REQUEST FOR QUOTATIONS (RFQ)

Title: *EnAct Backend Python Developer Support*

SUMMARY OF PROCUREMENT

RMI is seeking Python developer services to support its Engaging for Climate Action (EnAct) program. The contractor will convert EnAct's existing models and code -- in Python, R, and Excel – into Python modules and create documentation and processes to support rapid enhancements and high-quality data outputs that meet the standards of the financial investor industry.

Requirements and Responsibilities

Required Experience:

- 5 or more years of Python programming experience
- Experience working in cloud environments (e.g., GitHub, Azure) for code development, testing, and production
- Experience writing and conducting system integration and customer acceptance tests

Preferred Experience:

- Experience building ETLs
- Familiarity with Docker
- Familiarity with R
- Familiarity with the electric and gas utility industries and / or applicable utility operational, financial, and emissions data (e.g., FERC Form 1, EIA 860)

Contractor Responsibilities:

- Convert all EnAct input models and code to Python modules; existing Python code should be re-written as needed to be modular.
- Develop Python modules that can be easily enhanced and tested to quickly identify defects
- Develop Python modules to parse and store data exceptions
- Add in-line documentation for each module which should include a description of its inputs, outputs, and purpose
- Develop code QA/QC/test procedures to ensure outputs meet RMI expectations
- Train RMI staff how to review and update EnAct Python modules

RMI responsibilities:

- Provide input to and approve as-is architecture
- Provide input to and approve future-state architecture
- Provide functional requirements for what the EnAct code should do
- Provide prototypes / examples of how the parts of the EnAct code are supposed to work and integrate
- Provide personnel time to review, test, and accept Python modules and other deliverables

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 EnAct Program

Capital markets hold tremendous potential to support and accelerate the transition from fossil-based energy to carbon-free energy. RMI's Engaging for Climate Action (EnAct) platform arms investors with the data and analysis they need to hold utilities accountable for future emissions and the pragmatic strategies they need to support those utilities in making climate-aligned, customer-centered capital investments.

The core of EnAct is an RMI-designed utilities index that is uniquely transparent, robust, and forward-looking. The index aggregates and analyzes the forward-looking capex plans that utilities report to their regulators to estimate future emissions through 2035. Companies are weighted within the index according to how consistent their emissions trajectories are with a climate-aligned pathway – maintaining exposure to the full suite of US utilities but rewarding climate leaders while underweighting poor performers. The data underpinning the index will also be offered as a resource to drive investment decisions beyond those strategies following the EnAct index explicitly to scale and amplify the application of our work.

EnAct Data

The data used for the EnAct program come from multiple sources. Most of the data come from Catalyst Cooperative ("Catalyst") who extracts these data from the Federal Energy Regulatory Commission (FERC) and the Energy Information Administration (EIA) databases, then cleans and compiles them into their Public Utility Data Liberation (PUDL) database. A description and documentation for PUDL can be accessed here. RMI gets this database from Catalyst from their publicly accessible cloud data platform using Anaconda's intake or their website.

RMI also gets utility integrated resource plan (IRP) data from a third-party data provider, EQ Research. These data provide forward-looking utility plant investment, retirement, operational, and other related data that are used to derive EnAct's utility index.

A third set of data come from RMI-built models – the Utility Transition Hub and Patio – which are built using a combination of Python, R, and Excel.

EnAct data is currently stored in a range of formats including .csv, parquet, and sqlite on the team's computers and on GitHub. The code is managed in GitHub. A list of the data sources is provided in table 1 below. These data sources are the green boxes in figure 1.

Table 1. EnAct Data Sources

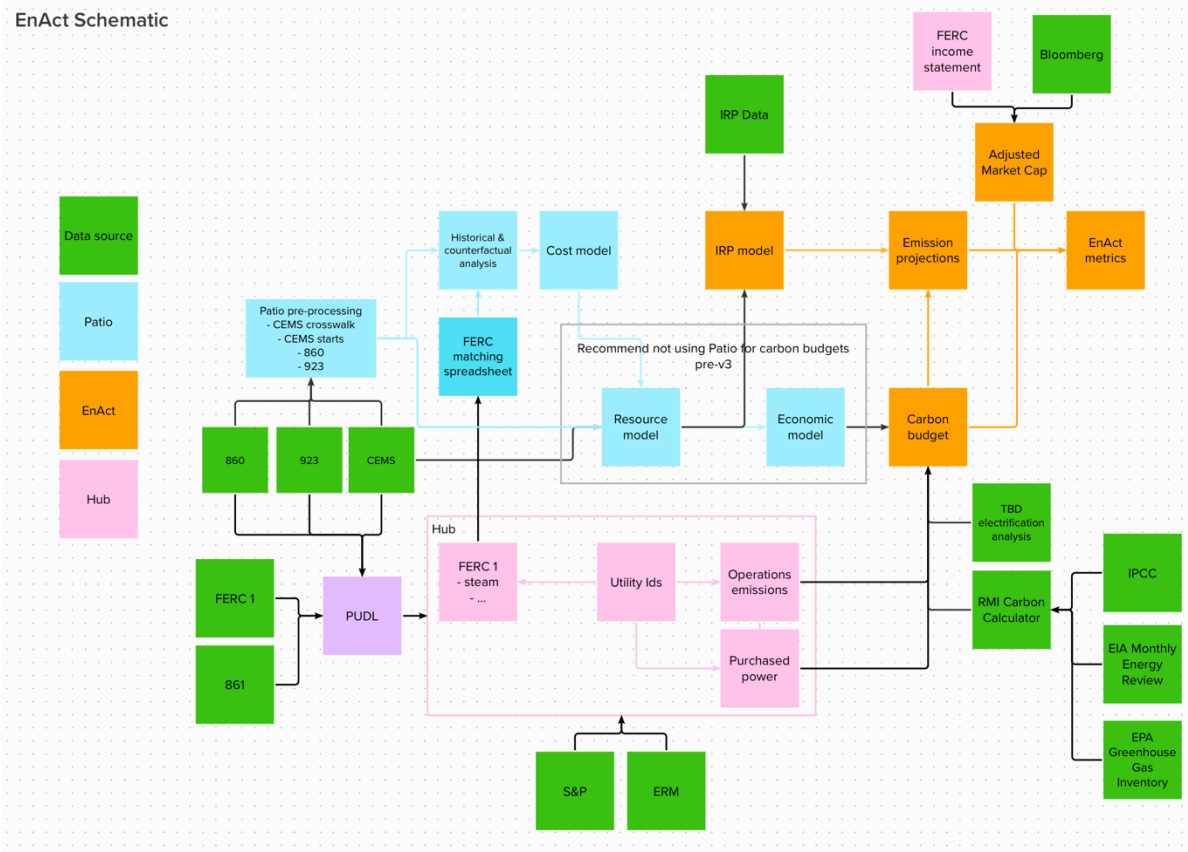
Data Source	Description
FERC Form 1	A comprehensive financial and operating report submitted by regulated utilities to FERC for Electric Rate regulation and financial audits. This dataset is an input to PUDL and consists of fifteen tables relevant to EnAct: • f1_fuel • f1_steam • f1_hydro • f1_pumped_storage • f1_gnrt_plant • f1_purchased_power • f1_respondent_id

Data Source	Description
	• f1_plant_in_srvce • f1_elctrc_erg_acct • f1_comp_balance_db • f1_accumdepr_prvsn • f1_bal_sheet_cr • f1_retained_erng • f1_income_stmnt • f1_income_stmnt_2
EIA 860	Unit-level data for existing and planned generators and associated environmental equipment at electric power plants with 1 megawatt or greater of combined nameplate capacity. This dataset is an input to PUDL and Patio and consists of five tables relevant to EnAct: • Generators • Plants • Utilities • Ownership • Environmental equipment
EIA 861	Data on balancing authorities and which states they operate in; utility service territories; utility electricity sales and reliability data; demand response activities; smart and net metering data; etc. A full description of EIA 861 can be found at https://www.eia.gov/electricity/data/eia861/ This dataset is an input to PUDL and consists of one table relevant to EnAct: • Operations Data
EIA 923	Detailed electric power data on electricity generation, fuel consumption, fossil fuel stocks, environmental data, and receipts at the power plant and prime mover level. A full description of EIA 923 can be found at https://www.eia.gov/electricity/data/eia923/ This dataset is an input to PUDL and Patio and consists of 3 tables relevant to EnAct: • Generation and Fuel Data • Generator Data • Fuel Receipts and Costs
EPA CEMS	Hourly unit-level generation, fuel use, and emission data. This dataset is an input to PUDL and Patio.
S&P Capital IQ	Utility financial metrics, including return on equity, and backup utility subsidiary to parent maps.

Data Source	Description
	This dataset is an input to the Utility Transition Hub.
ERM	Power plant ownership by ultimate parent company. This dataset is an input to the Utility Transition Hub.
IPCC	Global carbon (CO_2) emissions budget. This dataset is an input to the RMI Carbon Calculator.
EIA Monthly Energy Review	U.S. energy consumption, electricity consumption, and emissions by sector. Electricity generation by technology. This dataset is an input to the RMI Carbon Calculator.
Environmental Protection Agency (EPA) Greenhouse Gas Inventory	Greenhouse gas emissions (e.g., CO2, SO_x, NO_x) by sector. This dataset is an input to the RMI Carbon Calculator.
IRP data	Structured utility IRP data that are updated monthly and delivered either via a dynamic online file or an Excel file. A full description of EQ Research Policy Vista can be found at https://eq-research.com/services/eq-policyvista/ Our data provider, EQ Research, will be collecting more detailed data in this new format.
Bloomberg	Parent company market cap and gross profit.

A high-level data architecture is provided in figure 1 below.

Figure 1. EnAct Data Architecture



Project Timeline

An approximate timeline is provided in figure 2 below. The contractor services are expected to start 1 February 2023 and extend through 30 June 2023.

Figure 2. EnAct Backend Support Timeline

	Dec	Jan	Feb	Mar	Apr	May	Jun…
PHASE 0							
RMI builds EnAct model prototype							
PHASE 1							
Vendor onboards and develops as-is and future-state architectures.							
PHASE 2							
Vendor develops, documents, and tests core EnAct Python modules							
PHASE 3							
Vendor conducts additional Hub backend refactoring							
Vendor conducts RMI staff training on EnAct or Hub codebase, as needed							

RMI intends to complete an initial prototype of the EnAct modules (phase 0) in Python by the beginning of April 2023. The contractor would ideally be onboarded in February 2023 and conduct phase 1 in parallel, getting up to speed with the current models, code, and data across the Utility Transition Hub, Patio Model, and EnAct while developing the as-is- and future-state architectures. The contractor would then complete phase 2 that requires creating clean, documented versions of the EnAct modules, along with documentation for how to test the code from development through deployment into production. The contractor would conduct upstream code refactoring for the Utility Transition Hub and RMI training, as needed, in phase 3. A list of specific deliverables by phase is provided in table 2 in the following section.

SCOPE OF WORK AND OUTPUT/DELIVERABLES

Objectives

1. Convert all input models used to generate the EnAct index into modular, documented Python code
2. Establish and document test procedures and code migration procedures to enhance the EnAct code using best practices in code migration, QA/QC, and version control
3. Automate jobs where possible (either on a schedule or a defined trigger) to accelerate new data integration and code enhancements

Deliverables

Table 2. EnAct Backend Support Phases and Deliverables

No.	Deliverable	Description
Phase 1. Initiation		
1.	As-is system architecture diagram	Verify and update, as needed, the as-is system architecture for EnAct with RMI
2.	Future-state system architecture diagram	Create and very the future-state system architecture for EnAct with RMI
Phase 2. Build, Test, Deploy Core EnAct Modules		
3.	Data acquisition ETL	A module that centralizes all required data extraction and transformation required for the EnAct modules. This will include integrations with PUDL as well as some elements of the Hub. From the as-is architecture, this will include components from the Hub, Patio pre-processing, and additional data sources.
4.	Generator cost module	This module takes generator metadata, operations data, operating costs, and capital costs and using a set of regressions, calculates generator operating cost metrics for the Carbon budgeting and Emission projection modules.
5.	Carbon budget module	This module estimates each utility's carbon budget based on total electricity sector carbon budget and a simple assessment of utility-specific decarbonization economics. Total electricity sector carbon budget is estimated using RMI's process using IPCC, and other data sources.

No.	Deliverable	Description
6.	Emissions projection module	Combines data from utility capital plans (IRPs), the Generator cost module, and EIA to estimate how a utility's proposed portfolio of resources would operate using rmi.dispatch. It then combines these operations estimates with emission factors to estimate future emissions.
7.	EnAct outputs module	Combines results from emissions projection and carbon budget modules with financial data to construct the final EnAct metrics.
8.	Additional modules to be discussed on as-needed basis	Any additional Python modules / ETLs that RMI determines are necessary to create the EnAct index not captured above.
9.	Test procedures and code migration process documentation	Documented test procedures for each of the EnAct modules and code migration documentation for QA/QC between development, test, and production environments
Phase 3. Backend Support		
10.	Additional Hub backend refactoring	The Utility Transition Hub codebase is largely built but needs to be refactored to be more modularized, documented, and version controlled to accelerate enhancements to the PUDL data intake and transformation processes and produce the input data required for the Patio model. • Post PUDL data processing code refactoring • Patio model input code refactoring
11.	RMI staff training	Contractor will train RMI staff, as needed, to maintain and enhance the EnAct or Hub codebase.

Data Delivery

- The initial EnAct model outputs should be .csv files that the contractor will support RMI in making available for download on RMI's Utility Transition Hub
- Data should be refreshed as-available, eventually being made available at least monthly.

Duration

This is a limited term contract ending 1 December 2023.

GUIDELINES FOR QUOTATION SUBMISSION

Requirements

Fixed Price Pricing

RMI Deliverables:			***For Tenderer to fill in:***		
Deliverable no.	***Description of Goods / Services***	***Output Format***	***Estimated Hours***	***Hourly Rate***	***Total Price***
Fixed Price					
1 & 2	*As-is and future-state system architecture diagrams*	*Visio or equivalent*		$	$
3	*Data acquisition ETL*	*Python module(s)*		$	$
4	*Generator cost module*	*Python module*		$	$
5	*Carbon budget module*	*Python module*		$	$
6	*Emissions projection module*	*Python module*		$	$
7	*EnAct outputs module*	*Python module(s)*		$	$
9	*Test procedures and code migration process documentation*	*Documented and RMI signed-off test procedures for each of the above modules (e.g., MS Word)*		$	$
				Subtotal	$
				Sales tax (if applicable)	$
				Delivery charge (if applicable)	$
				Other charges (if applicable)	$
				TOTAL (not to exceed)	**$**

Time & Materials Pricing

RMI Deliverables:		***For Tenderer to fill in:***
Deliverable no.	***Description of Goods / Services***	***Hourly Rate***
8	Additional modules to be discussed on as-needed basis	$
10	Additional Hub backend refactoring	
11	RMI staff training on EnAct or Hub codebase	

Each tenderer must fill in the grayed sections in the table above.

The selected tenderer will also be able to demonstrate capacity in similar work or delivery of goods, particularly:

- *Python module development and documentation*
- *Development and execution of code test procedures*

Quotation Content

Tenderers should submit:

- A statement of interest that includes a description of how the above Requirements are met
- *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*
- *A CV or CVs of core team*
- *Examples of and references for similar work*
- *Tenderer contact details*
- *Quotation validity period*
- *Proposed modifications to the scope or timeline [Optional]*
- *Assumptions made [Optional]*

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

RMI intends to follow the procurement timeline outlined in table 4 below. The timeline may extend longer depending on the number of qualified tenderers received.

Table 3 RFQ Procurement Stages

Stage of Procurement	Date, Time, Time Zone
RFQ released	28 November 2022
Deadline for questions	9 December 2022, 11:59 PM MT
Questions answered by RMI	21 December 2022, 11:59 PM MT
Quotation submission deadline	31 December 2022, 11:59 PM MT
Interviews with selected tenderers	9 – 13 January 2023
Final tenderer selection	20 January 2023, 11:59 PM MT

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 **31 December 2022, 11:59 PM MT**.

Alexandra Gorin
Manager, Carbon-Free Electricity
agorin@rmi.org

CC:
Alex Engel
Manager, Carbon-Free Electricity
aengle@rmi.org

Claire Lingham
Program Operations Lead, Carbon-Free Electricity
clingham@rmi.org

When sending questions or submitting a quotation please use this electronic mail subject: ***EnAct Backend Support RFQ***

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: *[insert mandatory formal criteria, as needed, see examples below]*

- Ability to meet the minimum required experience
- Ability to meet the minimum preferred experience

Financial quotation criteria:

- Best value to RMI between experience, cost, RFQ completeness, and interview evaluation

The tenderer offering the best overall value will be selected. For this procurement, price is not necessarily considered more important than non-price aspects.

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.

INSTRUCTIONS FOR USING THIS TEMPLATE

1) An RFQ must always be used for Medium Value purchases but can also be used for Low Value purchases if the RMI team determines it necessary. A team may also determine it necessary to use an RFP instead of an RFQ for Medium Value purchases, which is also acceptable.

2) Complete this template, filling in information where *italic* font is used as a placeholder, guidance, or an example. Please delete any *italic* font placeholders, guidance, and examples before finalizing for publication.

3) All normal font wording should be considered mandatory for this RFQ and should not be edited unless approved by procurement@rmi.org.

4) Once this template is complete, please convert to PDF and submit via this Monday.com form.

5) Do you have any questions? Please email procurement@rmi.org.