

## Munib and Angela Masri Institute of Energy and Natural Resources (MI)

### INVITATION TO SUBMIT A RESEARCH PROPOSAL ON A MASRI INSTITUTE RESEARCH PROJECT

**Research Project Theme: De-carbonization of buildings—innovative affordable solutions towards zero-energy buildings Or Building Energy Performance and integration of Renewable Energy Resources**

This is a Request-for-Proposal (RFP) for a project dealing with advancing knowledge and technology applications for meeting building cooling, environmental air quality, and energy needs sustainably in the climates prevailing in the MENA region. Research collaboration and exchange of experiences with other societal actors of relevance to the project (such as other research teams, companies, civic society, etc.) who may contribute to ensuring the relevance of the project results and to realizing the potential of the project to contribute to the transition to a sustainable building cooling and energy systems are considered a strength in the project evaluation.

**Budget Range:** \$50,000 may be more or less as determined by value of proposal and competing proposals

**Scheduled Project Start Date:** September 1, 2020.

All proposals must be received **at MI online submission system** by 5:00 PM, February 20, 2020. No exceptions or extensions will be granted. MI has the right to reject any or all the proposals.

If you have questions concerning the Project, kindly you contact one of the below individuals:

**For Technical Matters:**

Nesreen Ghaddar, PhD  
Director  
Munib and Angela Masri Institute of Energy and Natural Resources  
American University of Beirut  
Telephone: 961-1-350000 ext. 3590/3594  
Email: [farah@aub.edu.lb](mailto:farah@aub.edu.lb)

**For Administrative Matters**

Sandrine Assaad  
Executive Assistant  
The Munib and Angela Masri Institute of Energy and Natural Resources  
Telephone: +961 1 350000 Ext. 4480  
American University of Beirut  
Email: [sa113@aub.edu.lb](mailto:sa113@aub.edu.lb)

**State of the Art (Background):**

Global warming and its implications on the climate are believed to highly affect the Middle East region. The higher outdoor temperature significantly increases the cooling loads in buildings during summers and consequently increases the buildings energy consumption for air conditioning and hence draining global energy resources needed for development and increasing greenhouse gases emissions. Therefore, energy consumption in buildings is a global issue that has attracted the attention of many researchers of different disciplines. Countless researchers have increased their efforts to mitigate buildings energy needs focusing on the building envelope opaque and transparent material, the efficiency of the air conditioning system, passive solar applications, and the integration of renewable energy resources.

Proposals are sought for advancing innovations in technology and in implementation of low carbon solutions that lead to significant reductions of building energy needs at country or region scale. The sought solutions should include the rounded integration of disciplines to achieve desired aim of reducing air-conditioning demand and the integration of renewable energy sources if relevant to the considered technology. Proposals could also consider further development and improvement of hybrid cooling and energy systems. Proposals should demonstrate solutions that aim for large scale roll-out according to defined business models and financial schemes for building owners/investors.

**Justification and value to Masri Institute and AUB:**

Improving building performance using or developing low carbon technologies of the project can lead to reduced GHG emissions and reduced energy costs of buildings. The project is expected to benefit MI mission in following ways:

- Will support the responsible use of natural resources and energy conservation
- Will reduce electric energy consumption of the building
- Will reduce building embodied energy
- Will reduce urban heat island effect
- Will reduce building thermal load
- Will provide for an effective implementation of a low cost technology by engineers and technician
- Will facilitate the production of knowledge by an interdisciplinary team and integrate knowledge in multiple fields

**Objectives:**

To develop and validate the implementation of one or more innovative approaches/technologies and affordable solutions that can influence some market aspects for improving building energy performance.

**Scope:**

The scope of the work in any submitted proposal is divided into the following tasks:

Task 1– Model development for the proposed technology/application development

Task 2 – Experimental testing or field work for validation of concept/s

Task 3 – Evaluation/optimization of system performance and relevance to existing codes of practice if applicable

Task 4 – Impact on society (energy savings, life cycle assessment) with full implementation of the system

Task 5 – Reporting.

**Deliverables:**

**a. Progress and Financial Reports**

Progress and Financial Reports shall be made to the Masri specifically on or before each June 1 of the contract period.

Furthermore, the Principal Investigator may be asked during the period of performance and after the Final Report has been submitted to meet in person with the MI Steering Committee to answer such questions regarding the research outcomes.

**b. Final Report**

A written final report (in PDF format and in Microsoft Word) shall be prepared by the PI by the end of the grant agreement term, containing complete details of all research carried out including a summary of the project outcomes.

Tabulated values for all measurements if relevant shall be provided as an appendix to the final report.

Following approval by the MI Steering Committee, final copies of the Final Report will be disseminated in the form of an executive summary that is suitable for wide distribution to the relevant industry and to the public.

**c. Publication of Research Results**

One or more peer-reviewed papers are expected to be published from the project containing generalized results of long-term archival value. Acknowledgment of the Masri Institute Funding is expected.

**d. Project Synopsis**

A written synopsis totaling approximately 100 words in length and written for a broad technical audience shall be submitted to the MI by the end of the project. It shall include the following:

- Main findings of research project
- Why findings are significant
- How the findings benefit the society or project stakeholders in general

**e. Level of Effort**

The estimated cost is \$50,000 and the project is expected to take 24 months.

**Project Milestones:**

Milestone	Deadline Month
Task 1:	9
Task 2:	15
Task 3:	21
Task 4:	24
Final Report	27

**Proposal Evaluation Criteria:**

Proposals submitted for this project should include the following minimum information:

No.	Proposal Review Criterion	Weighting Factor
1	PI's understanding of Work Statement as revealed in the proposal	20%
2	Qualification of personnel for this project	20%
3	Quality of proposal methodology for conducting research	40%
4	Probability of the proposal meeting objectives a. Detailed work plan with major tasks and key milestones b. All technical and logistic factors considered c. Rationality of project schedule	20%