

Request for Information (“RFI”) from the Israeli Independent System Operator (“NOGA”)

For Consulting Services in the field of execution and conducting of the Performance and Efficiency Tests for Power Plants

NOGA –Israel Independent System Operator Ltd. (“**NOGA**”) hereby invites the public to provide information regarding Consulting services dealing with proven experience in execution of Performance and Efficiency Tests for new built Conventional Power Plants (Combine Cycle GT, Open Cycle Gas Turbine, Thermal Power Plants) Pump Storage Power Plants, Renewables (Wind and PV Solar Parks), Hybrid and Stand-alone installations of BESS. Such an experience might be done also and for existing Power Plants

The purpose of this request is to gather information from companies that are interested in participating in a future tender or competition process for a project in this field, should one take place.

This procedure, including submission of a response (“**Response**”), does not constitute any obligation on the part of NOGA to publish a tender or other engagement process in connection with the project.

1. NOGA

NOGA is a 100% government-owned company, which operates as the independent system operator in Israel pursuant to the System Operator License, as defined in the Electricity Sector Law, 5756-1996, granted by the Israel Electricity Authority.

NOGA’s duties among others are:

- To connect new Power Plants to the Grid
- To execute the Performance and Efficiency tests for each Power Plant as per NOGA’s license
- To supply an approval letter for the Electricity Authority based on the Book of Standards before commercial operation of each new built Power Plant
- To execute the Performance and Efficiency test for existing Power Plants in case of needed

2. Objective of this RFI

NOGA has initiated this RFI to assess the capabilities of potential respondents regarding Consulting Services in the field of execution and conducting of the Efficiency and Performance tests for new built

Conventional Power Plants (Combine Cycle GT, Open Cycle Gas Turbine, Thermal Power Plants) Pump Storage Power Plants, Renewables (Wind and PV Solar Parks), Hybrid and Standalone installations of BESS. Such an experience might be done also for the commercially operating Power Plants in Israel.

NOGA is seeking for a Power Plants Performance and Efficiency tests service provider. The Main purpose of the Consulting Services is to assist NOGA to execute, perform and evaluate the Efficiency and Performance characteristics of Power Plants.

This RFI is a precursor to a potential Request for Proposal (RFP) regarding Consulting Service for Power Plants Performance and Efficiency test.

The form of any such RFP has not yet been determined. This RFI does not pre-qualify parties to respond to any subsequent RFP, nor has a date for any such RFP been set.

This RFI is issued solely for information and planning purposes – it does not constitute RFP or a promise to issue an RFP in the future.

3. Background Information:

The Israeli power market, installed generation capacity of ~21 GW, is based on the following participants:

- a. IEC – a vertically government owned monopoly company, with installed generation capacity of ~11 GW (due to a reform in the power market, its installed capacity will decrease in the next few years). Its generation fleet consists of: coal fired thermal units, gas fires operated steam units, gas fired CCGT and OCGT, gas oil jet units.
- b. Independent Power Producers (IPP) – installed capacity of ~10 GW is spread across different regulations and technology types such as: CCGT, OCGT –operated by natural gas, some by gas oil, PV, Thermo-solar, Wind, Pumped Storage, and CHP.

Israel Energy market

In order to perform NOGA's responsibility in Energy and Capacity, along with Ancillary services Market, NOGA needs to execute the Efficiency and Performance Tests in order to evaluate the actual Power Plant technical, commercial and operational characteristics that should serve NOGA in daily Market Optimization and Settlement Process. Such information is, but not limited to:

- Actual Power Plant Capacity depends on the ambient weather conditions
- Fuel consumptions for power plants at different loads
- Heat Rate curves for Power Plants in different operational conditions such a EVAP cooling system, Steam Injection, Water Injection and etc.
- Fuel consumptions for start up processes

- Costs for different modes of operations such as, Min – Max Load Range, No load cost, Start up costs and etc.

4. Description of the Required Scope of Service:

NOGA is interested to assess potential Consultants' knowledge and experience to formulate the requirements for execution and conducting of Power Plant Performance and Efficiency tests in Israel.

NOGA will be required to define the scope of Power Plants' Performance and the Efficiency Methodology, Test Procedures, and the method for the execution of Performance Tests by NOGA in order to evaluate the values for Gross and Net Power Output and Gross and Net Heat Rate and the Auxiliary Consumption of the Power Plant, but not limited to. Also, to define the test result uncertainties boundaries for the applicable Power Plant type.

Once the Performance and Efficiency Test Procedures are agreed by NOGA and the Power Plant Owner, the Consultant shall manage on behalf of NOGA by itself or by means of Power Plants Owner the tests strictly in accordance with the predefined set of rules, described and approved in advance within the Test Procedure Scope and consistent with common engineering practice and applicable test standards.

The Consultant should designate the representatives who will observe the test, conduct, and confirm that the tests have been conducted in accordance with the test requirements and Standards.

The technical specification- for the Efficiency and Performance Tests must relate to the following functionality:

The Performance Test will be used to determine the following values, which are required for all Fossil fueled Power Plants (combined Cycles as well as Open Cycle), Thermal Power Plants operating on natural gas, coal, or liquid fuels as well as Artificial Pumped Storage Power Plants etc. The tests and the calculations will evaluate and determine the following values:

- Gross Power Output (ISO) at different loads.
- Net Power Output (ISO) at different loads.
- Gross Heat Rate (ISO).
- Net Heat Rate (ISO).
- Auxiliary Power Consumption.
- Start-up Costs.
- No load costs.
- Etc.

The Performance Tests will be executed and conducted using the following international Standards ASME PTC (not limited to) for example:

- Combined cycle ASME PTC 46 (2015).
- Gas analysis ISO 6976, ISO 6974-3 and ISO 12213-2.
- Uncertainty Calculation ASME PTC 19.1-2005.
- Water/ Steam Flow ISO 5167 Part 1 to 4:2003.
- Fuel Gas Sampling ISO 10715:1997 Annex E “Procedure for sampling by the controlled-rate method”.
- Liquid Fuel Oil Analysis DIN51900, DIN51757 or ASTM D240, ASTM D1298 or D5291, D4809.

Responsibilities:

The Consultant

1. Witness party representing NOGA:
 - Participation at On-Line conference calls and meetings.
 - To Define and specify the guidelines for the Efficiency and Performance Test Procedures.
 - Review and Approve the Efficiency and Performance Test Procedures and the allowable Deviations.
 - On-Site Participation during the Efficiency and Performance tests.
2. Test Preparation:
 - Specification of Test Devices and Equipment within the required precision laboratory calibration.
 - Supply of Test Devices and Equipment (Optional) if needed, including site installation.
 - Approve Efficiency and Performance Test Procedure.
 - Approve relevant Correction Curves.
 - Provide a Standard means of determining compliance with performance guarantees.
 - Temporary Performance Test Instrumentation (Optional) Approve Calibration of Test Instrumentation reports.
 - Approve Laboratories for the Samplings.
3. Conducting the Efficiency and Performance Test:
 - Lead, Monitor and conduct the test execution.
 - Installation of test instruments. (Optional)
 - Transportation of Measurement Equipment. (Optional)
 - Recording of test data.
 - Recording Electrical measurements.
 - Verify Preliminary Fuel analyses.
 - Witness the Fuel sampling by the Power Plant.
 - Test evaluation.
 - Test Reports and Documentation.
 - Tests results approval.
 - Any other relevant NOGA's support during and after above mentioned tests.

5. Response Expectations

Respondents are requested to provide information regarding their **experience, especially regarding the experience in execution, conducting, providing the consulting services for ISO or Power Plants Owner in field of Power Plant Efficiency and Performance tests**, professional capabilities and detailed description regarding the topics stated above (not limited to), which consists of projects that were performed for different Power Plants (including different technologies) around the world.

Each project description should include:

- Client Names
- period and dates of the provided services
- detailed description of the provided services
- project team members (CV; if not possible – anonymous)
- project summary including the number of generating units, installed capacity in MW, units' technology, project duration, cost estimation of the projects and any additional information that could be valuable to NOGA.

6. Communicating

- a. RFI Coordinator NOGA has appointed the following person as its RFI Coordinator:

Mr. Itay Heidemann,
Telephone: (972) 50-7209321
E-mail: Itay.Heidemann@noga-iso.co.il

- b. Unless specifically stated otherwise elsewhere in this RFI, all communications relating to this RFI shall be addressed to the RFI Coordinator in writing by e-mail.

7. **Timetable for RFI**

The following Timetable lists the key dates and times (Israel Time - (GMT+3)) in this RFI process.

RFI release date	23/10/2022
Respondent's deadline for submitting questions and clarifications	07/11/2022 AT: 11:00
RFI Closing Date	16/11/2022 AT: 11:00

- a. NOGA may postpone the closing date at NOGA's discretion.
- b. NOGA is under no obligation to postpone the closing date for submitting a Response at the request of any of the respondents.

8. **Clarifications**

- a. The respondents may direct questions or seek additional information in writing by e-mail prior to the deadline for submitting questions to the RFI Coordinator.
- b. Any clarification questions should be sent to the following e-mail address: Itay.Heidemann@noga-iso.co.il
- c. NOGA may address clarification questions, but in any case, it is not obligated to do so.

NOGA shall review the information provided by the respondents and shall be entitled to contact all or some of the respondents to seek clarifications or additional information, at its discretion.

9. **Submission Place**

- a. All documents submitted pursuant to this RFI, should be submitted to the following e-mail address: Itay.Heidemann@noga-iso.co.il

10. General Terms

- a. NOGA has the right to hold a meeting with the respondents, at its discretion.
- b. The purpose of this RFI is for gathering information only, as part of developing and formulating the Project, and it is not intended to act as a tender or competition process.
- c. This procedure, including submission of a Response, does not constitute any obligation on the part of NOGA to publish a tender or other engagement process in connection with the Project.
- d. Without derogating from the generality of the aforesaid, it is hereby clarified that NOGA has full discretion in determining the terms of any future engagement under the Mandatory Tenders Law, 5752-1992 and the Mandatory Tenders Regulations, 5733-1993 (the “**Regulations**”), if and to the extent published in the future, including without limitation the terms of the contract, pricing and any other matter relating to the engagement.
- e. Without derogating from the generality of the aforesaid, it is hereby clarified that any detail described or indicated in this RFI may be changed at the sole discretion of NOGA and is not meant to bind NOGA in any way.
- f. It is hereby clarified that this RFI does not constitute a tender or an invitation to make proposals, but an early request for information in accordance with the provisions of Section 14A of the Regulations. Therefore, the respondents are hereby informed that according to the provisions of the Regulations:
 - i. NOGA’s Tenders Committee shall keep a record of any information received through the Responses and any discussions that have taken place with respondents.
 - ii. Responding to this RFI is not a prerequisite for participating in a future tender or competition process, should one be held, and will not confer any advantage on respondents. The respondents are not obligated to participate in any future tender or to engage with NOGA in any other way.
 - iii. Any information received through a Response to this RFI, on the basis of which a tender or other competition process was held in accordance with the Regulations, shall be subject *mutatis mutandis* to the right to review and access to information under Section 21(e) of the Regulations.
- g. The respondent shall bear all costs associated with preparing and submitting the Response and shall not be entitled to reimbursement and/or compensation and/or indemnity for any expenses and/or damages incurred in connection and/or any consideration with the Response.
- h. This RFI shall be governed by and construed in accordance with the laws and regulations of the State of Israel. The applicable courts in Haifa shall have the exclusive jurisdiction with respect to all matters and all disputes arising in connection with this RFI.