

**Office of the Chief Mechanical Engineer,  
Cochin Port Authority, Cochin, 682009, Kerala  
Tele: 91-0484-2666639/0484-2582300  
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## **1. Letter of Invitation**

### **1.1 Advertisement**

Cochin Port Authority (CoPA) intends to carry out the Energy Audit in its jurisdictional power distribution area under Cochin Port at Willingdon Island and Vallarpadam & Puthuvypin and in this regard proposals are sought by inviting tenders through Government e- Marketing Place (GeM) from leading BEE accredited Energy Auditing firms/organizations having relevant sectoral experience & requisite infrastructure to undertake such assessment.

The details of the assignment, broad objectives, and Letter proforma have been described in this document. Tenderers, who fulfill the Minimum Qualification Criteria and Terms and Conditions given below may register their tenders through GeM only well in advance on or before the scheduled date of submission.

Further information can be obtained at the address given below during 9.30 AM to 5.30 PM.

The proposals may be addressed to :

The Chief Mechanical Engineer,  
Cochin Port Authority,  
Willingdon Island,  
Cochin- 682 009.

For further details please contact the Nodal Officer / Energy Manger

Nodal Officer : Ajayakumar .R.S  
Executive Engineer(Ele)  
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Energy Manger : Jayalakshmy.S  
Asst. Executive Engineer(Ele)  
Phone no. 0484-2582360  
Email id : [jayalakshmi@cochinport.gov.in](mailto:jayalakshmi@cochinport.gov.in)

## 1.2 Critical Information

Venue for Pre-Bid meeting and opening of Bids	Chief Mechanical Engineer's Office, Cochin Port Authority, Willingdon Island, Cochin-09. <b>Through Online</b>
Contact Person for written queries	Chief Mechanical Engineer Cochin Port Authority Willingdon Island Cochin -682009
Submission of Proposal to be addressed to:	Chief Mechanical Engineer Cochin Port Authority W.Island, Kochi, Kerala, PIN : 682 009

## 2. Background Information

### 2.1 About Cochin Port Authority

Cochin Port Authority ( CoPA) is a Body Corporate under the Major Port Authorities Act, 2021 (earlier Cochin Port Trust, a major port under Ministry of Ports, Shipping and Waterways, Government of India)

CoPA is availing 6.5MVA, 110 KV power supply from Kerala State Electricity Board Ltd. at W.Island and 11 kV, 3 MVA power at Vallarpadam & Puthuvypin and distributing electricity to the consumers within the premises of Port.

CoPA has a 110 kV/ 11 KV Substation with 2 Nos 10/12.5 MVA power transformers and associated switchgears and control gears at W. island and 11 kV receiving Station at Vallarpadam and Puthuvypin. 11 KV power is routed to consumers through 11 KV ring main system / dedicated feeders using underground cabling system and LT O.H/ UG cable lines. At present there are 1185 consumers ( 35 nos. 11 kV Consumers and 1150 nos. of LT consumers).

There are 11 nos. 11 KV feeders emanating from 110/11 KV substation at W.Island and 4 nos. of 11 kV feeders at Vallarpadam & Puthuvypin).

There are 40 nos of 11kV/415 volt / 11 kv / 3.3 kV distribution transformers and associated LT panels, distribution metering system.

Distribution Transformer meters are not presently installed and consumers are metered using SMART meters. Interested bidders shall /may visit the 110 KV substation and 11 kV receiving and the distribution system of CoPT prior to bidding for clear understanding of the Power Distribution System of CoPA. The Single Line Diagram pertaining to distribution system at cochin port is attached.

## 2.2 About Energy Accounting in CoPA

Energy Accounting means accounting of all energy inflows at various voltage levels in the distribution periphery of the network, including renewable energy generation and energy consumption by the end consumers. Energy accounting and a consequent annual energy audit would help to identify areas of high loss and pilferage, and thereafter focus efforts to take corrective action.

Owing to the impact of energy auditing on the entire distribution and retail supply business and absence of an existing framework with dedicated focus on the same, it was imperative to develop a set of comprehensive guidelines that all Distribution utilities across India can follow and adhere to.

Bureau of Energy Efficiency (BEE) through Ministry of Power, Government of India issued regulations for Conduct of Mandatory Annual Energy Audit and Periodic Energy Accounting in DISCOMs. As per the regulation, all Electricity Distribution Companies are mandated to conduct annual energy audit and periodic energy accounting on quarterly basis.

These Regulations for Energy audit in Electricity Distribution Companies provides broad framework for conduct of Annual Energy Audit and Quarterly Periodic Energy Accounting with necessary Pre-requisites and reporting requirements to be met.

## 2.3 Objective of Assignment

CoPA intends to engage an agency to carry out the Energy Audit in CoPA. The objective of this assignment is to carry out the Annual Energy Audit for the years 2020-21 & 2021-22 and periodic accounting for the years 2021-2022 & 2022-23 as per the prescribed formats of regulation to conduct Energy Audit in DISCOMs issued by Bureau of Energy Efficiency, Ministry of Power Government of India.

### 3. Scope of Work

- 1) Energy Audit and periodic energy accounting should be carried out in line with the Regulation to Conduct Energy Audit in DISCOMs, 2021.
- 2) Preparation of checklist/action plan for the following:
  - (i) Energy Audit for the year 2020-21 and periodic accounting for the year 2021-2022.
  - (ii) Energy Audit for the year 2021-22 and periodic accounting for the year 2022-2023.
- 3) CoPA premises visit should be carried out by all team members of the agency as per the team declaration in technical proposal. Energy Audit regulation, 2021 profomas (formats) shall be used for this audit.
- 4) Collection and Review of the energy related data of Financial Years (FY 2020- 21) and (FY 2021-22) by visiting the DISCOM physically. Periodic accounting for the financial years FY2021-22 and FY 2022-23 shall also to be prepared and submitted.
- 5) Verification of existing pattern of energy distribution across periphery of electricity distribution company.
- 6) Collection and verification of energy flow data of electricity distribution company at all applicable voltage level of distribution network (please refer energy audit regulation)
- 7) Collection of data on energy received and distributed by DISCOM and verify the accuracy of data.
- 8) Collection & analysis of the data and prepare the same with report;
  - I. Input energy details:
    - a) Collection of input energy from recorded system meter reading
    - b) All the inputs points of transmission system
    - c) Details provided by transmission unit
    - d) Recorded meter reading at all export points of the distribution system);
    - e) System loading and captures infrastructure details (i.e. feeders, DTs, & Consumers)
  - II. Parameters for computation of distribution losses:
    - a) Details of HT sale, LT sale and transmission losses
    - b) Number of consumers category wise in each circle
    - c) Consumers connected load category wise
    - d) Details of billed and un-billed energy category wise
    - e) Metered and un-metered details.
    - f) Circle wise losses under CoPT distribution periphery
    - g) Boundary meter details
    - h) Energy Cost and Tariff data
    - i) Source of energy Supply (e.g. electricity from grid or self-generation), including generation from renewables.

- III. Monitoring and verifications of input energy and consumption pattern at various voltage levels
- IV. Identify the areas of energy leakage, wastage or inefficient use;
- V. Identify high loss-making areas/networks, for initiating target based corrective action;
- VI. Identify overloaded segments of the network for necessary capacity additions
- VII. Methodology for loss computation of various losses.
- VIII. Computation of Average Billing Rate (ABR)
- IX.
  - a) Total revenue billed category wise.
  - b) Category wise ABR with tariff subsidy, if any.
  - c) Category wise ABR without tariff subsidy.
  - d) Collection Efficiency (Category wise) and computation of AT&C loss.
- 9) Observe and compile various Energy Conservation (ENCON) options implemented by the DISCOM and prepare report containing details of expenditure made by DC along with saving and payback period.
- 10) Recommendations to facilitate energy audit, energy accounting and improve energy efficiency.
- 11) Study the details of loss/gain of DISCOM, analysis of Average Cost of Supply (ACS) and Average Revenue realized (ARR) gap, details of energy charges/Power purchase cost along with the financial analysis.
- 12) Current System Metering Status at various voltage level of DISCOM
  - (i) Status of Functional meters for all consumers, transformers and feeders.
  - (ii) Status of default meters (non-functional meters) for all consumers, transformers and feeders.
- 13) Current status of pre-requisites mentioned in regulations (Please refer energy accounting regulation).
- 14) Copies of relevant authentic and certified documents should support the report. Each document should be sealed and signed by DISCOM authorized representative as well as by agency's AEA.
- 15) Prepare final report of DISCOM as per the scope of work and as per the regulation of Energy Audit, 2021, in a standard format duly indexed, covering profile of the unit and its details of energy related data w.r.t DISCOMs Sector, analytical & statistical details and any other relevant information.
- 16) Assist CoPA to prepare and submit all returns in respect of Energy audit reports and energy accounting reports as per Proforma issued by BEE.

#### 4. Timelines and Key deliverables

The time for delivery and acceptance of final deliverable for this assignment shall be **30 days** from the date of award of work. However, the timelines may be extended depending on the requirement of CoPA with mutual consent.

Deliverables under the assignment will include following:

1. Draft report consisting of executive summary, presentation and details existing Distribution System. Metering, accuracy class of meters, CTs and PTs, availability of meters, DT meters, existing energy consumption/sale and consumer mix, demand pattern, power factor, distribution loss voltage wise, areas of unmetered energy if any, errors if any in metering

( excess or less than actuals recorded), annexure/ details of filed analysis of consumption and error in energy recorded, reasons for wrong energy recording if any, areas of improvement and scope for reduction of loss, specific recommendation for necessary corrective measures to reduce wastage of energy and to reduce distribution loss etc.

2. Final Report covering all the above information finalized after detailed analysis.
3. Energy Audit report forms & Energy Accounting reports as per final BEE regulations for Energy Auditing and Energy Accounting of DISCOM.

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