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UNIVERSITY OF MASSACHUSETTS BOSTON

REQUEST FOR PROPOSAL

CONSULTING SERVICES FOR BOSTON CAMPUS

ENERGY AND CARBON MASTER PLAN

RFP NO. CB-21-JN-0187

JANUARY 20, 2021

NOTICE TO CONTRACTORS
THE COMMONWEALTH OF
MASSACHUSETTS UNIVERSITY
OF MASSACHUSETTS BOSTON

Campus Energy and Carbon
Master Plan
CB-21-JN-0187

The University of Massachusetts Boston is soliciting proposals from qualified engineering firms for consulting services to develop a comprehensive Energy & Carbon Master Plan for the institution's campus in Boston, Massachusetts.

The Commonwealth of Massachusetts, University of Massachusetts (Boston) as defined in this RFP, will receive responses from qualified firms.

Inquiries and questions regarding the specifications of this solicitation can be submitted via Bonfire from Monday, January 20, 2021 at 2:00PM Eastern Standard Time and end on Friday, February 5, 2021 at 2:00PM Eastern Standard Time. Responders will not be able to send questions after this date and time.
By submitting a bid; the bidder certifies that, in the event s/he receives an award under this solicitation, s/he shall operate in accordance with all applicable, current Program regulations. **Responses will be received no later than 2:00 P.M., Eastern Standard Time on Friday, February 19, 2021.**

Submitting a response via the Bonfire website is Mandatory; No Hard Copies will be accepted. The documents on https://umass.bonfirehub.com are the official source of information on all bids for the UMass Boston. Documents attained from other sources will not be recognized during the RFP and award process. Vendor's relying on documents obtained from sources other than the https://umass.bonfirehub.com website do so at their own risk and may result in the rejection of an individual's response.
Bid documents can be downloaded from Bonfire, the official UMass eSourcing portal;

https://umass.bonfirehub.com/opportunities/37340

Note that responses must be uploaded to the site on or before the due date and time stipulated. Responders will not be able to upload a submission after the date and time.

The University reserves the right to reject any or all proposals submitted in response to this Request for Proposals ("RFP") and to take any other action the University may deem to be in its best interest.

II. PROJECT DESCRIPTION

As a public entity, the University of Massachusetts Boston ("UMB") is mandated by Executive Order 484 ("EO 484") to reduce Scope 1 and Scope 2 greenhouse gas emissions from campus operations. Using a 2004 baseline of campus emissions, EO 484 calls for UMB to achieve emissions reductions of 40 percent by 2020 and a reduction of 80 percent by 2050. UMB's emissions in fiscal year 2020 were 1% below the campus' baseline emissions. This outcome largely reflects the campus' growth over the last 15 years; full-time enrollment and campus building gross square footage have both increased by 50% over the last 15 years.

UMB's current thermal energy production and distribution infrastructure, which is fueled by natural gas, will not enable the campus to achieve EO 484's current or future emissions and energy targets. To reduce campus emissions on the magnitude required under EO 484, UMB will need to consider alternatives to conventional gas-fired energy systems. To chart a course towards achieving the emissions and energy goals set forth in EO 484, UMB intends to develop an Energy & Carbon Master Plan that enables UMB to 1) understand the investment and implementation requirements to reduce emissions from campus operations in 2050 by at least 80 percent from the 2004 baseline as called for in EO 484, and 2) ensure that future investment in and design of campus energy systems provide resiliency in campus utilities services and operations considering the campus' proximity to the ocean and vulnerability to sea level rise and storm surge, and increased research activities dependent on reliable power and temperature control.

In addition to providing a roadmap to meet EO 484's long-term goals, the Energy & Carbon Master Plan must also enable UMB to evaluate and compare strategies for the campus to meet the 2050 emissions goals set forth in the 2007 American College & University Presidential Climate Commitment ("ACUPCC") and in the Baker-Polito Administration's April 2020 determination letter. As an ACPUCC signatory, UMB has committed to achieving carbon neutrality by 2050. The Baker-Polito Administration has determined that net zero emissions by 2050 is a reasonable and appropriate statewide emissions limit necessary to adequately protect the health, economy, people and natural resources of the Commonwealth. Meeting these goals will require changes to UMB's energy infrastructure, energy purchasing, and consideration of climate preparedness objectives stemming from Executive Order 569.

UMB has five primary goals in developing a comprehensive Energy & Carbon Master Plan:

1. Forecast the campus' hourly and annual energy demands over the next decade under a Business-as-Usual case in which the campus maintains its current level of energy efficiency, and identify any expected shortfalls in campus utility infrastructure capacity and service.
2. Forecast greenhouse gas emissions from campus operations and UMB's energy investment and purchasing costs through 2050 under the Business-as-Usual case in which the campus maintains its current energy systems and sources.
3. Evaluate reliability and resiliency risks in campus utilities and operations considering the campus' proximity to the ocean and vulnerability to sea level rise and storm surge and increased research activities dependent on reliable power and temperature control.

4. Identify, evaluate, and compare energy efficiency, infrastructure and purchasing options that enable UMB to meet the long-term EO 484, ACPUCC, and Baker-Polito Administration emissions goals in a reliable, cost effective manner.
5. Specify the physical infrastructure, operating systems, and costs for UMB to implement the recommended energy investment and purchasing strategy to meet its emissions, cost, reliability, and resiliency objectives. Compare emissions, cost, and resiliency outcomes between the Business-as-Usual case and the recommended alternative case.

III. CAMPUS OVERVIEW

UMB is a public research university dedicated to engaged learning and innovative research resulting in personal and lifelong student success. As one of five campuses that comprise the University of Massachusetts System, UMB is the only public Massachusetts university in Boston. Located on the Columbia Point peninsula on Dorchester Bay, the campus hosts a community of approximately 16,000 enrolled students and 2,300 faculty and staff. The campus encompasses 120 acres of land and is comprised of 3.7 million gross square feet ("GSF") of building space and normally has over 1,000 students living on campus.[1] The campus is located on landfill with most main campus property having been part of the City of Boston's Mile Road dump. Development on campus is subject to various environmental regulations, which can be detailed for bidders upon request.

Campus Master Planning History

In the early 2000s UMB completed a 10-year campus-wide natural gas retrofit via an award-winning energy services project managed by NORESCO. Along with the establishment of a comprehensive sustainability program in 2002, numerous campus green initiatives in energy, green buildings, procurement, hybrid shuttles commenced including building the 2004 UMB Campus Center using a number of LEED criteria. These efforts resulted in UMB being awarded the 2004 Commonwealth of Massachusetts award for Excellence in Environmental Purchasing and Sustainability from the Massachusetts Executive Office of Environmental Affairs. In 2007, UMB signed onto ACUPCC, and in 2009 UMB created its first Climate Action Plan.

In 2009, UMB also developed a 25-Year Campus Master Plan that aimed to provide the vision and framework to reinvent the 1970s campus. A copy of the Campus Master Plan is provided in Appendix C. Sustainability was one of the guiding principles of the Campus Master Plan. The primary focus of the Campus Master Plan was to remove the original Science Center and the superstructure that connected the original campus buildings and that had deteriorated to the point where a new organizing principal for the campus was needed. The Campus Master Plan identified building sites needed for new facilities to accommodate UMB's enrollment growth and an increased emphasis on being an urban public research institution, opened the campus to the surrounding neighborhood and enhanced connections to the campus perimeter, including Dorchester Bay and Boston's HarborWalk, and envisioned the incorporation of residential facilities while remaining a predominantly commuter institution.

[1] Campus GSF will be reduced to roughly 3.0 million GSF with the upcoming demolition of several buildings.

Following the development of the plan, UMB has implemented a number of transformative projects in phases which are aimed at improved teaching, student life, research, transportation, and the physical environment, including:

- Integrated Sciences Complex (LEED Gold, opened 2015)
- University Hall (LEED Gold opened 2016)
- Utility Corridor and Roadway Relocation
- HarborWalk Improvements and Shoreline Stabilization
- Residence Hall 1 (LEED Gold opened 2018)
- West Garage (Solar PV canopy, solar plus storage)

UMB was once again recognized by the Commonwealth of Massachusetts Leading by Example Award for public higher education institutions in 2014 (the individual campus) and in 2015 (as part of the five-campus UMass System).

In conjunction with the development of the Campus Master Plan, a Utility Master Plan was produced by the engineering firm Arup under the direction of the Division of Capital Asset Management and Maintenance ("DCAMM"). The Utility Master Plan focused on the campus' utility infrastructure needs to implement the first ten years of the Campus Master Plan. A copy of the Utility Master Plan is provided in Appendix D. While certain elements of the Utility Master Plan, such as the recommended relocation of campus utility distribution infrastructure required in order to remove the superstructure, have been implemented, other key aspects of the plan, in particular the recommendation to develop a 4.5MW tri-generation facility to replace the Utility Plant, were cancelled.

Overall, while many sustainable building milestones have been achieved, the Campus Master Plan and Utility Master Plan do not sufficiently address strategies and requirements for UMB to meet the goals set forth in EO 484 and the Baker-Polito Administration's 2050 net zero target and are in this sense outdated.

Capital Improvement Projects: 2020 – 2030

The following list includes UMB's planned campus renovations, demolitions, and new construction over the next decade:

Substructure, Science Center, Pool Building and Plaza Demolition and Quad Development
Bayside Redevelopment
New Residence Hall
New Parking Garage
Calf Pasture Pump Station Upgrades

Campus Utility Plant

UMB's Utility Plant houses four boilers that provide hot water to the campus for space heating, although there are portions of the campus that remain reliant on electric resistance heat. The boilers consume approximately 150,000 MMBtu of natural gas each year that is delivered to UMB by National Grid, the campus' local gas utility. Space cooling is provided to buildings by a

district chilled water system that relies in part on a seawater exchange system along with a single 3,750-ton cooling tower.

Electricity Usage and Infrastructure

UMB consumes approximately 60 million kilowatt-hours ("kWh") of electricity per year, nearly all of which is purchased from the local distribution grid behind a primary master electric meter. Eversource is UMB's local utility for electricity service. Electricity is fed to campus buildings via a looped 13.8 kV distribution system owned, operated, and maintained by UMB.

UMB has an array of distributed generation and load management assets on campus, including a building automation system, 378 kW of rooftop solar arrays (separate arrays of 304 kW and 74 kW), a 644 kW solar parking canopy, a 500 kW battery storage system, and electric vehicle chargers. UMB's innovative solar plus storage project with EnelX, received a Leading by Example grant from DOER, an Advancing Commonwealth Energy Storage ("ACES") grant from MassCEC, and several industry accolades. While there is potential for increases of onsite generation capacity, the campus expects that meeting EO484 and ACUPCC goals will require renewable energy efforts to be focused on project developments located off campus.

UMass Sustainability

The University of Massachusetts System ("UMass") has made a collective commitment to responsible stewardship of resources and to demonstrating leadership in sustainable business practices. Each UMass campus conducts a wide variety of programs and services focused on sustainability. The recent efforts and achievements of each campus demonstrate the strong responsibility felt within the UMass community to advance sustainability in the Commonwealth. More information on UMB's campus sustainability initiatives and UMass' Annual Sustainability Reports can be found online at: https://www.umassp.edu/reports-and-initiatives/sustainability.

In 2016, the UMass Board of Trustees adopted a system-wide sustainability policy. Drafted by the UMass Sustainability Council, a group of management, faculty, and staff, the policy statement was developed through an eighteen-month stakeholder engagement process. The policy includes 10 guiding principle for the UMass campuses: Sustainability Strategic Planning, Clean Energy, Climate Resilience and Preparedness, Green Building Design and Sustainable Campus Operations, Sustainable Transportation, Waste Reduction and Recycling, Environmentally Preferable Purchasing, Sustainable Food Services, Sustainable Water Systems, and Academic and Research Programming and Community Engagement.

The following goals have been developed to address key elements of these guiding principles:

1. Sustainability Strategic Planning – Integration of sustainability planning, practices, and strategies into the University's strategic planning processes
    - Goal – Complete a sustainability plan with a focus on energy projects at each campus, or update any existing plans, to align with the principles and goals outlined in this policy to adequately and efficiently understand the energy needs and potential sustainability projects on each campus.
2. Clean Energy – Supports the development and use of clean and renewable energy sources

- Goal – Achieve UMass' commitment to carbon neutrality by 2050 or as specified through the sustainability planning process occurring through the development of campus-specific action plans.
- Goal - Procure a defined amount of annual electricity consumption through renewable and clean energy sources to achieve carbon reduction commitments and meet sustainability objectives.

3. Climate Resilience and Preparedness - Implementation of strategies to mitigate or reduce environmental impact.
    - Goal - Build climate resilience and preparedness standards into the University's capital planning process, emergency management and business continuity planning.
4. Green Building Design and Sustainable Campus Operations – Strategies to address emissions associated with designing, building, maintaining, and operating campus buildings and grounds.
    - Goal - Any new construction must meet the MA Leadership in Energy and Environmental Design (LEED) Plus green building standards and continue to research and employ improved sustainable building practices.
    - Goal - Reduce energy consumption, increase efficiency, and determine goals consistent with capital investments and annual programs implemented in support of energy consumption reduction.
5. Sustainable Transportation - Integrating sustainable best practices for the use and maintenance of campus fleets, student/employee commuters, and public transportation options.
    - Goal - Reduce vehicle fuel consumption of the University vehicle fleet through promoting the use of public transportation, reducing the number of single occupancy vehicles and increasing the use of other alternative fuel transportation for faculty, staff, and students.
6. Waste Reduction and Recycling – Promote strategies to encourage waste reduction and re-use and acknowledge the importance of preventative measures.
    - Goal – Employ strategies around preventative measures in waste diversion to promote source reduction, re-use and recycling of materials.
7. Environmentally Preferable Purchasing – Implement a procurement approach to access environmentally-conscious products whenever applicable and available.
    - Goal - Establish Environmentally-Preferable Products Procurement Program and continue to implement annual procurement goals to move toward alignment with the standards of the Environmental Purchasing Advisory Council wherever appropriate and consistent with available funding.
8. Sustainable Food Services – Supporting sustainable food systems through food and beverage purchases.
    - Goal – Strive for each campus food service operation to procure sustainable food products while maintaining accessibility and affordability for all students and campus patrons.
9. Sustainable Water Systems – Reducing campus water withdrawals can reduce pressures on local aquifers, streams, rivers, lakes, and aquatic wildlife.

- Goal - Reduce potable water usage and determine goals consistent with capital investments and annual programs implemented in support of reducing potable water.

10. Academic and Research Programming and Community Engagement – Ensuring Sustainability is part of Academic and Research programming and part of community engagement efforts
    - Goal - The UMass Sustainability Council will work with their respective campus curriculum governance units to identify where Academic and Research Programming and Community Engagement involving Sustainability already exists, and to explore more formal incorporation into core curriculum and identified learning outcomes.

IV. SCOPE OF SERVICES

The following work outline is intended to provide bidders with an idea of UMB's expectations for the scope of services to develop an Energy & Carbon Master Plan. It is not meant to be an exclusive list of elements of the project, but instead should be used by Bidders as a guideline for the project components and process that UMB believes are important to reflect in proposals. Bidders should use their own experience and expertise to draft a proposed scope of services that they believe will provide the answers to the targeted questions UMB is seeking through this effort.

In the first phase of the project, the selected Bidder will assess existing conditions of utility and energy infrastructure on campus and will forecast campus energy consumption, demand, and investment requirements under a Business-as-Usual ("BAU") scenario in which the campus continues to use grid electricity and natural gas as its primary energy sources, without significant improvements in building energy efficiency. The BAU case should project hourly and annual campus electricity/thermal demands, onsite generation, and grid imports through 2030 based on UMB's planned building construction and renovations for the campus and identify infrastructure requirements to reliably serve campus operations in the coming decades based on the condition and lifecycle of existing utility plant.

In the second phase of the project the selected Bidder will establish a framework to identify and compare viable alternatives to the BAU case that can enable the campus to achieve the long-term emissions targets set forth in EO 484, ACUPCC, and the Baker-Polito Administration's April 2020 determination letter (establishing a statewide 2050 net zero emissions target) while not compromising the reliability of campus utility services. Alternatives to the BAU case may include, but are not limited to, energy efficiency measures, adoption of new thermal production and distribution systems, electrification of the campus' heating and transportation systems, utilization of alternative heating fuels, and/or contracting for renewable energy credits generated by off campus renewable energy facilities. A focus of the study is expected to be assessment of thermal electrification options including ground, air, and seawater-source heat pumps with associated lower-temperature distribution systems. Potential for building energy-efficiency improvements may be evaluated based on energy and capital-cost savings at benchmark demand reduction levels such as 20% and 40% reductions from BAU. The framework evaluation will consider market, technical, and regulatory opportunities for the alternatives screened.

UMB is expecting the selected Bidder to develop an energy reliability and resiliency strategy for the campus that details the location, configuration, and vulnerabilities of utility services and compares the options and costs to harden the campus' energy infrastructure to ensure campus operations are resilient based on the campus' waterfront location and risks posed by sea level rise and extreme weather events including storm surge. The strategy should contemplate both the BAU Case and the preferred alternative case(s), identifying risks and solutions under each investment strategy. Strategies may include alternative architectural configuration for future MEP and IT functions in planning for climate preparedness or shelter in place for climate events or other hazards.

In the final phase of the project the selected Bidder will develop investment plans for the BAU case and preferred alternative case(s). The investment plan should include a schedule of capital and operating costs for each case and a prioritized list of energy projects to achieve the desired outcomes under each case. The final Energy & Carbon Master Plan report will be developed in this phase, comparing the expected financial, emissions, and reliability/resiliency outcomes under each strategy studied. The selected Bidder will assist the UMB team in presenting the final report and findings to the campus' senior leadership and interested campus stakeholder groups.

V. MINIMUM QUALIFICATIONS & EVALUATION CRITERIA

The following criteria will be used, at a minimum, in the selection process (the criteria are listed in rank order of importance):

- Professional qualifications of the Bidder, its key project members and team, and any subconsultants.
- Experience of the Bidder, its key project members and team and its subconsultants in the development of Energy & Carbon Master Plans.
- Structure and content of the proposed project work plan.
- Breakdown and detail of fee proposal.
- References from previous and/or current clients.
- Samples of Energy & Carbon Master Plans and Utility Resiliency Plans developed for other higher ed clients.
- Finalist interview.
- Additional information as may be provided.

The University reserves the right to request clarification of any aspect of any submitted proposal or to request additional information that might be required to evaluate a proposal. In addition, Bidders will be selected for interviews at the sole discretion of the University.

UMB's selection process will include an evaluation based on the minimum qualification criteria described below. UMB will select the most overall advantageous response(s) and reserves the right to reject any and all proposals. If determined by UMB, in its sole and absolute discretion, that a proposal does not meet the minimum qualifications, UMB will eliminate the proposal from further consideration and deem it as non-responsive to the RFP.

A. Responding firm and key project members (Executive Sponsor, Project Manager, lead engineers) must have significant prior experience with utility master planning in a campus setting, including at least three (3) projects that have been completed within the past ten (10) years involving the planning and design of campus district energy systems of similar size and design as UMB's energy system.
B. Responding firm and key project members (Executive Sponsor, Project Manager, lead engineers) must have significant prior experience with greenhouse gas emissions analysis and mitigation strategy development, including at least three (3) projects that have been completed within the past ten (10) years.
C. Responding firm and key project members (Executive Sponsor, Project Manager, lead engineers) must have significant prior experience with analyzing campus utility reliability and resiliency, including at least three (3) projects that have been completed within the past ten (10) years.
D. Massachusetts registration and licensing in all applicable engineering disciplines required to perform the proposed scope of services.

Bidders' proposals should speak to their experience and its subconsultants' experience in providing consulting services in the following subject matters: electric and thermal energy demand forecasting; feasibility analysis, design, and implementation planning for air-source and ground-source heat pump technologies; assessment and design of hot water distribution systems and medium-voltage electric distribution systems; resiliency assessment and planning for electrical and thermal energy infrastructure; analysis and implementation of energy efficiency measures in a campus setting; emissions analysis and mitigation strategy development, including an understanding of EO 484, ACPUCC, and Massachusetts Global Warming Solutions Act goals and objectives, Executive Order 569, USGBC L.E.E.D. standards, AASHE STARS-based campus sustainability metrics, and the Climate Ready Boston initiative.

Proposal Submission:

The proposal must include the following information:

Qualifications of the Bidder
A summary presentation describing the unique qualifications of the firm for this contract.

Description of the Bidder
History and description of firm(s) indicating principal business of firm and complete description of in-house services. Include both the total number of personnel in each discipline and the number of personnel holding professional registration.

Description of Subconsultants (if applicable)
History and description of firm(s) indicating principal business of firm, complete description of in-house services, and projects, if any, that the bidder and subconsultant have worked on jointly. Include both the total number of personnel in each discipline and the number of personnel holding professional registration.

Project Organization
Provide an organizational chart showing the design team, indicating the Bidder and each subconsultant.

For each firm involved, list the Principal-in-Charge, the Project Manager, and other support personnel. For each required discipline, list the key persons that will be assigned to this project. Submit resumes of these key individuals identifying their education and recent experience relevant to the services required for this project. Submittals should also identify team members that will be present locally and be able to respond quickly during the project.

Project Experience
Provide a list and description of similar project experience for the primary firm and all key designers/planners/engineers that demonstrate the firms' current qualifications for this project. List experience of key individuals on these projects, including the following information at a minimum:

Name of Project
Project description with specifics related to project
Owner representative, address and telephone number
Period of performance
Executive Sponsor and Project Manager

Samples of Deliverables from Referenced Project Experience
Provide samples of final reports from similar project experience referenced. UMB would like to review at least three samples of deliverables from the project references provided by Bidder that demonstrate Bidder's expertise in the areas of service being requested.

Fee
Provide a breakdown of fees in substantive detail, by Phase I, Phase II, and Phase III of the scope of work as set forth in Section IV, to allow UMB to understand the proposed costs across work plan development, discovery, engineering analysis, economic analysis, development of alternatives, interim updates and presentations, and the production a final report. Bidders' proposals should include all fees for anticipated subconsultants that will be utilized for this project.

Project Schedule
UMB intends to complete the project in an expeditious manner. Please provide a schedule as part of your submission that details tasks, duration, and milestones for each project phase and contains a project completion target by November 30, 2021.

Bidder Affirmation Form
Note: An authorized representative of the bidder shall fill out and sign the Bidder Affirmation Form that is attached as Appendix B to this RFP.

Insurance

The firm shall maintain throughout the duration of the contract an Insurance Policy with coverage limits of not less than those defined in Article 13 of "Other Conditions or Services to the Contract for Services", which can be found in Appendix A.

Additional Information
Provide any additional information deemed necessary by the firm to describe any characteristics or qualities beyond what is specified in the submission requirements in order to assist the University in evaluating a specific proposal.

This request for proposal does not create any contractual relationship between the University of Massachusetts Boston and any party. The University reserves the right to accept or reject any or all proposals submitted for this project.

VII. CONTRACT FOR SERVICES

The selected firm will be required to enter into a standard University Contract for Services. The successful vendor must sign the standard University Contract for Services and agree to all Terms and Conditions listed. This contract shall further reference "Other Conditions or Services to the Contract for Services. A copy of this document is attached for informational purposes as Appendix A.

This RFP and the successful consultant response will become part of this contract.

Public Information
All bids and related documents submitted in response to this RFP are subject to the Massachusetts Freedom of Information Law, M.G.L. Chapter 66, Section 10 and to M.G.L. Chapter 4, Section 7, Subsection 26, regarding public access to such documents. Statements in the bid response that are inconsistent with those statutes will be disregarded.

Cost to Submit
The University is not responsible for any expenses that may be incurred by any bidder to prepare or submit bids.

Alterations to Bids
The bidder may not materially alter its bid response after the bids have been opened. Only the Director of Procurement may deem what constitutes a material alteration to a bid.

Bidders Exceptions to Contract Terms and Conditions
If bidder takes exception to any of the contract terms and conditions contained herein, it must be so noted in the bid. Such an exception may be grounds for rejection of the bid, at the option of the University.

Appendix A: Contract for Services
Appendix B: Bidder Affirmation Form
Appendix C: 2009 Campus Master Plan
Appendix D: 2010 Utility Master Plan

***** END OF REQUEST FOR PROPOSALS *****