

# Oman Tower Company

**Confidential**

## Request for Proposal

### Supply and Installation of Solar & Battery Power Solution

<b>RFQ Ref:</b> RFP/2024/002	<b>Date:</b> Nov 27, 2024
<b>To:</b>	Open RFP
	<p><b>Oman Tower Company</b> PO Box 3819, PC 111, Ruwi, Muscat, Sultanate of Oman <b>Office Location:</b> Al Sahwa Square, Building B2, Al Mawalih, Muscat, Sultanate of Oman</p>
	<p><b>Buyer Details: Supply Chain Management Department</b> <b>Name:</b> Mudathir Al Esri. <b>Tel:</b> <b>E-mail:</b> <a href="mailto:procurement@omantowerco.om">procurement@omantowerco.om</a></p>
<b>Bid Closing Date: Wednesday 11 Dec 2024, 12 PM</b>	

#### A) RFP Process

Oman Tower Company would like to invite you (“Bidder” / “Supplier”, as applicable) to participate in this RFP.

- Offers must be submitted to [procurement@omantowerco.om](mailto:procurement@omantowerco.om) before the submission deadline.
- Clarification queries must be submitted to the same email address at least 2 working days before the bid submission deadline.
- The bidders will be expected to submit a full technical proposal (with detailed hardware and software specifications, warranties, support, etc.) and a detailed commercial offer including all costs: fixed costs, variable costs, installation costs, recurring and maintenance costs, volume discount if any.
- If any of the bidders have provided a satisfactory technical and commercial offer, they will be invited for final negotiation. OTC intends to award this contract to only one Supplier.
- This RFP does not commit OTC to award any Work.
- Oman Tower at its discretion is not bound to award to the lowest bidder.
- Bidders shall fill in the Technical Proposal Table in “Page 6”
- Bidders shall fill in their quotes in the schedule of price “Page 8 & 9”.

#### B) Introduction and Background

Oman Tower Company (OTC) is seeking proposals from qualified Bidders for the supply, installation, and commissioning of solar power systems with battery solutions to support its telecom sites in remote areas. These sites are currently off-grid and require a sustainable, low-maintenance power solution. The scope of this RFP is to identify a Supplier who can provide high-quality solar power systems that meet the load and backup hour requirements defined in this document.

The solar power systems will be deployed across remote telecom sites where grid power is unavailable, and operator power demand is low. The project aims to start with the initial deployment of around 10 sites, with potential future expansions based on performance and site availability. Upon successful execution of this RFP, OTC shall sign a long-term frame contract with the winning bidder for the same scope and for an additional scope that covers the power service management of the deployed solar power system.

The system must be designed with modularity in mind, allowing for future expansion in power capacity based on site needs or tenant requirements. The solution should allow for flexibility to handle any range of capacity upgrades, including the possibility of additional tenants being accommodated at the site.

### **C) Primary Scope of Work:**

The scope of work for the RFP includes the supply, installation, testing, and commissioning of solar power systems for remote telecom sites. The Supplier must propose solutions that consider two power supply options:

- **AC Power Supply Option:**

OTC will continue to supply AC power to the mobile network operator (MNO) sites. This means the solar system must include an inverter to convert the generated DC power to AC power, which will then be fed to the MNO's existing equipment.

- **Direct DC Power Supply Option:**

The MNOs will eliminate their own DC systems, and the solar system will directly provide DC power to the MNO equipment. The Supplier must ensure that the direct DC supply can support the MNO's equipment specifications and configurations.

The proposed solar solutions should consider four load configurations (1 kW, 2 kW, 3kW and 5 kW) with varying autonomy hours (24, 48, and 72 hours) when the system is failing to charge the batteries.

### **Modularity Requirement:**

- The solar power systems must be modular in design, allowing for future expansions in power capacity. While the example provided is an upgrade from 1 kW to 5 kW, the system should be designed to accommodate any power increase that may be required by the tenant or in the event a second tenant is added to the site.
- The modular design should allow for easy integration of additional components (such as solar panels, batteries, and inverters) without major system overhaul.

### **Key Considerations:**

- The solutions should be designed to provide continuous power to the MNO's equipment based on the defined load and backup hour requirements.

- The system should include necessary protection mechanisms, including overcharge, over-discharge, and short-circuit protection.
- The proposed systems should operate efficiently under harsh environmental conditions, including temperatures up to 60°C.
- The solar solution should incorporate a cooling system using Fan Cooling for the Rectifier Section and DC Aircon for the Battery Section.
- The RMS (Remote Monitoring System) modem and cloud service are optional and therefore should be quoted separately.

#### **D) Secondary Scope of Work:**

In addition to the primary scope, OTC intends to establish a long-term managed service agreement for the power service management of the deployed solar power systems. Bidders are required to propose a comprehensive maintenance and service management plan, which should include:

- **Corrective Maintenance**
  - Procedures and response times for addressing system failures or malfunctions.
  - Details on troubleshooting, repair, and replacement of defective components, including critical elements such as PV panels, batteries, inverters, and cooling systems.
  - Availability of spare parts and on-site support.
- **Preventive Maintenance**
  - A detailed preventive maintenance schedule outlining periodic inspections, cleaning, and performance checks.
  - Routine maintenance activities to ensure the system operates at optimal efficiency, including cleaning solar panels, checking battery health, and inspecting the cooling systems.
  - Preventive maintenance checklist for reporting and documentation of all preventive maintenance activities.
- **Managed Service Proposal**
  - A managed service approach, detailing how the bidder will oversee and manage the ongoing operation of the solar power systems considering the optional RMS cloud-based system.
  - Use of remote monitoring tools to track system performance and proactively address issues.
  - Service level agreements (SLAs) (section H) covering system uptime, maintenance response times, and performance metrics.

#### **E) Technical Specifications:**

The following technical specifications must be met by all bidders:

##### **Power Supply Options**

- **AC Power Supply, Installation and Commissioning:** Solar system must include an inverter for AC conversion. The MNO's current equipment will receive AC power as usual.
- **Direct DC Power Supply, Installation and Commissioning:** Solar system must provide DC output directly to MNO equipment, bypassing their existing DC systems.

### **Load Capacity Configurations**

The solar power solution should be designed to support the following configurations apart from the load required to charge the batteries:

- **1 kW** load with backup options of 24, 48, and 72 hours.
- **2 kW** load with backup options of 24, 48, and 72 hours.
- **3 kW** load with backup options of 24, 48, and 72 hours.
- **5 kW** load with backup options of 24, 48, and 72 hours.

### **Backup Requirements**

The battery bank capacity should be designed to provide uninterrupted power for the following durations:

- **24 Hours**
- **48 Hours**
- **72 Hours**

### **Environmental Conditions**

- Operating temperature: Up to 60°C
- Humidity: Up to 95% RH (non-condensing)
- Dust and sand-resistant design

### **Cooling System**

- The cooling system should consist of Fan Cooling for the Rectifier Section and DC Aircon for the Battery Section to ensure optimal performance and longevity of the equipment.

### **Solar Capacity**

- To be calculated by the Supplier based on 5 hours of peak sunlight per day in Oman.

### **Shadow-Free Area Requirements**

- Supplier should assess the required shadow-free area needed for the solar installation at each site.

### **RMS and Cloud Service**

- RMS modem and cloud service for monitoring are optional. Bidders should provide separate pricing for this option.

## F) Implementation Plan and Project Timeline

The implementation of the solar power systems should follow a structured project plan, including the following stages:

- **Supply of Equipment:**  
The supplier shall manufacture, supply, and deliver all equipment as per the specifications and approved drawings.
- **Installation and Commissioning:**  
Installation and commissioning must be completed within 8 weeks from the date of receiving a purchase order for each site.
- **Testing and Acceptance:**  
Upon completion of installation, the supplier must conduct comprehensive testing and provide test results for OTC's review and acceptance.

## G) Proposal Submission Guidelines

- **Technical Proposal**  
Bidders must include the following in their technical proposal:
  - Detailed description of the proposed solution, including specifications of solar panels (with the supporting frame structure), batteries, inverters, and other components by filling the Technical Proposal Table.
  - Compliance with power delivery options (AC and Direct DC) and backup configurations.
  - Project implementation plan and timeline.
- **Commercial Proposal**
  - Bidders must fill out the attached Schedule of Prices for the proposed solutions.
  - Bidders are also expected to submit a commercial proposal for the **Secondary Scope of Work**.
  - Proposals should be priced for both AC and DC power supply options.
  - Each solution should cover four load configurations (1kW, 2 kW, 3 kW and 5kW) and backup hours (24, 48, 72 hours).
- **Warranty and Support Services**
  - Bidders are required to specify a minimum warranty period for the entire system (including PV panels, inverters, batteries, and other components).
  - **OTC's Suggested Warranty Period:** Minimum of 5 years for PV panels and inverters, and 5 years for batteries. Bidders may propose a longer warranty period if available.

- Bidders are also required to provide a support service package in line with the warranty periods.

- **Technical Proposal Table**

- Bidders should fill in each field with specific details about the components and warranties of the proposed solution.
- Each entry should provide a brand, model, or technical specification, if available.
- If optional components or additional features are proposed, these should be listed in the Additional Information section.
- The Type of Battery mentioned below shall be set to Lithium-ion.

Technical Element	Bidder's Response
<b>1. Solar Panels</b>	
Type of PV Module	[e.g., Monocrystalline, Polycrystalline, Bifacial]
PV Module Efficiency (%)	[e.g., 21%]
Peak Power of PV Module (Wp)	[e.g., 550 Wp]
Dimensions of PV Module (m x m)	[e.g., 2.28 m x 1.13 m]
Total footprint required for the different power loads vs 24, 48 and 72 hrs autonomy respectively (m <sup>2</sup> )	The smaller the footprint the better
Warranty Period for PV Module (years)	[e.g., 25 years performance, 10 years product]
<b>2. Battery Storage</b>	
Type of Battery	<b>Bidder to propose Lithium-ion</b>
Battery Capacity (kWh)	[e.g., 10 kWh]
Depth of Discharge (%)	[e.g., 80%]
Battery Cycle Life	[e.g., 3,000 cycles]
Battery Warranty (years)	[e.g., 5 years]
<b>3. Inverter and Solar Charger</b>	
Inverter Type	[e.g., Pure Sine Wave, Hybrid]
Inverter Efficiency (%)	[e.g., 98%]
Inverter Brand	[e.g., SMA, Huawei]
Inverter Warranty (years)	[e.g., 5 years]
Solar Charger Brand	[e.g., Victron, Schneider]
Solar Charger Warranty (years)	[e.g., 5 years]
<b>4. Cooling System</b>	
Cooling Type	[e.g., DC Aircon + Hex cooling]
Cooling System Brand	[e.g., Dantherm]
Cooling System Warranty (years)	[e.g., 3 years]
<b>5. Remote Monitoring System (RMS)</b>	
RMS Brand	[e.g., Schneider, Delta]

Technical Element	Bidder's Response
RMS Cloud Service Availability	[Yes/No]
RMS Warranty (years)	[e.g., 3 years]
<b>6. Structural and Environmental Specifications</b>	
Mounting Structure Type	[e.g., Ground mount, Roof mount]
Mounting Structure Warranty (years)	[e.g., 10 years]
System Temperature Range (°C)	[e.g., -20 to +60°C]
Sand/Dust Resistance	[e.g., Yes, IP65 rating]
<b>7. System Backup and Capacity</b>	
Backup Duration (Hours)	[e.g., 24, 48, 72 hours]
System Capacity Scalability	[e.g., Modular, up to 10 kW]
<b>8. Additional Information</b>	
Optional Components	[e.g., RMS, Additional cooling, etc.]

## H) Service Level Agreement (SLA)

### a. Minimum Weekly Uptime

- i. **Definition:** Weekly uptime refers to the percentage of time the solar power system is operational and delivering the required power to the MNO equipment over a 7-day week.
- ii. **SLA Requirement:** The supplier must ensure a **minimum weekly uptime of 99.7%**.
- iii. This translates to a maximum allowable downtime of **0.3% per week**, which equals approximately **30 minutes per week**.
- iv. **Measurement and Reporting:** Uptime shall be monitored continuously using the Remote Monitoring System (RMS) or any other mean, and a detailed uptime report must be submitted to OTC on a monthly basis.

### b. Minimum Service Restoration Time

- i. **Definition:** Service restoration time refers to the duration taken to restore the solar power system to full operational status after a failure or significant performance degradation.
- ii. **SLA Requirement:**
  - **Critical Failures (System Down):** The service restoration time for critical failures must be within **4 hours** from the time the issue is reported or detected by the RMS.
  - **Non-Critical Issues:** For non-critical issues (e.g., minor performance inefficiencies), the service restoration time must be within **24 hours** from the time the issue is reported or detected.

### c. Penalties for SLA Breach

- i. **Uptime SLA Breach:** If the weekly uptime falls below 99.7% for any given week, OTC reserves the right to impose penalties for each 0.1% drop (or any portion thereof) below

the uptime target and for each 1hr of delay (or any portion thereof) above the restoration time. The penalty terms will be defined in the final contract.

- ii. **Restoration Time SLA Breach:** If the service restoration times are not met, OTC may impose penalties based on the severity and duration of the breach, as will be defined in the final contract.
- iii. **The penalty cap** shall be 15% of the applicable monthly service fee.

**I) Schedule of Prices:**

Bidders are requested to fill in the schedule below based on the options provided. Pricing should be listed in Omani Riyal (OMR) for the complete supply, installation, and commissioning of the solar power system.

**Table 1: Pricing Matrix for AC Power Option**

Load Capacity (kW)	24 Hours		48 Hours		72 Hours	
	Equipment	Service	Equipment	Service	Equipment	Service
1 kW						
2 kW						
3 kW						
5 kW						

**Table 2: Pricing Matrix for Direct DC Power Option**

Load Capacity (kW)	24 Hours		48 Hours		72 Hours	
	Equipment	Service	Equipment	Service	Equipment	Service
1 kW						
2 kW						
3 kW						
5 kW						

- a. Bidders should provide separate pricing for each row and column combination, covering all specified configurations.

The service prices in the table are meant for solution deployment in Muscat. Deployment outside Muscat shall attract additional charges by multiplying the service rates with regional coefficients:

Regions	Regional Coefficients
Muscat Governorate	1.000
Ad Dahira Governorate	1.050



Al Buraimi Governorate	1.060
Ash Sharqiyah Governorates (excl. Masirah island)	1.050
Masirah island	1.100
Al Wusta Governorate	1.060
Dhofar Governorate (excl. wilayat Salalah)	1.090
Al Batinah Governorates	1.040
Ad Dakhiliyah Governorate	1.050
Musandam Governorate	1.150
Oil & gas restricted areas (Work Order with > 10 sites in oil & gas restricted area)	1.900
Oil & gas restricted areas (Work Order with 6 to 10 sites in oil & gas restricted area)	2.000
Oil & gas restricted areas (Work Order with 5 or less sites in oil & gas restricted area)	2.100

- b. Bidders may also provide an Opex model (Solar as a service) offer by filling the following table with a monthly fee corresponding to each category:

**Table 1: Pricing Matrix for AC Power Option**

Load Capacity (kW)	24 Hours	48 Hours	72 Hours
	Monthly fee	Monthly fee	Monthly fee
1 kW			
2 kW			
3 kW			
5 kW			

**Table 2: Pricing Matrix for Direct DC Power Option**

Load Capacity (kW)	24 Hours	48 Hours	72 Hours
	Monthly fee	Monthly fee	Monthly fee
1 kW			
2 kW			
3 kW			
5 kW			

*Mobilization and demobilization (including commissioning and decommissioning) shall be quoted separately for each category in the following table:*

Load Capacity (kW)	24 Hours	48 Hours	72 Hours
	Mobilization/Demobilization	Mobilization/Demobilization	Mobilization/Demobilization
1 kW			
2 kW			
3 kW			
5 kW			

Opex model terms and conditions:

- 10-year term period.
- The opex model shall cover the operation and maintenance requirements outlined in section D, Secondary Scope of Work, to be factored in the monthly fee.
- Refer to section H for the SLAs.
- The bidder shall be fully responsible for the end-to-end service including the upkeep and security of the system.
- OTC shall commit to secure the site with a boundary wall or a standard chain-link fence and a pad/smart lock.
- Bidder may consider any special security means as extra measures if required.

#### J) Evaluation Criteria:

##### 1. Technical Evaluation:

###### a. Technical Compliance (15%)

- i. Proposals will be evaluated on their ability to meet the technical specifications, scope of work and system configuration requirements mentioned above.
- ii. Compliance with both AC and DC power delivery options will be considered.

###### b. Experience and Capabilities (20%)

- i. Bidder's experience in implementing solar solutions for similar applications (Track Record) will be considered.

###### c. Technical Proposal Specifications (40%)

- i. Bidder's technical proposal table will be compared with the other participants for overall solution capabilities.

###### d. Warranty and After-Sales Support (15%)

- i. Warranty periods and after-sales support services proposed by the Bidders will be compared and evaluated.

###### e. Project Delivery Period (10%)

- i. Project delivery period for supply, installation & Commissioning proposed by the Bidders will be compared and evaluated.

**2. Commercial Evaluation:**

Competitive pricing for both AC and DC power solutions will be evaluated based on the commercial offer. The award of the work shall be to the technically compliant bidder with the lowest total cost.

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