

**United States Energy Association
Just and Secure Energy Transition Program (JSET)**

Cooperative Agreement #7200AA22CA00028

REQUEST FOR PROPOSALS (RFP)

PLEXOS Optimization Analyses of European Gas Vertical Corridor Initiative to Improve Ukraine and Moldova's Energy Security

The United States Energy Association (USEA) is seeking proposals from qualified candidates to perform Plexos-based technical and economic analyses of the investments proposed to increase the capacity of the European "Vertical Gas Corridor" to diversify Ukraine and Moldova's gas supplies.

Background

The Just and Secure Energy Transition Program (JSET) is a cooperative agreement between the United States Agency for International Development (USAID) and the United States Energy Association (USEA) established in 2022 to provide technical assistance to the electric and natural gas utilities in Europe and Eurasia. The overarching objectives of the program are to:

- Operationalize and integrate regional energy markets;
- Improve energy system operation and integrate reliable, cost-effective clean energy technologies into energy networks;
- Improve regional energy sector resilience and response capabilities to disasters and extreme events;
- Increase adoption of US-developed or supplied grid enhancing technologies; and
- Improve public understanding of the benefits of a clean energy transition

The Vertical Gas Corridor Initiative (VC) is a European gas pipeline system initiative involving gas system operators (GSOs) from seven countries (Greece, Bulgaria, Romania, Hungary, Slovakia, Moldova, and Ukraine). It is intended to promote energy security in the region through bi-directional gas volume transport from south to north and further west. Gas supply diversification, including LNG, from reliable non-Russian sources is of strategic importance for Europe's energy security. The VC will expand supply options for countries along the corridor and provide expanded access for EU countries to Ukraine's underground gas storage.

Members of the VC initiative have independently proposed network upgrades and costs to provide 10 BCM of annual incremental capacity along the entire length of the corridor. These proposals, however, do not account for savings that may accrue from optimizing the investments on a regional basis.

The objectives this project are to:

- Collaborate with representatives from the VC GSOs to build a PLEXOS VGC Model that includes the technical and economic data of each of the proposed investments and underground storage along the corridor to achieve Level One incremental capacity of 10 BCM/a per year
- Use the PLEXOS VGC Model to perform a series of optimization analyses of the proposed investments along the corridor to determine potential cost savings considering the benefits of using Ukrainian gas storage to improve security of supply.

- Calculate the transmission tariffs resulting from the optimization analyses and share them with stakeholders to encourage financing and use of the corridor.
- Increase the understanding of the VC working group members of the project including the capabilities of the PLEXOS software and how it is being used for the optimization analyses

JSET Vertical Gas Corridor Working Group

JSET has convened a working group for this project consisting of senior technical and financial representatives from each of the Vertical Corridor GSOs. The working group will meet regularly throughout the duration of the project to review progress and to provide financial and technical data to build and update the model and perform the analyses.

USEA and Energy Exemplar

USEA has partnered with Energy Exemplar, the developer of the PLEXOS gas optimization software platform, for this project. Energy Exemplar will provide a copy of its proprietary European Gas Dataset. This dataset includes:

- A fundamental view of European gas market drivers – production, LNG, imports, infrastructure and storage, flows and prices;
- A detailed daily market simulation of how the European gas market operates;
- Historical calibration – back cast against 2019-2022 market data; and
- Out-of-the-box future scenarios of potential market outcomes projected to 2050.

USEA will provide the selected Consultant with access to the European Gas Dataset for this project. USEA will also provide each of the VGC working group members with a PLEXOS Reviewer License, enabling them to view the model development and analyses.

Scope of Work

The selected Consultant will perform the following tasks:

Task One: Actively participate in regularly scheduled JSET VGC working group meetings throughout the duration of the project. Lead the working group through the modeling process and support their involvement and understanding of the project.

Task Two: Build the PLEXOS VGC Model utilizing Energy Exemplar’s European Gas Dataset, Ukraine’s underground gas storage data and other publicly available data. This model will be used as the basis for the analyses of the cost-effectiveness of the Corridor

Task Three: Work with the Vertical Corridor gas system operators to update the PLEXOS VGC Model with the technical, financial and commercial data for each of the proposed projects to achieve 10 BCM of annual incremental capacity along the Corridor.

Task Four: Develop methodologies to use the PLEXOS VGC Model to analyze the following scenarios:

Baseline Scenario:

The baseline scenario will consider the technical, financial and commercial data provided by the members of the working group for each of the proposed investment projects. The PLEXOS VGC Model will optimize the investment projects to reach 10 BCM of annual incremental capacity at the lowest possible cost.

Security of Supply Scenario

Underground gas storage is a critical component of gas infrastructure that helps to ensure security of supply during peak demand and ensure price stability. Ukraine’s underground gas storage holds the potential to improve energy security along the corridor and the rest of Europe. This scenario will consider the cost-effectiveness of the Corridor for various levels of underground storage capacity in Ukraine.

Demand for natural gas may increase as the region’s clean energy transition progresses. Working with the GSOs and using its best judgement, the Consultant will develop a linear sensitivity scenario that includes increased demand for natural gas resulting from the decommissioning of coal and lignite power generation units along the corridor.

Task Five: Apply the methodology developed in Task One for the Baseline Scenario and utilize the PLEXOS VGC Model to perform Monte Carlo financial and economic calculations to prioritize the projects necessary to reach Level One incremental capacity of 10 BCM per year at the lowest cost. If the analysis identifies any cost savings, the Consultant will perform a second run of the model to determine if these savings can be used to further expand the capacity of the proposed investments along the corridor above the baseline 10 BCM per year. This may require consideration of expanding the existing LNG import terminal capacity.

Task Six: Apply the methodology developed in Task Two for the Security of Supply scenario to determine the cost-effectiveness of the Corridor considering Ukraine’s available underground gas storage and estimated natural gas demand over the past 5 years. This should account for a linear sensitivity scenario that includes increased demand for natural gas resulting from the decommissioning of coal and lignite power generation units along the corridor.

Task Seven: In close coordination with the members of the working group, the consultant will collect the tariff methodologies of each of the countries along the corridor. The consultant will develop a methodology for calculating the entry and exit transmission tariffs along the Vertical Corridor for each interconnection point and calculate the transmission tariffs using the methodology.

Task Eight: Regularly inform the JSET Vertical Gas Corridor Working Group on the status of the project to improve their understanding of the PLEXOS VGC Model and its capabilities, and how it is being used for this project.

Milestone & Deliverables:

The Consultant will be required to complete the following milestones and submit the following deliverables to USEA:

	Milestones & Deliverables
Participation in regular virtual meetings of the JSET Vertical Gas Corridor Working Group throughout the duration of the project – Task One	Milestone
PLEXOS Regional Model of the Vertical Gas Corridor including the technical, financial and commercial data for each of the proposed investments - Task Two and Three	Deliverable

Methodologies for the Baseline and Security of Supply scenarios – Task Four	Deliverable
Draft Baseline and Security of Supply Scenario Results – Task Five and Six	Deliverable
Final Baseline and Security of Supply Scenario Results – Tasks Five and Six	Deliverable
Tariff Methodology and Tariff Calculation – Task Seven	Deliverable
Draft Narrative in MS Word and MS PowerPoint Report	Deliverable
Final Narrative in MS Word and MS PowerPoint Report	Deliverable

Proposal Preparation

Interested parties should submit separate technical and cost proposals as described below:

Technical Proposal

Interested parties are requested to submit a technical proposal of no more than 10 pages. The 10-page limit does not include information about the firm and its qualifications to perform these analyses. This information should be placed in an annex to the technical proposal. The Technical proposal should discuss the process proposed to:

- Develop the PLEXOS VGC Model
- Develop the baseline and security of supply scenario methodologies
- Conduct the optimization analyses for the two scenarios
- Develop the tariff methodology and run the tariff analyses

The proposal should identify challenges and risks to these tasks and suggest potential remedies. The technical proposal should include a timeline and Gantt chart for completing each deliverable consistent with the urgency dictated by the conflict in Ukraine.

Cost Proposal

The sub-agreement between USEA and the winning offeror will be structured as a fixed price sub-agreement for labor, fringe benefits and indirect costs. Under the terms of the Just and Secure Energy Technology cooperative agreement, offerors are not permitted to take a fee on their costs to perform this work. The cost proposal should identify the level of effort for each person proposed to work on this assignment by task, their fully loaded daily rate, and the total estimated charge for each individual proposed. A sample budget worksheet is included with this RFP.

USEA will fund other direct costs, including travel (transportation, lodging and a U.S. Government approved daily meals and incidental allowance) directly. DO NOT include travel costs, as USEA will fund this directly.

CVs of each person proposed to work on this project must be included as an appendix. Offerors must also submit USAID Contractor Employee Biographical Data Sheets for each person. This

form can be found [here](#). CV's and Biodata forms will not count toward the technical proposal page limit.

USEA's contract template containing its standard terms and conditions and special provisions is attached for reference.

Selection Criteria

The following criteria will be used to evaluate proposals:

- 30% -- Proven experience in using the PLEXOS software to conduct a regional technical and financial gas network economic analysis in Europe
- 30% -- Technical Approach
- 15% -- Proposed Schedule
- 25% -- Price

PROPOSAL SCHEDULE

Please note: All email correspondence related to this RFP should have a subject heading of JSET Vertical Corridor RFP.

Questions on the terms of this request for proposals must be submitted prior to December 17, 2024 by email to the following mailbox: proposals@usea.org. All questions received will be posted anonymously with their responses on the USEA website (www.usea.org).

Final proposals must be submitted by email by the close of business EDT on January 9, 2025 to the following mailbox: proposals@usea.org.

Issuance of this Request for Proposals does not commit USEA to move forward with this project. Proposals are submitted at the risk of the offeror. All preparation and submission costs are at the offeror's expense.