huron Parkway and separated from the Central Core by Arborcrest Cemetery, this area contains mostly back-of-house support facilities including the main chiller plant that supports the Central Core's academic buildings, the main Grounds support facilities for the Ann Arbor campuses, a large, recently constructed DTE substation supporting all of North Campus, Michigan Medicine's main data center, a child care center, and a large commuter parking lot.

Green Road Area: At the far Northeast corner of North Campus along Plymouth Road and Green Road, this area includes a 20-acre vehicle test research facility, several back-of-house support buildings including the main transportation garage for the Ann Arbor campus, and large undeveloped wooded and open areas.

East Area: This area south of Hubbard Road and east of Hurton Parkway consists of additional older low-density apartment style family housing flanked by undeveloped steep-sloped wooded areas.

Glazier Way Area: At the far south edge of North Campus between Glazier Way and Fuller Road, this area includes areas of undeveloped woodland around a central parking lot and a large former landfill zone with environmental limitations on its redevelopment.