



REQUEST FOR PROPOSALS:
AUTOMATED GEOMETRY DATA COLLECTION FOR
RMI'S PORTFOLIO ENERGY OPTIMIZATION INITIATIVE

PROJECT CONTACTS:

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PROJECT OVERVIEW

The Portfolio Energy Optimization (PEO) initiative – part of RMI's Carbon-Free Buildings Program – seeks a firm (hereafter “Contractor”) to develop an automated commercial building geometry data collection process.

The contract will only apply to the development of the automated geometry data collection solution and will not cover any potential additional services that may be necessary post deliverable completion.

BACKGROUND

RMI transforms global energy use to create a clean, prosperous, and secure low-carbon future. That is our mission. That is our passion. And every day, every member of our team of over 400 works relentlessly to achieve it. We are driving the global energy transition from fossil fuels to efficiency and renewable energy by working in partnership with businesses, communities, institutions, and entrepreneurs to advance market-based solutions. We achieve this by developing breakthrough ideas, testing and refining them, reshaping markets, and bringing solutions to scale. RMI is an independent 501(c)(3) nonprofit organization with an annual budget of \$70 million and offices in Basalt and Boulder, Colorado; New York City; Oakland, California; Washington, D.C.; and Beijing, China.

Commercial buildings consume more than 35 percent of the generated electricity in the U.S. and are underperforming at every level. They waste energy, emit too much carbon, and are too costly for owners and occupants. But retrofits are not happening at the rate or scale needed. Today, portfolio property owners own most commercial buildings. Yet most building efficiency work is focused on single buildings, thereby missing the distinct needs of this owner class, which has very different needs than traditional owner-occupiers. The diverse nature of commercial buildings, combined with technology and performance uncertainty, make simple energy optimization initiatives – which could greatly reduce energy use and improve building value – financially unattractive, resulting in slow adoption rates. The industry demands a better solution.

RMI's Portfolio Energy Optimization (PEO) initiative is creating a disruptive and scalable approach to commercial building retrofits that have been left behind by the traditional retrofit approach. The PEO team is focused on developing a scalable, mass-customized approach to identify zero-carbon retrofit packages and evaluate their financial return from the perspective of the portfolio owner. We are developing software tools, working with portfolio owners, and directly testing and evaluating new technologies that can dramatically increase the efficiency of portfolios of operating buildings.

PROJECT SCOPE

PEO is seeking a Contractor to develop an automated geometry data collection process that will reduce the need for manual data collection, thereby accelerating the ability to scale PEO's mass-customized retrofit analysis approach. Below is a list of geometry data that is currently collected manually. Not all items listed must be automated by the Contractor; however, proposals which provide the greatest number of viable solutions to items listed will be prioritized in RMI's Contractor selection process.



- A. Exterior door construction (by orientation, by floor)
- B. Exterior door area (by orientation, by floor)
- C. Window type (by orientation, by floor)
- D. Window area (by orientation, by floor)
- E. Exterior wall construction (by orientation, by floor)
- F. Exterior wall color (by orientation, by floor)
- G. Exterior wall area (by orientation, by floor)
- H. Exterior wall R-value
- I. Building orientations
- J. Building height
- K. Number of floors
- L. Floor to floor height (by floor)
- M. Floor plate area (by floor)
- N. Exterior perimeter length (by orientation, by floor)
- O. Roof pitch
- P. Roof construction
- Q. Roof color
- R. Roof area
- S. Roof R-value
- T. Existing solar photovoltaic system area
- U. Potential solar photovoltaic system area
- V. Skylight area
- W. Shading projected from surrounding objects (external-shading)
- X. Shading projected from one section of the building being modeled onto another part of the building being modeled (self-shading)

Data collected must be able to be output in file formats compatible with Microsoft Excel. However, the PEO team is also interested in potential output options that may be directly integrated with EnergyPlus.

Automated geometry data sources (publicly available or purchasable) may include the use of but are not limited to:

- A. Remotely accessible satellite imagery, aerial imagery, street level imagery or LIDAR data to extract point clouds that can be used to identify any of the geometry data included in, but not limited to, the project scope and edited in building information modeling software compatible with EnergyPlus energy modeling software and PEO energy modeling software.
- B. Cartographic layers including building footprints and elevation data
- C. Building information databases and 3D building model databases

CONTRACTOR ROLE

- Lead on development of automated geometry solution
- Meet with RMI staff, and other RMI partners as necessary, in order to ensure compatibility with other PEO software development processes

RMI ROLE

- The Contractor will report to Joey Cathcart for deliverables identified in the project scope.
- Joey Cathcart will coordinate a project kickoff meeting, weekly meetings between the Contractor and RMI staff, and any other meetings between the Contractor and RMI's partners as necessary in order to ensure deliverable compatibility with other PEO software development processes.



PROPOSAL REQUIREMENTS & SELECTION CRITERIA

Formal Criteria

Please include firm’s name, address, contact information, biographies of key staff members, and firm history. Please also include the names, addresses, contact information, biographies of key staff members, and firm history of any potential sub-contractors of the primary proposal respondent. Please also include who will serve as primary point of contact and who would participate in the design and/or execution phases of the work.

Technical Criteria

Project Delivery

Please provide a detailed response of how you will deliver the project scope.

Experience/Work Samples

Please include the following:

- A. A summary of your firm’s completed projects of a similar scale and/or for clients similar to RMI.
- B. Examples of prior experience with software development, building information modeling, cartographic systems, and energy modeling.
- C. At least one in-depth case study with references.

Financial Criteria

Proposals must include an estimated cost for all work related to tasks and deliverables outlined in the proposal, including travel and materials. Submissions are encouraged to offer a spectrum of cost options; cost-efficiency will be a consideration when evaluating proposals. Proposals should make mention of any costs associated with potential continuous services that may be necessary to support the automated geometry solution developed by the Contractor. Any differences in costs due to project geographic location should also be mentioned.

CONTRACT DEVELOPMENT

The contract will be developed in negotiation with the Contractor. The contract will begin at the time of execution and conclude after the automated geometry solution developed by the Contractor has been integrated into all applicable PEO processes – including integration into a web-based user interface – and undergone quality control by the PEO team. All intellectual property developed through this solicitation is property of RMI.

PROJECT TIMELINE

Task	Description	Approximate Timing
Data Collection / Solution Development	Identify data sources and approaches to automate building geometry development. Test approaches and document processes applied so that the most viable approaches may be easily replicated.	Jan. – Feb. 2022
Solution Integration	Work with the PEO team to integrate automated geometry developed models into the PEO tool.	Mar. 2022
User Interface Integration	Work with the PEO team and additional partners/contractors as needed to integrate the automated geometry solution with an interactive web-based interface.	Apr. – Jun. 2022



SUBMISSION FORMAT/DEADLINE/TIMELINE

Submission Format

Please submit two separate proposals; one including the Formal Criteria and Technical Criteria and one including the Financial Criteria.

Deadline

Proposals must be digitally submitted by November 1, 2021, 5:00 PM Mountain Time.

RFP Timeline

Milestone	Due Date	Notes
RFP Release	10/11/21	RFP issued and available on RMI's website.
Question and Answer Period Ends	10/22/21	During this period, submit any questions via email to jcathcart@rmi.org . Answers to the questions will be shared with all parties who have asked questions or otherwise expressed interest.
Intent to Apply	10/29/21	Send an email indicating your intent to submit a proposal. Emails should be directed to jcathcart@rmi.org .
Proposal Deadline	11/1/21	All final proposals are due by 5pm Mountain Time. Proposals should be submitted to jcathcart@rmi.org . Proposals received without a previous intent to apply notification will be considered.
Respondents Notified	11/12/21	All respondents will be notified of whether they qualify for the next level of consideration in the process. If so, phone interviews will be scheduled.
Interview Period Ends	11/26/21	All phone interviews complete.
Selection	12/3/21	All finalists will be notified of selection decision.

SUBMIT TO / CONTACT

Please send any questions and proposals by electronic mail to:

Joey Cathcart
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