Request For Information ("RFI") from Israel Independent System Operator ("NOGA") regarding the Transmission of Submarine Electrical Energy

1. **General**

1.1. NOGA - Israel Independent System Operator Ltd. ("**NOGA**") is an Israeli government-owned company operating as an independent system operator pursuant to a System Operator License, as defined in the Electricity Sector Law, 5756-1996. As an independent system operator, NOGA is responsible for the operation of the Israeli electricity system, as well as for its future planning and development.

1.2. Through this RFI, NOGA requests information regarding the existing technologies of transmission of submarine electrical energy for the purpose of NOGA's review of a future submarine power cable.

2. **Time Schedule**

2.1. The RFI shall be conducted on the following dates:

RFI release date	20-Sep.2022,
Last date for submitting a Clarification Request ("**Last Date for Submitting CR**")	24-Oct.2022 AT 11:00AM
Last date for submitting a response to the RFI ("**Last Date for Submitting Response**")	07-Nov.2022, AT 11:00AM

2.2. NOGA may, at its sole discretion, postpone any of the deadlines listed above, but shall not be obliged to do so at the request of any of the participants.

3. **Required Information**

3.1. NOGA wishes to carry out a review of the technologies that are implemented for the transmission of submarine electrical energy for its implementation along the Israeli coastline. The information should include a review of the technical literature, a review of technologies suitable for the system requirements, examples of systems installed around the world (including a description of similarities

to NOGA requirements for this project), experience of equipment manufacturers, cost estimations and initial configuration of the system in the State of Israel.

3.2. Detailed information below in Annex 1.

4. **Clarification Requests**

4.1. The participants may direct questions or seek additional information ("**Clarification Request**").

4.2. Any Clarification Request should be submitted in writing to the e-mail address mentioned in Section 5.2.

4.3. A Clarification Request should be submitted by no later than the Last Date for Submitting CR as specified in Section 2.1.

4.4. NOGA may address a Clarification Request but is not obligated to do so. At NOGA's discretion, any response to a Clarification Request may be issued in writing to all participants, *provided, however*, that the identity of the participant submitting the Clarification Request will not be disclosed.

5. **NOGA's POC; Submission Place**

5.1. NOGA has appointed the following person as its POC for the purpose of this RFI: Itay Heidemann ("**NOGA's POC**").

5.2. All communications relating to this RFI should be addresses to NOGA's POC through the following e-mail address: Itay.Heidemann@noga-iso.co.il

5.3. All documents submitted pursuant to this RFI, should be submitted to the e-mail address mentioned in Section 5.2.

6. **General Prerogative**

6.1. At any time prior to the Last Date for Submitting Response, NOGA may refine, change, amend, add to, eliminate from or modify this RFI, for any reason, whether on its own initiative, or in response to a Clarification Request received pursuant to Section 4.

6.2. NOGA may communicate and hold meetings with any or all participants during any stage, including after the Last Date for Submitting Response, at NOGA's sole discretion.

7. **General Terms**

7.1. The purpose of this RFI is only to gather information from entities interested in participating in a future tender or competition process for a consultation project in the field of submarine electrical energy, should one take place.

7.2. 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 Mandatory Tenders Regulations 5753-1993 ("**Regulations**"). Therefore, the participants are hereby informed that according to the provisions of the Regulations:

7.2.1. NOGA's tenders committee shall keep a record of any information received through the responses and any discussions that have taken place with participants.

7.2.2. 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 participants. The participants are not obligated to participate in any future tender or to engage with NOGA in any other way.

7.2.3. 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.

7.3. NOGA shall have full discretion in determining the terms of any future tender or other engagement process under the Israeli law and 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.

7.4. 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.

7.5. The participants shall bear all costs associated with preparing and submitting a response and shall not be entitled to any consideration and/or any reimbursement and/or compensation and/or indemnity for any expenses and/or damages incurred in connection with this RFI and/or with submitting a response.

7.6. 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.

Annex 1

Detailed requests

Subject: **Contact for information / advice on submarine electric energy transmission solutions**

1. Background:

NOGA wishes to carry out a review of the technologies that are implemented for the transmission of submarine electrical energy for its implementation along the Israeli coastline.

The requested service may include the requirements listed below. These requirements should not be taken as a closed list and additional requirements may be added in the future. The information should include a review of the technical literature, a review of technologies suitable for the system requirements, examples of systems installed around the world (including a description of similarities to NOGA requirements for this project), experience of equipment manufacturers, cost estimations and initial configuration of the system in the State of Israel.

2. Defining the basic system needs:

2.1. Basic assumptions:

2.1.1. The Israeli transmission system is according to the Grid Code at Noga website www.noga-iso.co.il:

2.1.1.1. The transmission system including 400 kV and 161 kV lines, while the interface are at the 400/161 kV substations.

2.1.1.2. Each 400 kV transmission line include two circuits and up to rated current of 4000A.

2.1.1.3. The transmission system are design according to N-1 and N-2 criteria.

2.1.2. Submarine transmission system:

2.1.2.1. The submarine lines will be in parallel to the Israeli transmission lines.

2.1.2.2. The reliability of the submarine system will be equivalent to the Israeli transmission system.

2.1.2.3. The landing points shall be according to sub-clause 2.2.

2.1.2.4. The submarine system will be able to be controlled and monitored of the active and reactive power that will allow to control the energy flow between the aforementioned landing points including up to the required energy flow ability.

2.1.2.5. The transmission line length is up to the entire length according to the landing points, moreover the landing areas near the coastline and/or far up to 10 km from the coastline.

2.1.3. It is required to provide an evaluation of the land occupation area for each transmission technology at the landing points.

2.2. Landing points - The options for landing points for each landing zone:

2.2.1. North:

2.2.1.1. Haifa

2.2.1.2. Acre (Naaman)

2.2.1.3. Dor

2.2.2. Center

2.2.2.1. Sorek

2.2.2.2. Morasha

2.2.2.3. Cesarea (Orot Rabin Power Plant)

2.2.3. South

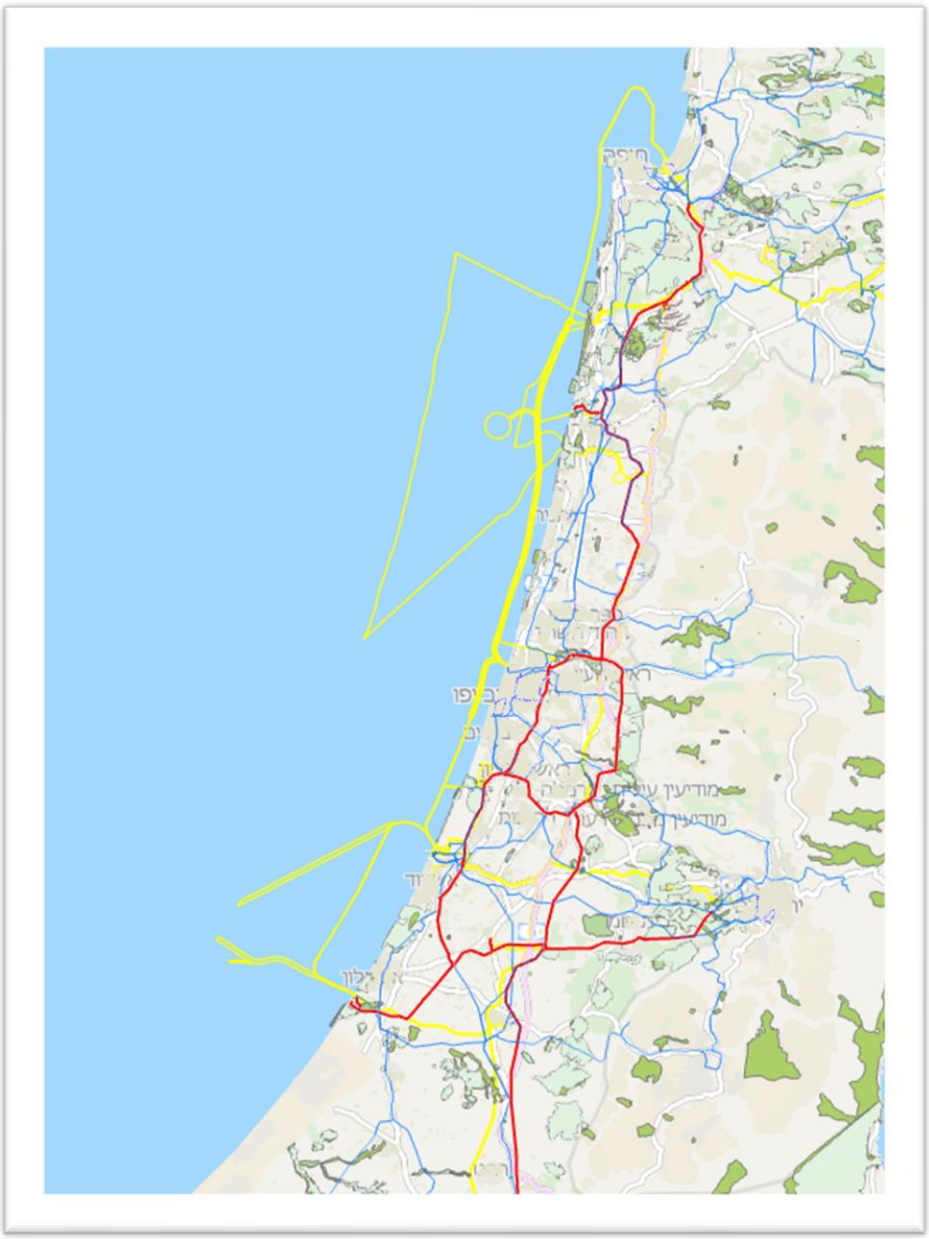
2.2.3.1. Ashkelon (Rotenberg Power Plant)

2.2.3.2. Nir Galim

3. Statutorial aspects:

3.1. In the State of Israel there is a statutorial strip for a marine infrastructure of natural gas called National Outline Plan no. 37/a/2 (2/א/37 תמ"א). This strip runs about 3 km from the Israeli coastline with a variable width of about 100 m. With land entrances in the area of Ashkelon, Ashdod, Palmachim, Tel Aviv, Hadera and Dor.

3.2. The possibility of expanding this marine infrastructure strip for the transmission of electrical energy will be considered as part of a plan for national infrastructure, accompanied by a supportive government decision



4. Environmental aspects:

4.1. Laying electrical power cables in the sea requires consideration of the natural environment in the sea and on the coast as well as the manner of carrying out the works, areas needed for organizing, and monitoring the work areas at the end of the works.

4.2. Sea natural environment:

4.2.1.

4.2.1.1. In Israel, there are marine nature reserves and protected areas that include kurkar submarine ridges. To protect the maritime environment, the Planning Administration prepared a document about the marine environment protection policy. This document is

intended to be a uniform and clear framework that includes environmental instructions for the planning and execution of all infrastructure works in the Mediterranean Sea.

4.2.1.2. The planning of the system in the State of Israel will include an Environmental Impact Survey, a bathymetric map, and an environmental engineering opinion.

4.3. Examination of the environmental aspects:

4.3.1. Phase I - review of existing information and data (see also section 4.3.4 below)

4.3.1.1. Similar marine electric power transmission projects in the world

4.3.1.1.1. Presentation of the tested work methods and the execution method of burying the marine power line according to the chosen method, with an emphasis on minimizing environmental effects and restoration operations of the marine subsoil.

4.3.1.1.2. Presentation of the tested work methods and the execution method of the marine power line's landing points according to the chosen method, with an emphasis on minimizing environmental effects and restoration operations of the area where the line enters the shore.

4.3.1.1.3. Presentation of the way of reference to parallel and/or external infrastructures.

4.3.1.1.4. A detailed description of the main environmental requirements and all the surveys that were carried out.

4.3.1.2. The gas line route in the National Outline Plan no. 37/a/2 (2/א/37 תמ"א)

4.3.1.2.1. A concise presentation of statutorily and environmental challenges in the project.

4.3.1.2.2. Presentation of the method of burying the gas line

4.3.1.2.3. Presentation of parallel/crossing infrastructures of the gas transmission route.

4.3.1.2.4. Presentation of the main environmental requirements and the surveys carried out within the Environmental Impact Review of this project.

4.3.2. Phase II - Preparation of a basic work plan

4.3.2.1. Preparation of a work plan to carry out marine survey(s) and required coordination with nearby infrastructures based on the findings of Phase I.

4.3.2.2. The work plan will include a list of potential local and international consultants to conduct the required surveys

4.3.3. Phase III - Carrying out marine surveys along the route of the line - optional (see details in section 4.3.4 below)

The main focus of the marine survey is to identify the components of the marine environment, including ecological components, rock and soil components, locating existing or planned engineering infrastructures as well as land-uses such as fishing and military activity, examining the interrelationships and possible environmental impacts between the electric cable and the marine environment, proposing measures to reduce expected mutual effects, as far as possible, at the time of establishment and during the operation phase.

Remarks:

- The survey will be based as much as possible on existing information.
- The survey components will be updated after receiving instructions for the preparation of the Environmental Impact Review, from the Ministry of Environmental Protection or the environmental consultant for the outline plan.

4.3.4. Main components of the review of existing information and of marine studies

The requested marine survey may include the following elements:

4.3.4.1. Up-to-date bathymetry mapping of the cable route area which includes: infrastructures, facilities and structures above and under the sea, large rocks exposed on the seabed and accumulations of waste on the seabed, including ammunition waste.

4.3.4.2. Hydrographic information including the regime of waves and currents, sea tides, sedimentological characterization, description of movement of sediments - erosion and bedding on the seabed, sea water characterization such as temperature and salinity.

4.3.4.3. Characterization of the biotic conditions: description of the habitats (benthos - the flora and fauna found on the bottom, or in the bottom sediments, of a sea and fish).

4.3.4.4. Survey of nature values/coastal and marine nature reserves.

4.3.4.5. Survey of archaeological sites.

4.3.4.6. Description of possible effects, during the cable placement and its operation, on the marine and coastal environment, in aspects: hydrodynamic, morphological, sedimentological, chemical and marine biological/ecological.

4.3.4.7. Description of possible effects during the cable placement and its operation on nature values and archaeological sites.

4.3.4.8. Description of possible effects during the cable placement and its operation on other infrastructures.

4.3.4.9. Description of possible effects of the marine environment on the cable after its placement.

4.3.4.10. Description of possible mutual effects between the cable and other infrastructures on the cable at its placement and during its regular operation.

4.3.4.11. Suggesting measures to reduce mutual effects as much as possible (with reference to sections f - j).

4.4. Way of carrying out the works.

4.4.1. Location of work and organizing areas and location of on-shore facilities related to submarine cables.

4.5. Space and duration required for works on-shore

4.5.1. Consider the issue of burying the power cable line at sea and cutting the Korchari / limestone ridge.

4.5.2. Push shaft position and push distance.

4.5.3. Description of the works and prevention of sea pollution with fuel (oil).

4.5.4. Temporarily storing of the excavated rocks/sediments.

4.5.5. Environmental monitoring during/after the execution of the works, including reference to the abandonment of the submarine cable.