



REQUEST FOR QUOTATIONS (RFQ)

Title: Energy Modeling Services for RMI's Zetro Energy

SUMMARY OF PROCUREMENT

RMI's Zetro Energy platform analyzes decarbonization retrofit solutions for large-scale building portfolios using detailed EnergyPlus models. The team is seeking vendors to support the quality control and calibration of the EnergyPlus models generated by the platform.

About RMI

RMI decarbonizes energy systems through rapid, market-based change in the world's most critical geographies to align with a 1.5°C future and address the climate crisis. We work with businesses, policymakers, communities, and other organizations to identify and scale energy system interventions that will cut greenhouse gas emissions at least 50% by 2030.

For nearly 40 years, RMI has utilized our unique techno-economic expertise and whole-systems thinking to both publish groundbreaking research and analysis. We bring together collaborations of rare reach, range, and expertise—creating unconventional partnerships and mobilizing action to drive change on the massive scale needed to combat the climate crisis.

About RMI's Zetro Energy

RMI's Zetro Energy platform has been developed over the past seven years and has successfully supported multiple demonstration projects while continuing to expand in capability. The tool produces virtual representations of buildings and uses them to identify cost-effective retrofit packages to decarbonize buildings. The Zetro Energy team is staffed with engineers, software developers, and sustainability experts capable of expanding and troubleshooting the analytics tool. The current platform is already capable of delivering results at one-half the cost of traditional approaches. To impact the market at scale, however, the tool needs to be rearchitected for workflow optimization and evolve into a client-friendly software application containing RMI's engineering and expertise, that can expand beyond RMI's consultant-led projects and eventually become ubiquitous within the industry enabling sectoral transformation.



SCOPE OF WORK AND OUTPUT/DELIVERABLES

The team is seeking vendors to provide support for one or more sub-scopes listed below:

Subscope 1: EnergyPlus Support

Ensure the EnergyPlus input files (IDFs) generated by the tool are accurate. Although the tasks will vary depending on evolving project needs, primary objectives of this sub-scope include:

- i. Provide guidance around modeling specific HVAC system types in EnergyPlus
- ii. Provide guidance around the functioning of specific EnergyPlus objects
- iii. Provide guidance around the default performance settings and curves for EnergyPlus components
- iv. Provide 'helpdesk' assistance with workflows and/or issues related to EnergyPlus model generation

Subscope 2: Verification of energy simulation results

Review EnergyPlus results to ensure accurate specification and operation. The vendor will be provided with modeling intent (e.g., input variable) and EnergyPlus hourly output values related to the HVAC system components that need verification. The checks that need to be completed will vary depending on evolving project needs and the primary objective of this subscope is:

- i. Identify hourly output values needed to verify the HVAC system being modeled is functioning as intended.
- ii. Review the hourly simulation results using plots and/or tables to verify the HVAC system being modeled is functioning as intended. Checks will be pre-defined prior to review of the EnergyPlus results.

Subscope 3: Calibration of EnergyPlus models to monthly energy consumption

Calibrate EnergyPlus models to historic monthly energy consumption data for buildings. The vendor will be provided with

- a. EnergyPlus input files (IDFs) generated by the tool
- b. 12 months of historic monthly energy consumption data
- c. A list of variables and acceptable ranges for each that can be modified to calibrate the energy model's monthly energy outputs

Models will be calibrated to comply with the monthly validation criteria set by ASHREA Guideline-14, 2014.

Calibration metric	Acceptable thresholds
Coefficient of Variance of root mean square error [CV(RMSE)]	± 15 %
Mean bias error [MBE]	± 5%



Contract type

This is a Time and Materials contract based on the rate schedule proposed by the tenderer and approved by RMI. Prior to beginning work on each of the scheduled deliverables identified in the previous section, or a Work Order, RMI will review the proposed level of effort and issue an authorization to proceed to the Contractor.

Duration

This is a limited term contract ending June 2023.

Expenses

Expenses will not be reimbursed, and as such, should be included in the bid price as necessary.

GUIDELINES FOR QUOTATION SUBMISSION

Requirements

The selected tenderer will be able to demonstrate capacity in similar work in one or more of the subscope listed in the previous section. Preference will be given to tenderers that are able to demonstrate the following requirements for each subscope.

<i>Subscope</i>	<i>Requirements</i>
EnergyPlus Support	<ul style="list-style-type: none"> - Experience in and / or ability to work with IDFs to simulate energy performance in EnergyPlus. - Ability to work with detailed simulation models for complex HVAC systems in EnergyPlus. - Deep understanding of concepts related to HVAC system specification and operation.
Verification of energy simulation results	<ul style="list-style-type: none"> - Deep understanding of concepts related to HVAC system specification and operation. - Ability to efficiently evaluate accuracy of hourly simulation outputs relative to intent.
Calibration of EnergyPlus models to monthly energy consumption	<ul style="list-style-type: none"> - Experience calibrating energy models per ASHRAE Guideline 14-2014 and detailed in Option D of IPMVP vol 1.



Quotation Content

Tenderers should submit:

- A statement of interest that includes a description of how the above Requirements are met
- Basic background:
 - Tenderer’s official name, address, and contact information
 - Name, position, address, and contact information of person who is authorized to make decisions or represent the tenderer
 - Type of entity
 - Tenderer contact details
- Qualifications overview:
 - A CV or CVs of core team
 - Examples of and references for similar work
 - At least 2 professional references with contact details (preferably email)
- Pricing:
 - Provide hourly rate that would be charged for the core team
 - Estimated % breakdown of work between various roles to work on the requested work

Quotations, including all supporting documents, should be written in English and financial information should be provided in USD. Supporting documents may be in another language, provided they are accompanied by an accurate translation of the relevant passages in English.

RMI is aware that information contained in a quotation may indicate a tenderer’s current operations and may be confidential. Therefore, RMI requests that any confidential information in a quotation be clearly identified as such and RMI will treat it as confidential.

All materials submitted with a quotation become property of RMI. RMI will have the right to use all ideas or adaptations of the ideas contained in the quotations received subject to clearly identified confidential or proprietary limitations. Disqualification of any quotation does not restrict or eliminate this right.

RFQ Process & Timeline

Stage of Procurement	Date, Time, Time zone
RFQ released	<i>December 1, 2022; 9:00 am (Eastern US time)</i>
Deadline for questions	December 9, 2022; 5:00 pm (Eastern US time)
Questions answered by RMI	December 13, 2022; 5:00 pm (Eastern US time)
Quotation submission deadline	December 16, 2022; 11:59 pm (Eastern US time)
Final tenderer selection	January 2, 2023; 5:00 pm (Eastern US time)



All questions about this RFQ must be received via electronic mail to the contact below. Answers to the questions will be shared with all parties who have asked questions or otherwise expressed interest.

All quotations must be sent via electronic mail to the same contact listed below by **December 16, 2022, 11:59pm (Eastern US time or UTC/GMT -5 hours)**

Raghuram Sunnam
Manager, Carbon-free Buildings team
rsunnam@rmi.org

Phil Keuhn
Principal, Carbon-free Buildings team
pkeuhn@rmi.org

When sending questions or submitting a quotation please use this electronic mail subject:

“Questions regarding RFQ for Energy Modeling Services for RMI’s ZeTro Energy”

Please note that it is the tenderer's responsibility to ensure that the quotation and all other required documents are received by the closing date at the email address specified above. Quotations received after the time and date specified will not be reviewed or considered. Failure to provide any information requested in this RFQ may result in rejection for non-responsiveness.

EVALUATION AND SELECTION

Evaluation Criteria

The following elements will be the primary considerations in evaluating quotations submitted in response to this RFQ.

Formal criteria:

- Expertise working with IDFs to simulate complex systems in EnergyPlus.
- Experience with energy modeling projects.
- The extent to which the quotation fulfills RMI’s stated requirements as set out in the RFQ.
- Completion of all requirements.

Financial quotation criteria:

- Hourly Price/fees.
- Terms of payment and guarantees in respect to the subject matter.

The tenderer offering the best overall value will be selected.



Selection Process

No quotation development costs shall be charged to RMI. All expenses are to be borne by the tenderers. RMI may award to the tenderer offering best value without discussions. However, RMI reserves the right to seek tenderer clarifications and to negotiate with those tenderers deemed to be within a competitive range.

RMI may, at its discretion and without explanation to the prospective tenderers, choose to discontinue this RFQ without obligation to such prospective tenderers or make multiple awards under this RFQ. Procurement contracts will not be awarded to tenderers debarred by the U.S. government or named on restricted parties lists. Any quotation may be rejected in whole or in part for good cause when in the best interests of RMI.

A quotation will be selected based on the evaluation of the RFQ response, the interview results, any necessary vetting and due diligence, and the satisfactory outcome of financial negotiations. After the selected tenderer and RMI have entered into a contract for goods/services, RMI will notify the unsuccessful tenderers.

Any Tenderer who wishes to ascertain the grounds on which its quotation was not selected, should request explanation. The RMI procurement contact shall promptly provide in writing an explanation of why such quotation was not selected. Please note, if a tenderer requests a debriefing meeting, the Tenderer shall bear all their costs of attending such a debriefing meeting and the hourly rates of the RMI staff required for the meeting if significant expenses are incurred by RMI.