

**Request for Expression of Interest  
(Consulting Services – Firms  
Selection) For  
Power Procurement Costs Optimization in JBVNL**

[India]

[*Jharkhand Bijli Vitran Nigam Ltd*]

**Assignment Title: \_Consultancy Services for Power Procurement Costs Optimization in JBVNL**

JBVNL, through Govt. of Jharkhand, has applied for financing from the World Bank towards the cost of the **Jharkhand Power System Improvement Project**, and intends to apply part of the proceeds for consulting services towards ‘Optimization of Power Procurement Costs in JBVNL’.

The Draft Terms of Reference (TOR) of the consulting services (“the Services”) is attached as Annexure. This is only to provide an idea about the scope of the assignment to potential Consultants to help them prepare their Expressions of Interest (EoIs). A more detailed TOR will be included in the Request for Proposal (RfP), which will be issued to the short-list Consultants.

*Jharkhand Bijli Vitran Nigam Ltd* now invites eligible consulting firms (“Consultants”) to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services and share relevant details of similar work/ assignments undertaken. The firms should not share individual CVs at this stage as only the firm credentials will be reviewed.

The shortlisting criteria would be based on the following:

- a. )The bidder should be a registered firm /legal entity,
- b).Experience of design or implementation of software solution for power procurement cost optimization in power distribution utilities. More weightage will be given to proposals demonstrating implementation experience.
- c)Experience of undertaking or supporting power procurement cost optimization function for a power distribution utility.

The attention of interested Consultants is drawn to paragraph 3.14 of the World Bank's Procurement Regulations for Borrowers [July 2016] ("Procurement Regulations"), setting forth the World Bank's policy on conflict of interest.

Consultants may associate with other firms in the form of a joint venture or a sub-consultancy to enhance their qualifications. Please clearly state the nature of association while submitting your Expression of Interest.

A Consultant will be selected in accordance with the QCBS method .

Further information can be obtained at the address below during office hours [*10:00 to 18:00 hours*].

Expressions of interest must be delivered through email on (i) [coml.rev@rediffmail.com](mailto:coml.rev@rediffmail.com); (ii) [chiefengineercr@gmail.com](mailto:chiefengineercr@gmail.com) by 17.03.2017 till 5pm.

Attn: Chief Engineer (Commercial & Rev),

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# ***Jharkhand Bijli Vitran Nigam Ltd***

## **Terms of Reference**

### **Consultancy Services for Power Procurement Costs Optimization**

1) **Background**

The demand supply gap forecast is the difference between power demand and power availability. The different parameters that influence power demand and hence load

forecasting are Weather Parameters, historical demand/load, load growth projections, historical life style & life style projections, festivals, holidays, elections, economic behavior of the country, policy decision of different statutory body/ Govt. etc. The different parameters that affect power availability from Generating units are maintenance schedule, Maintenance Planning of generating stations, Outage planning of generating units, life of generating units, long & short term power purchase contracts with generating units, fuel availability for generating units on short term & long term basis, various commercial conditions of power purchase contracts & their legal dispute status, various past, present & future decisions/ stays on various Power Purchase Agreements (PPAs) & other related parameters.

As the cost of procured power is a very large part of the cost to serve for the organization, optimization in the cost of power procurement is very important. It is therefore important to continuously upgrade, strengthen & manage the Power portfolio in a distribution utility. The establishment of a formal Power management process is necessary to bridge the gap between the power demand and supply.

To reap the optimum benefits of the investments in Power Procurement, it is imperative that the investments are made most judiciously and efficiently.

Therefore, JBVNL requires the services of a reputed Consulting firm to work on power portfolio planning, who have the experience in load forecasting, achieving price optimization for Sale & Purchase of Power, management & optimization of Power Purchase cost by efficient scheduling of power plants & cost effective disposal of surplus power.

## **2) OBJECTIVE**

The main purpose of this consultancy is to provide services to the client in preparing a sustainable & efficient power portfolio management solution comprising of Optimization of Power purchase cost, Short term & Real time power management planning & DSM bill verification along with the Load forecasting services. The objective of this consultancy contract will be as under:

- 1.1 Optimization of Power Purchase Cost
- 1.2 Short term & Real time power Management
- 1.3 DSM bill verification
- 1.4 Load forecasting.
- 1.5 Hand holding support to utility staff

## **3) SCOPE OF WORK**

Project scope would include solution software, implementation and three years Operational support. Software features would include mainly Medium term, Short Term and Day ahead Demand Forecasting, Day ahead and real time power scheduling/management, integration with RLDC and SLDC, DSM bill verification, effective disposal of surplus power at competitive rate & suggest better power management techniques with the help of solution software.

Post implementation of the Power Management Solution, consultant shall engage for period of 3 Years Operational Support (which can extended up to 5 years), wherein JBVNL shall have manpower of service provider engaged with JBVNL to transfer knowledge, handhold JBVNL staff, manage and build capacities for JBVNL

As a part of operational support post implementation, consultant shall depute Team comprising of Team Leader with relevant experience along with one Shift Engineer per shift along with reliever.

The service provider must guide & assist JBVNL in efficient power procurement & disposal related issues throughout the contract period.

- a. **Implementation:** JBVNL intends to develop a power management tool that is designed to handle & optimize the power portfolio of JBVNL which would include effective power scheduling, effective disposal of surplus power, lowering down of PPC & Demand Forecasting functions.

Following are the components of solution

- i. **Medium term Planning:** - It gather data from all stakeholders and forecast the data.
  - ii. **Day ahead power management:** It gathers data from all stakeholders viz. Power Producers, Load Shedding, Weather forecast etc. to accurately predict power requirement during different slots of subsequent day. Schedule prepared from such forecast is automatically communicated to SLDC/RLDC.
  - iii. **Intraday power management:** It gather real time data from all stakeholders viz. Power Producers, Load Dispatch Centers, Weather forecast etc. and proposes decisions to reduce real time power purchase cost through process of rescheduling, real time demand re-alignment and automated communications to power producers through SLDC/RLDC for backing up and backing down power capacities.
  - iv. **DSM Bill verification:** System has capability of verification of DSM bill with existing utility data and configured DSM tariff.
- b. **Handholding support:** The service provider would ensure that tools run effectively with customized scenarios of JBVNL. Following are support services that are offered with the solution
    - i. Training to existing utility staff
    - ii. Operational support for period of three years (which can extend up to 5 years).

### **Post product implementation:**

1. The consultant will be required to provide advice for better load management, to reduce power procurement costs and suggest the strategies for shifting of load from peak hours to off peak hours in order to flatten the load curve.
2. The consultant shall provide analysis reports regarding load forecast and shall prepare the merit order of different sources of power from where JBVNL is getting power.
3. The system should review the existing intra-day, medium term & short term, day ahead and intraday power management process and redesign the process such that the DSM charge reduction shall reduce the Power Purchase Cost.
4. After implementation of the above said forecast, the consultant shall provide cost benefit analysis report on short, medium & intra-day basis including for peak/off-peak hours basis. This analysis shall be included as an output parameter of software tool.
5. The consultant should study & analyze the Indian Power Market & associate JBVNL in the purchase /sale of power through Power exchange & bilateral transaction.
6. The software should have the facility to store and analyze the data and use it for portfolio analysis and decision support.
7. Consultant must guide & assist JBVNL in efficient power procurement & disposal related issues throughout the contract period
8. The software should provide the following output parameters in addition to other parameters as will be required during the contract period.

Load forecasting (in MW) on short term, medium term and also for peak hours & off peak hours.

Power availability (in MW) on short term, medium term and also for peak hours & off peak hours.

Demand supply gap (in MW) on short term, medium term and also for peak hours & off peak hours.

Variation of load/power availability/demand supply gap with frequency, weather parameters e.g. Rainfall, Temperature (min, max & average), Relative Humidity (min., max. & average) wind speed, UI rate and etc.

**Features of Load Forecasting Module:** Software will be deployed on basis of single geographical instance forecasting model to cover entire

Jharkhand. JBVNL at any point of time would be able to get medium term, short term, day ahead and real time forecasting data for entire Jharkhand. For the purpose of calculating demand supply gap (in MW) and for the purpose of reducing Over Drawl (OD)/Under Drawl(UD) from the Indian National Grid, the Consultant shall undertake Load Forecasting on Short, (Daily, monthly & yearly) Medium term basis & long term basis. In all the three scenarios the peak, off-peak and average forecast shall also be provided. The short term forecasting data will be required to be prepared at 15 minutes intervals and updated on daily basis by using suitable weather data to be arranged by the consultant and other inputs required for accurate load forecasting. The consultant shall provide the necessary software tool for the above purpose and shall provide training to JBVNL employees for operating the software tool. The Consultant shall provide license for the software supplied in the name of JBVNL and the license should be perpetual.

While making forecast, the following factors shall also be taken into consideration along with other relevant factors:

For each month, both restricted and unrestricted forecast shall be made for peak as well as off-peak periods of the day. The seasonal variation in demand & energy requirement due to various factors such as paddy and non-paddy sowing seasons etc. should be taken in to account

#### Weather forecast

Overall economic growth projections, load curve, connected load, diversity factor and other techno-commercial factors; Likely impact of implementation of Demand Side Management (DSM) Regulations

Projected efficiency gains due to implementation of T&D loss reduction initiatives and other improvement programs

The proposed methodology shall also be guided by the methodology adopted in the latest Electric Power Survey of Central Electricity Authority (CEA) for the State.

The above demand forecasting model must be based upon latest approaches used in Power Sector and using latest state of art technology/statistical software available for Power sector.