Request for Information (RFI) for a 10-Year Long Term Service Agreement (LTSA) for Tzafit Unit 3 - GE 9FA Gas Turbine and Generator

Dear Sir/Madam,

1. Executive Summary and Strategic Context

1.1. The Israel Electric Corporation Ltd. (IEC) is initiating a strategic procurement process to secure a comprehensive, high-performance Long Term Service Agreement (LTSA) for Tzafit Power Station Unit 3 (Tzafit 3), centered on a General Electric (GE) 9FA.03 gas turbine and its associated generator.

1.2. This RFI serves as a foundational instrument to identify qualified service providers capable of maintaining the operational integrity, availability, and efficiency of this critical 50 Hz power generation asset from 2029 through 2039. The Tzafit Power Station, located approximately 40 kilometers southeast of Tel Aviv, plays a pivotal role in the national grid, providing 360 MW of combined-cycle and peaking capacity. Unit 3, specifically, is a GE 9FA.03 DLN 2.6+ xD5 OpFlex gas turbine 256 MW configured within a combined-cycle system that has undergone significant technological evolutions since its commissioning in 2006.

1.3. The contemplated 10-year term is designed to align with the asset's aging profile and the increasing requirements for grid flexibility driven by the integration of intermittent renewable energy. This RFI adopts the proven structure of IEC’s previous engagements for its units, ensuring a standardized approach to technical data disclosure, scope definition, and participant qualification. It focuses exclusively on the gas turbine and generator sections, specifically excluding the steam turbine, HRSG, and its related steam-cycle components or BOP from the scope of work, unless otherwise specified by IEC in future procurement process.

1.4. Participants are expected to demonstrate not only technical proficiency in GE F-class technology but also the organizational maturity and logistical capability to support the unit within the specific legal and regulatory framework of the State of Israel. The objective is to establish a partnership that leverages advanced diagnostics, proactive maintenance factors, and a robust supply chain to ensure Tzafit Unit 3 remains a reliable pillar of the Israeli energy sector through the next decade.

1.5. The contemplated LTSA will cover planned and unplanned maintenance support for the Gas Turbine and Generator of Unit 3.

2. Unit Identification and Original Technical Data

2.1. Tzafit Unit 3 is powered by a GE 9FA.03 gas turbine, a heavy-duty, single-shaft (GT-Generator) machine engineered for high-efficiency 50 Hz power generation. The 9FA series is recognized globally for its high firing temperatures and advanced aerodynamic features, which allow it to deliver substantial power output in both simple and combined-cycle configurations.

Component	Specification Detail
Gas Turbine Manufacturer	General Electric (GE)
Gas Turbine Model	9FA.03 (Frame 9FA)
Nominal Rated (Simple Cycle)	~256 MW (Site Rated)
Compressor Configuration	18 Stages, Axial Flow
Turbine Configuration	3 Stages, Air-Cooled Buckets/Nozzles
Combustion System	Dry Low NOx (DLN) 2.6+ XD5
Operating Speed	3,000 RPM
Control System	Speedtronic Mark VIe (Upgraded 2018) with OpFlex
Primary Fuel	Natural Gas
Backup Fuel	Distillate Fuel Oil
Generator Model	GE 324 LU
Generator Cooling	Hydrogen Cooled (H2)

Component	Specification Detail
Rated Capacity	310.725 MVA
Power Factor	0.85

2.2. The technology utilizes a cold-end drive and axial exhaust, which is optimized for combined-cycle integration with Heat Recovery Steam Generators (HRSG). The 18-stage compressor includes variable inlet guide vanes (IGV) for airflow control during startup and part-load conditions. The turbine section consists of three stages, where the first two stages of buckets and all three stages of nozzles are air-cooled using internal and external cooling circuits supplied by compressor discharge and extraction air.

2.3. The generator is a GE 324 LU hydrogen-cooled machine, designed to manage the high thermal loads associated with large-frame gas turbines. Cooling is achieved by circulating pressurized hydrogen gas through the rotor and stator, which is then cooled by hydrogen-to-water heat exchangers. This cooling method significantly reduces windage losses compared to air-cooled units, contributing to the overall plant efficiency.

3. Operational History and Maintenance Trajectory

3.1. The operational narrative of Tzafit Unit 3 began with its first synchronization on October 9, 2006. Over nearly two decades, the unit has been a workhorse for the IEC fleet, transitioning from a predominantly baseload profile to an increasingly flexible duty cycle. The historical data provided in the Tzafit history files reveals a pattern of both planned interventions and significant forced events that have shaped the current condition of the asset.

4. Major Maintenance Outages (2006–2025)

4.1. The maintenance history shows an evolution from early Combustion Inspections (CI) to high-complexity Major and Hot Gas Path Inspections (HGPI).

Date	Activity Type	Key Actions and Upgrades
2006-10-09	First Start	Initial commissioning of the unit.

Date	Activity Type	Key Actions and Upgrades
2007-11-17	CI No. 1	Generator Magic test performed during CI.
2011-10-27	HGPI 2011	Minor control modifications; Generator Minor inspection.
2013-10-04	Forced HGPI	Advanced due to turbine findings; Compressor shim upgrade.
2014-01-15	Forced CI	Combustion failure in Can 7; replaced fuel nozzles and liners.
2015-02-12	Forced CI	HMI upgrade to MK VI; EX2100 and LCI upgrades.
2017-03-22	Forced Major	Massive turbine failure; full Unit Rotor Replacement.
2018-10-19	CI (Part 1)	Upgrade to Mark VIe; OpFlex DLN 2.6+ xD5 installation.
2021-03-05	HGPI 2021	Planned HGPI after 24k FFH; Generator Minor performed.
2025-01-18	Major 2025	Rotor Out; Full Generator Rewedge; Compressor Package 4.
2028 – 10-01	HGPI 2028	Expected

5. Cumulative Counters and Operational Stress

5.1. As the unit had a Major Inspection during 2025 outage, the cumulative stress on the machine components is captured by the following operational counters recorded from the first start (Data as of January 2026):

- **Actual Fired Hours (FH):** 90,470
- **Total Starts:** 1,772
- **Total Trips:** 392
- **Factored Fired Hours (FFH) (GT Basis):** 107,668
- **Factored Fired Starts (FFS):** 5,114

6. Maintenance Schedule and LTSA Scope (2029–2039)

6.1. The new LTSA is specifically structured to cover three major maintenance events over its 10-year term, ensuring the unit's integrity as it reaches and exceeds 30 years of total service.

7. Mandatory Maintenance Schedule

7.1. The schedule for Tzafit Unit 3 under the new 10-year agreement is strictly defined as follows:

Event Year	Inspection Type	Strategic Objective
2031/2	**Major Inspection**	GT & Generator Major outage including replacement of Generator Rotor (installed 2017) after ~15 years.
2034/5	**HGPI**	GT HGPI & Generator Minor to maintain efficiency and reliability.
2037/8	**Major Inspection**	GT & Generator Major outage before contract expiration.

7.2. The 2025 Major outage had successfully addressed the unit's current immediate needs, including the generator rewedge and compressor upgrades. The 2031/2 Major will then serve as the critical point for

replacing of the 2017 Generator rotor, while the 2038 Major will prepare the unit for its fourth decade of service.

7.3. Participants are requested to propose recommended maintenance intervals and triggers for GE 9FA based on OEM guidance and operational profile, and to propose typical outage durations (calendar days) for each event (GT and Generator).

8. Planned Maintenance Scope of Work

8.1. The LTSA provider will be responsible for the organization, management, and performance of all planned outages. The scope is divided into the Gas Turbine and the 324 LU Generator.

9. Gas Turbine Section

9.1. **Combustion Inspection (CI):** CI activities are integrated into larger outages (HGPI or Major), and include the removal and inspection of fuel nozzles, combustion liners, transition pieces, and crossfire tubes. All components must be replaced using new or refurbished hardware and the removal components should be inspected for deposits, cracks, and wear, and refurbished or replaced by new components to be ready for the next outage.

9.2. **Hot Gas Path Inspection (HGPI):** This involves the disassembly of the turbine section to replace the nozzles, buckets, and shrouds of all three stages. Key activities include measuring clearances, performing NDE (Non-Destructive Evaluation) on critical surfaces, inspecting and assessing the condition of the turbine wheels and rotor dovetails.

9.3. **Major Inspection (MI):** The most comprehensive outage includes all HGPI activities and require complete disassembly from "flange-to-flange". This includes lifting the upper casings of the compressor and turbine, detailed Rotor inspection, and evaluating all bearings and seals. The 2032 and 2038 MIs will specifically focus on the structural integrity of the rotor discs and spacers.

10. 324 LU Generator Section

10.1. **Minor Inspections:** Performed during gas turbine HGPIs, these include visual inspections of the stator and rotor end-windings, electrical tests (IR/PI), and testing of the hydrogen cooling system for leaks.

10.2. **Major Inspections:** Performed during gas turbine MIs, these involve removing the generator rotor. A "Rings-Off" inspection must be conducted to examine the rotor end-rings (retaining rings) for stress corrosion cracking and to inspect the underlying windings. The stator wedge tightness must be verified, and the hydrogen seals must be pressure tested.

11. Spare Parts and Refurbishment

11.1. The Participants / Contractors, shall provide a comprehensive parts management solution and describe their capability and approach for supplying / repairing / refurbishing, including but not limited to:

11.1.1. **Capital Parts Supply:** Provision of all required HGP and combustion hardware. For the GE 9FA, this includes combustion hardware, transition pieces, liners, seals, nozzles, buckets, shrouds/segments, TBC solutions.

11.1.2. **Compressor Parts:** blades/vanes, discs/spools as required, casings, bearings and seals. Rotor repair/overhaul capability including balancing, NDE, life assessment and life extension solutions.

11.1.3. **Consumables and Hardware:** All gaskets, seals, shims, ITH bolts, River Hawk bolts, and minor hardware required for the reassembly of the unit.

11.1.4. **Generator Components:** for rotor, stator, field winding capabilities, end-winding support, wedges, retaining rings (if applicable), excitation system, bearings and seals.

11.1.5. **Refurbishment Program:** The contractor must manage the repair of removed parts at qualified service centers. This includes specialized coating applications (Thermal Barrier Coatings), structural welding, and flow testing of fuel nozzles and transition pieces.

12. Engineering and Technical Support Services

12.1. A modern LTSA for an F-class unit extends beyond physical labor to encompass deep engineering support and predictive analytics.

13. Remote Monitoring and Diagnostics (M&D)

13.1. The contractor is required to provide 24/7 remote monitoring services for Tzafit Unit 3. This involves:

13.1.1. **Real-time Surveillance:** Monitoring of vibration, temperature, pressure, and combustion dynamics via the Mark VIe control system.

13.1.2. **Predictive Analytics:** Using technology to identify anomalous behavior that may indicate incipient failure of bearings, blades, or control valves.

13.1.3. **Back Office / Expert Analysis:** Access to a global engineering team for rapid diagnosis of trips or performance degradation. A Back Office should be able to support Contractor's field team on-site during Outages.

14. Control System and Software Support

14.1. Tzafit 3 utilizes the Speedtronic Mark VIe control platform with OpFlex xD5 enhancements. The LTSA must include:

14.1.1. **Software Maintenance:** Regular updates to the control software and HMI (Human Machine Interface) to maintain cybersecurity and operational features.

14.1.2. **Combustion Auto-Tuning:** Support for advanced tuning packages (like GE's AutoTune or EthosEnergy's ECOMAX) to manage emissions and stability across the full load range and various ambient conditions.

14.1.3. **Obsolescence Planning:** Proactive management of electronic hardware life, ensuring that the control system remains supportable through 2039.

15. Unplanned Maintenance Support

15.1. To minimize the financial impact of forced outages, the contractor must provide:

15.1.1. **Guaranteed Response Times:** Initial technical response within 4 hours and mobilization of field service personnel within 48 hours of an event.

15.1.2. **Root Cause Analysis (RCA):** Formal engineering assessment for any major unplanned event to determine the mechanism of failure and prevent recurrence.

15.1.3. **Emergency Spare Parts:** Access to a global pool of emergency spares to reduce the lead time for critical component replacement.

16. Technical Maintenance Factors for GE 9FA

16.1. Effective planning of the LTSA requires a deep understanding of the maintenance factors defined in GER-3620, which govern the timing of inspections for GE heavy-duty turbines.

17. Generator Specific Maintenance: The 324 LU Machine

17.1. The 324 LU generator is a complex hydrogen-cooled asset that requires specific technical oversight throughout the LTSA term.

18. Hydrogen Cooling Management

18.1. The integrity of the hydrogen cooling system is paramount for safety and performance. The contractor must support:

18.1.1. **Hydrogen Purity Monitoring:** Inspect the hydrogen seal oil system and scavenging process to ensure H2 purity remains within rated limits (typically >95%) to minimize windage losses.

18.1.2. **Pressure Maintenance:** Monitoring of the casing pressure, which fluctuates with generator load and temperature.

18.1.3. **Auxiliary Systems:** Overhauling the hydrogen control skid, seal oil pumps, and the emergency seal oil system during major outages.

19. Structural and Electrical Integrity

19.1. The 324 LU machine is subject to significant electromagnetic and mechanical forces. The LTSA scope must address:

19.1.1. **Stator Wedge Tightness:** Following the "Full Rewedge" in 2025, subsequent MIs must verify the tightness of the stator wedges to prevent bar vibration and insulation wear.

19.1.2. **Retaining Ring Life:** The 18Mn-18Cr retaining rings are the most stressed mechanical components in the generator. The contractor must perform ultrasonic and eddy current testing to detect stress corrosion cracks, particularly if the unit is exposed to high humidity or halides.

19.1.3. **High Voltage Bushings:** Inspection and maintenance of the terminal bushings and studs, which are prone to leaks and mechanical degradation as the unit ages.

20. Required Information to be supplied by Participants

20.1. To facilitate a comprehensive evaluation, participants must provide detailed information organized into the following categories:

21. Reference List and Experience Profile

21.1. Participants shall provide a reference list of similar long-term service (LTSA) contracts signed and performed during the previous ten (10) years. For each contract, the following information is required:

21.1.1. **Facility Details:** Company/Facility name, Owner name, facility location (country/region), and unit configuration (combined cycle, single shaft, etc.).

21.1.2. **Scope Description:** Contract scope summary (planned outages, unplanned support, parts) and a clear summary of the services provided, distinguishing between parts supply, field services, and engineering support.

21.1.3. **Performance Metrics:** Information on the age of the units at the time of the contract and the number of operating hours/starts achieved during the term.

21.1.4. **Direct vs. Subcontracted:** Clarification on whether services were supplied directly by the participant or by a subcontractor.

21.1.5. **Contact Information:** Name, telephone number, and e-mail of a reference person at the facility.

22. Technical Capability Assessments

22.1. The participant must confirm his ability to supply each service required in the LTSA scope:

22.1.1. **Engineering Capabilities:** Detailed confirmation of in-house expertise for planned and unplanned maintenance, performance analysis, and control system support. Including Parts manufacturing/repair/refurbishment capabilities (in-house vs. subcontractors), including QA/QC and certifications.

22.1.2. **Outages Durations**: Typical outage schedules and durations for Minor / CI / HGPI / Major (GT and Generator).

22.1.3. **GT, Generator Rotors**: Ability to provide rotor services including repair, life assessment and balancing.

22.1.4. **Field Service Infrastructure:** A description of the field service teams, technical advisors, and specialized craft labor available to support Tzafit 3 Gas Turbine and Generator.

22.1.5. **Manufacturing and Repair Facilities:** A list of relevant facilities operated by or available to the participant for parts manufacturing and hot gas path components refurbishment.

22.1.6. **Licensing and Technology Rights:** If the participant is not the OEM, they must identify the owner of the license or the means by

which they are entitled to use the required technology (e.g., for DLN 2.6+ systems) and any limitations on such use.

23. Corporate and Financial Information

23.1. To ensure long-term stability, participants must submit the following legal and financial documents:

23.1.1. **Company History:** A ten-year overview of the company, with emphasis on corporate reorganizations and licensing agreements.

23.1.2. **Quality Certifications:** ISO 9001 certification approval for design, manufacturing, and services.

23.1.3. **Financial Health:** Annual audited reports (or equivalent) for the past three years.

23.1.4. **Corporate Structure:** Indications regarding parent companies, subsidiaries, and affiliates.

23.1.5. **Good Standing:** An affidavit by legal counsel or an accountant confirming the company is in good standing with no current actions regarding bankruptcy or insolvency.

23.1.6. **Local Representation:** Details regarding a local Israeli agent (if applicable) and the availability of technical support within Israel.

24. Commercial and Legal Framework

24.1. The proposed LTSA will be governed by a framework that balances technical performance with national and legal obligations.

25. Governing Law and Jurisdiction

25.1. **Applicable Law:** The contract and all subsequent agreements shall be governed by the laws of the State of Israel.

25.2. **National Obligations:** The contractor will be liable for buy-back obligations (industrial cooperation) towards the State of Israel, as may be applicable under local regulations.

25.3. **Standard Contract:** IEC intends to issue its standard contract for LTSA services alongside the formal RFP.

26. Budgetary and Scheduling Information

26.1. **Project Budget Price:** Participants are requested to provide a general estimated schedule of performance and a detailed budgetary price for the 10-year term.

26.2. **Risk Sharing:** The contractor should outline its approach to performance-based incentives, including guarantees for availability, reliability, and heat rate.

26.3. **Detailed Budgetary and Personnel Resource Estimation**: To enable a precise economic evaluation, Participants are required to provide a comprehensive breakdown of estimated costs and human resource requirements. All labor pricing must account for IEC's standard working structure at the Tzafit site, which consists of two 10-hour shifts per day (Day Shift and Night Shift).

26.4. **The budgetary proposal shall include:**

26.4.1. **Outage-Specific Estimates**: Detailed estimated costs for each of the following events:

26.4.1.1. Gas Turbine Major Inspection (MI).

26.4.1.2. Generator Major Inspection (including rotor removal and "Rings-Off" inspection).

26.4.1.3. Gas Turbine Hot Gas Path Inspection (HGPI).

26.4.1.4. Generator Minor Inspection.

26.4.2. **Capital Parts and Refurbishment**:

26.4.2.1. Estimated costs for the refurbishment of major HGP and combustion components.

26.4.2.2. Pricing for replacement with new capital parts where refurbishment is not feasible or recommended.

26.4.3. **Technical Expertise and Personnel**:

26.4.3.1. Hourly Rates: Clear pricing for Technical Field Advisors (TFA) and specialized experts.

26.4.3.2. Staffing Levels: The projected number of specialists and experts to be deployed for each outage type (MI, HGPI, Minor).

26.4.3.3. Mobilization: Costs associated with the deployment of the global engineering back-office support for on-site activities.

27. Instructions to Participants and Submission Details

27.1. A participant who wishes to be considered for further evaluation towards inclusion in the contemplated purchasing process shall provide all the details and information requested in this RFI.

28. Submission Instructions

28.1. **Deadline:** Responses must be submitted no later than **May 3rd, 2026**.

28.2. **Address:** Submissions should be sent to the Israel Electric Corporation Ltd., Attention:

Mr. O. Yudovitch, Mechanical Eng. Dept., Generation Division, Israel Electric Corporation Ltd.

Email: ori.yudovitch@iec.co.il

28.3. **Late Submissions:** Responses received after the above-mentioned date may result in the information supplied being disregarded.

29. Legal Disclaimers

29.1. **Sole Purpose:** The sole purpose of this RFI and prequalification process is to provide IEC with certain information. It does not grant any participant right to participate in any current or future purchasing process conducted by IEC. IEC may request additional information or clarifications from participants at its sole discretion.

29.2. A response to an RFI shall not bestow upon any person responding thereto (hereinafter referred to as the "Respondent") any advantage in any procurement procedure, if such procedure should be publicized at all, and IEC shall not be obliged to include the Respondent in the procurement process.

29.3. **Confidentiality:** Subject to disclosure requirements under Israeli law, IEC shall keep all information provided in this RFI confidential and shall use it only for its own purpose in connection with this process. IEC shall be entitled to use the information obtained by way of the RFI, as well as any data, solution, process, technique or suggestion contained in any of the responses or documents/response material submitted to IEC in connection therewith. Without derogating from the above.

29.4. IEC shall keep any information/data received from any person responding to the RFI in strict confidence and shall not permit the use thereof or use the same for any purpose other than for its own needs,

unless such information must be disclosed pursuant to a right granted by law.

29.5. **No Obligation:** IEC shall not be required to enter upon any purchase process of any type or kind because of this document.

29.6. Any exceptions, changes or additions to the above instructions (whether contained in any response to the RFI or otherwise) shall be devoid of validity and legal effect and shall not oblige IEC.

30. Summary - Conclusions and Strategic Recommendations

30.1. The generation of this RFI for Tzafit Unit 3 marks a critical step in the lifecycle management of one of IEC's most significant F-class assets. The analysis of the unit's operational history, characterized by over 80,000 fired hours and a significant rotor replacement event in 2017, underscores the necessity of a partner with profound technical expertise and a proactive maintenance philosophy. The specific maintenance schedule—comprising Majors in 2032 and 2038, and an HGPI in 2035—provides a clear technical roadmap that ensures the unit's mechanical and electrical systems are thoroughly vetted as they reach advanced service ages. The integration of local Israeli requirements, such as industrial cooperation and adherence to Israeli law, further aligns the technical goals of the LTSA with the national interests of the State of Israel.

30.2. Participants are encouraged to provide detailed, evidence-based responses that demonstrate their ability to deliver world-class service, ensuring Tzafit Unit 3 remains a reliable and efficient contributor to the national grid through 2039.

Appendix A: Budgetary Price Tables

Participants are requested to populate the following tables to provide a clear financial and resource estimation for the 10-year LTSA term (2029–2039).

Table 1: Maintenance Event Budgetary Estimates

Estimated costs should be inclusive of all standard labor, tools, and consumables for the defined scope.

Maintenance Event	Scheduled Year	Scope Summary	Estimated Budgetary Price (USD/EUR)
Major Inspection (GT & Generator)	2031/2	Full GT MI + Generator MI (including 2017 Rotor Replacement)	
HGPI & Generator Minor	2034/5	GT Hot Gas Path Inspection + Generator Minor Inspection	
Major Inspection (GT & Generator)	2037/8	Final GT & Generator MI before contract expiration	

Table 2: Personnel and Expertise Rates (10-Hour Shift Basis)

Pricing must be based on the IEC site standard: Two shifts per day (Day/Night) of 10 hours each.

Resource Category	Rate per 10-hour Day Shift	Rate per 10-hour Night Shift	Overtime Rate (per Hour)	Estimated No. of Experts (for MI)
Technical Field Advisor (TFA)				
Generator Specialist / Expert				

Resource Category	Rate per 10-hour Day Shift	Rate per 10-hour Night Shift	Overtime Rate (per Hour)	Estimated No. of Experts (for MI)
Bucket Technician Engineer				
Specialized Craft Labor				
Other				

Table 3: Capital Parts & Refurbishment Pricing

Participants should provide typical budgetary pricing for key F-class components.

Component Description	Refurbishment Cost (Per Set)	New Part Purchase Cost (Per Set)	Repair Turnaround Time (Days)
GT Stage 1 Buckets			
GT Stage 1 Nozzles			
Combustion Liners & TPs			
Fuel Nozzle Sets (DLN 2.6+)			
Generator Retaining Rings	N/A		