

# **THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION**

## **GUIDELINES FOR LOAD FORECASTS, RESOURCE PLANS, AND POWER PROCUREMENT PROCESS**

**2001**

In exercise of the powers conferred on it by the Uttar Pradesh Electricity Reforms Act 1999 (Act 24 of 1999), the Uttar Pradesh Electricity Regulatory Commission hereby issues these Guidelines for Load Forecasts, Resource Plans, and Power Procurement Process, for compliance by the Licensees and the State Transmission Utility as provided in the Supply/Transmission Licences granted by the Commission/Government and in the UP Electricity Grid Code approved by the Commission.

## **Table of Contents**

- 1. Chapter 1 – General**
- 2. Chapter 2 - Load Forecasts**
- 3. Chapter 3 - Resource Plans**
- 4. Chapter 4 - Power Procurement**

**U.P. ELECTRICITY REGULATORY COMMISSION  
GUIDELINES FOR  
LOAD FORECASTS, RESOURCE PLANS, AND POWER  
PROCUREMENT PROCESS.**

**1. General:**

These guidelines are to be followed by the Licensees and the State Transmission Utility (STU), while

- (a) forecasting the demand for power within their area of Supply/Transmission,
- (b) formulating resource plans and schemes to meet their obligations, and
- (c) formulating proposals for power purchase.

**2. Load Forecasts:**

2.1 A load/demand forecast submitted to the Commission pursuant to the Supply Licence or the UP Electricity Grid Code (hereinafter a "Load Forecast") shall contain a forecast of future demand in the respective area of supply/transmission of the Licensee, for a period of 10 years, to include details of the forecast load year by year, for each customer class, and shall also include forecasts of technical and non-technical losses. The Load Forecast should also include details of the forecasting methodology used and state the assumptions on which it is based. The forecast shall examine the appropriateness of the various sophisticated techniques currently available and adopt a suitable approach, stating the logic for the same. These technique shall include econometric techniques like time-series and regression analysis.

2.2 The Load Forecast shall take into account the anticipated increase in end use efficiency on account of Demand Side Management (DSM)<sup>\*</sup> programs. The Licensees shall co-ordinate the planning and implementation of DSM programs in their respective areas.

2.3 The relevant years for which the forecast is made, shall each begin on 1<sup>st</sup> April and end on the succeeding 31<sup>st</sup> March. Each Licensee shall submit its Load Forecast to the Commission every year, within the month of April, and at such other times as the Commission may require.

2.4 The Commission may from time to time specify issues to be addressed in the Load Forecasts.

---

\* Demand Side Management Programs are programs introduced and administered by electricity supply companies with the objective of encouraging economical and efficient use of power that effectively increase available supply. While the programs may include any action that reduces demand, including more efficient use of energy by the utility itself, DSM generally involves participation of the end user. The programs may, for example, include time of day tariffs that encourage customers to shift their consumption to non-peak hours, or tariffs based on appropriate metering that discourage excessive power consumption.

## **2.5 Commission's Review**

2.5.1 While reviewing a Load Forecast submitted to it, the Commission may call for clarifications and additional information, as necessary. The Licensee shall furnish such additional information within fifteen days of being requested, unless otherwise specified by the Commission.

2.5.2 The Commission may communicate to the Licensee, its findings on a Load Forecast within three months from the date of first submission to the Commission, or within three months of receipt of additional information requested under paragraph 2.5.1, to the satisfaction of the Commission, as the case may be.

2.5.3 The Commission may, at its discretion, serve notice for a hearing, to examine/decide any issue arising from a Load Forecast.

2.5.4 On the fulfilment of requirements laid down in directions issued by the Commission as a part the proceedings envisaged under paragraphs 2.5.2 and/or 2.5.3 or otherwise, to the satisfaction of the Commission, and on an order to that effect by the Commission, the Licensee shall adopt the load forecast for appropriate purposes. The Licensee may do the same, with fifteen days notice to the Commission, in the event the Commission takes no action within the prescribed time limits, on a submission made by the Licensee.

## **3 Resource Plans:**

3.1.1 A Licensee shall formulate resource plans and schemes in co-ordination with other stakeholders and affected parties like the State Transmission Utility, Generators, other Licensees, Consumers etc., for the promotion of generation, transmission, distribution and supply of electricity, which shall conform to the provisions listed below.

### **3.2 Standard**

3.2.1 A Licensee must demonstrate to the Commission that its resource planning would ensure that all Consumers connected to its transmission or distribution system shall receive an adequate, safe, and economical supply of electricity, with due regard to quality, continuity and reliability of service.

3.2.2 A Licensee must demonstrate that it has examined the economic, technical, system, and environmental aspects of all reasonable options available to satisfy the energy needs of its Consumers in its Area of operation, and that such examination has been carried out in accordance with these guidelines.

3.2.3 A resource plan prepared by a Licensee shall be

- (i) Complete and self-explanatory. i.e. it shall contain all necessary information and documentation to enable the Commission to understand fully and work out the method of evaluation used by the Licensee to prepare the plan. It must also contain the proposed financing plan;

- (ii) Appropriate. i.e. it shall use a method of forecasting energy and/or capacity requirements, and other tools of analysis that are technically appropriate for the prevailing circumstances of the Licensee;
- (iii) Robust. i.e. it shall identify key uncertainties in the underlying assumptions, the sensitivity of the plan to the materialization of these uncertainties, and the manner in which the risks implied therein are to be managed;
- (iv) Uniform. i.e. it shall present the information in a standard format, with clear and standard definitions of the terms used.

3.2.4 Power Procurement Plans, Transmission Plans and Distribution Plans, as described below, shall be prepared by Licensees every alternate year, or with such other frequency as the Commission may from time to time require. Notwithstanding this requirement, Licensees will notify the Commission immediately regarding any emergent circumstances and the consequent modifications required to be made to the most recently submitted Plan. This would apply to any submission required to be made under these guidelines, including load forecasts, resource plans etc.

### **3.3 Power Procurement Planning**

3.3.1 The State Transmission Utility shall formulate a resource plan for the State in co-ordination with the supply/transmission Licensees, Generating Companies, the State Government, the Commission, the Regional Electricity Board, the Central Electricity Authority and other relevant agencies. The plan shall take into account all available generation resources and spell out the additional power required to meet the future energy demand of the State as assessed by the Licensees (hereinafter called a “Power Procurement Plan”).

3.3.2 The Power Procurement Plan shall be a least cost plan involving the least financial cost to the Licensee. The ultimate objective shall be to make a secure, reliable power supply available at economical rates to all consumers, while satisfying Power Supply Planning and Security Standards, pursuant to the provisions of the Supply Licence. Notwithstanding the least cost requirement, the Power Procurement Plan shall incorporate environmental considerations while arriving at the optimal power mix, keeping in mind National/State Policy in this regard, in consultation with the Commission.

To arrive at the least cost configuration, the Licensee shall examine and consider for adoption the latest computer aided techniques, like EGEAS<sup>#</sup> model and ISPLAN<sup>§</sup>. The analysis in this regard shall be provided to the Commission.

Each Power Procurement Plan shall include

---

<sup>#</sup> The EGEAS model uses a probabilistic approach to arrive at the optimal generation addition configuration based on specified reliability factors, after considering various generation options, ranging from pit head coal plants, load centre based coal plants, imported coal based plants, storage based pumped hydro plants, to combined cycle plants etc.

<sup>§</sup> The ISPLAN model, which is deterministic in nature, uses the generic plant capacity as an input and optimises the plant type mix by taking into account the fuel transportation network and the transmission system.

- (i) A report describing all existing sources of power, including generating plants exclusively contracted to Licensees, allocation from central sector plants (CSPs), surplus capacity from CSPs etc.
- (ii) Energy utilisation, peak load and power factor data, and annual load factors, for the previous 5-year period.
- (iii) Data for each existing generating station collected from the generation companies, indicating expected energy and peaking capacity during the plan period.
- (iv) Existing and proposed Demand Side Management (DSM) programmes and their impact.
- (v) Annual capacity and energy balance statements for the Plan period, showing available net capacity from existing resources, station by station, additional net generation capacity to be added, indicating year of commissioning, and total capacity against planning criteria indices, achieved after each addition.
- (vi) Recommended plan for additional power procurement indicating unit size, type, gross capacity, year of commissioning, short and long run marginal cost, with annual details of incremental cost of generation and incremental net energy generated, for each unit. It is recognised that the exact names, locations etc. of additional future power sources that have been planned for may not be available until the culmination of a competitive procurement process to purchase new capacity from IPPs. However, the licensee must include in the plan the results of its evaluation of alternative sources and justify the economic advantage in the preferred options for meeting new capacity requirements.
- (vii) The Licensee shall submit a two-year implementation plan, consistent with and specifying the elements of the first two years of the Power Procurement Plan. The Licensee shall make explicit the steps it intends to take in the first two years that will enable the acquisition of the supply and demand side resources planned for in the remaining years of the Power Procurement Plan..

### **3.4 Transmission Planning**

3.4.1 The State Transmission Utility shall plan the Transmission System in accordance with Chapter 4 of the UP Electricity Grid Code 2000.

3.4.2 The objective of the plan shall be to install sufficient capacity to evacuate power from generating stations to Grid substations, taking into account the Load Forecast, and ensure maintenance of voltage within the required limits, contain transmission losses to levels consistent with the Load Forecast and provide for the economic exchange of power with contiguous States. For this purpose, the STU shall carry out a power system analysis using computer models for load flow, short circuit and transient stability studies.

3.4.3 The Transmission Plan shall use planning criteria<sup>&</sup> consistent with, and shall be formulated to meet the requirements of, the Transmission Planning and Security Standards adopted pursuant to UP Electricity Grid Code. It shall also be consistent with the Power Procurement Plan filed pursuant to Section 3.3, and shall take into account the transmission investments required to meet new demand.

3.4.4 The plan shall specify the interconnections at which power is exported/imported to other entities, including neighbouring states. It shall take into account demand on the Licensee's/STU's existing or planned transmission capacity arising from projected wheeling transactions.

3.4.5 The Transmission Plan shall list proposed new lines, substations, reactive compensation, and other investments, stating the planned year of commissioning for each.

### **3.5 Distribution Planning**

3.5.1 Each holder of a Supply Licence shall plan and develop its Distribution System, so as to ensure that subject to the availability of adequate generating and transmission capacity, the system is capable of providing consumers within its area of supply with adequate, safe and economical supply of electricity, with due regard to quality, continuity and reliability of service.

3.5.2 Each Supply Licensee shall formulate a plan for its Distribution System in accordance with the Load Forecast for the Plan period (hereinafter called a "Distribution Plan"). The Distribution Plan shall adopt planning standards consistent with, and shall be designed to meet the requirements of the Distribution System Planning and Security Standards adopted pursuant to the Supply Licence.

3.5.3 The planning study shall take into account any demand on the Licensee's existing or planned distribution capacity arising from projected wheeling transactions.

3.5.4 The Distribution Plan shall include a strategy aimed at pin pointing and identifying areas of high power losses and implementing remedial action, in accordance with the latest techniques in this regard. In doing so, the Licensee shall consult relevant documents like "Guidelines for Reduction of T&D Losses", CEA July 1991 and more recent publications.

### **3.6 Commission's Review**

3.6.1 While reviewing a Resource Plan submitted to it, the Commission may call for clarifications and additional information, as necessary. The Licensee shall furnish such additional information within fifteen days of being requested, unless otherwise specified by the Commission.

---

<sup>&</sup> The Licensee shall refer to documents like, "Manual on Transmission Planning Criteria", CEA June 1994, and more recent relevant publications in this regard while preparing the Transmission Plan. Computer models like IREQ (Canada) and PTS (USA) used at CEA and PGCIL shall also be considered for adoption. The analysis in this regard shall be forwarded to the Commission.

3.6.2 The Commission may communicate to the Licensee, its findings on a Resource Plan within three months from the date of first submission to the Commission, or within three months of receipt of additional information requested under paragraph 3.6.1, to the satisfaction of the Commission, as the case may be.

3.6.3 The Commission may, at its discretion, serve notice for a hearing to examine/decide any issue arising from a Resource Plan.

3.6.4 On the fulfilment of requirements laid down in directions issued by the Commission as a part the proceedings envisaged under paragraphs 3.6.2 and/or 3.6.3 or otherwise, to the satisfaction of the Commission, and on an order to that effect by the Commission, the Licensee shall adopt the Resource Plan for appropriate purposes. The Licensee may do the same, with fifteen days notice to the Commission, in the event the Commission takes no action within the prescribed time limits, on a submission made by the Licensee.

## **4 Power Procurement**

### **4.1 Procedure**

4.1.1 Except as otherwise permitted by paragraphs 4.1.2 and 4.1.3 the Licensee shall not enter into a power purchase agreement or purchase or solicit offers for supply of power until 60 days after it has notified the Commission of its intention to do so and its compliance with requirements laid down in paragraphs 4.2 and 4.3, after complying with requirements of 4.4.3.

4.1.2 Licensee may make short-term purchases of power for emergency support and to realise short-term operating cost saving, without first notifying the Commission and providing the information required by paragraphs 4.3 and 4.4.2. In the case of short-term purchases for emergency support, the Licensee shall do the utmost to minimise the cost to himself and the consumer. The Licensee shall also comply with any special guidelines relating to short-term purchases that the Commission may issue from time to time. However, the Licensee should specifically identify in advance, with information to the Commission, the likelihood and nature of potential short-term purchases, in the context of:

- (a) contingency plans notified to the Commission in the context of the Power Supply Planning and Security Standards;
- (b) general power purchase agreements with suppliers which allow on-call purchases of short-term power;
- (c) generation options identified in the Power Procurement Resource Plan.

The Licensee shall report the details of such short-term purchases to the Commission on a monthly basis, which shall include a justification for that purchase, with an explanation to demonstrate that the particular purchase was the cheapest source available at that time.



4.1.3 Electrical capacity and/or energy shall be purchased in an economical, efficient and transparent manner. The Licensee shall in all cases, unless expressly permitted under these guidelines or by the Commission, procure power through a Structured Competitive Procurement Process described in paragraph 4.3 below. The Commission may permit Licensee to make purchases of power, other than for the purposes set out in paragraph 4.1.2, without requiring that such purchases be subject to a Competitive Procurement Process. For example, such permission may be granted in the case of purchases from central plants. Licensee shall not, however, thereby be exempt from the requirement in Supply Licence to demonstrate the need for power, the economic justification for the purchase, the means by which, in the absence of a competitive process, the Licensee proposes to secure the best possible terms from the supplier, and the reasonability of the proposed terms compared to other options. All these issues must be discussed in the Filing required under paragraph 4.2.

## **4.2 Need for Additional Power**

4.2.1 Whenever the Licensee intends to procure power, it must make a filing before the Commission in accordance with paragraph 4.1.1. In the filing, the Licensee shall demonstrate to the Commission's satisfaction that there is a need for the additional power for which it intends to contract, to meet its obligations under the conditions of the Supply Licence. It may do so by referring to its most recent Power Procurement Plan submitted to the Commission and should specify any areas in which its current proposal departs from its most recent Power Purchase Plan, providing reasons for the departure.

4.2.2 If the Licensee proposes to procure the power without use of a Competitive Procurement Process, it shall in its filing seek the consent of the Commission and demonstrate to the Commission's satisfaction that the proposed procurement is the preferred least cost option, with reference to the economic, technical, system and environmental aspects of commercially viable alternatives, including DSM arrangements for reducing the level of demand. Licensee shall describe the procurement procedure that is proposed, including the steps to be taken to ensure that the purchase is made on the best possible terms. In all other cases, the Licensee shall include in its filing with the Commission the details specified in paragraph 4.3 below.

## **4.3 Structured Competitive Procurement Process for Power.**

### **4.3.1 Standard**

The Licensee shall demonstrate to the Commission's satisfaction that its proposed procurement process complies with the principles set out in paragraph 4.3.3 and that it has developed procedures and commercial terms that can be reasonably expected to identify the best bid and not expose the Licensee and its consumers and customers to undue risk.

### **4.3.2 Filing**

In respect of a Competitive Procurement Process, it shall include in its filing the following:

- (i) an explanation of how the Licensee intends to provide publicity through advertisements to create competition by notifying potential bidders, so as to attract the maximum number of technically qualified bidders to potentially provide the required power;
- (ii) if applicable, a Request for Qualifications (RFQ) laying down the technical grounds and procedure by which the Licensee proposes to select companies that are deemed to be qualified to bid for providing the required power;
- (iii) the Request for Proposals (RFP) describing Licensee's requirement for power and the process to be employed to select the company to provide it;
- (iv) draft PPA setting out the terms on which the Licensee proposes to purchase the required power;
- (v) a risk allocation and management plan, that summarises the allocation of major project risks between the parties and describes how the Licensee intends to manage the risks to be allocated to it under the PPA and any other risks associated with the project;
- (vi) the procedures and criteria to be used by Licensee to evaluate bids and select the winner, including an explanation of the manner in which the best bid secured would be evaluated in an absolute manner to test its acceptability;
- (vii) if post-bid negotiations are permitted, a description of the scope and nature of the expected post-bid negotiation process, including the scope of issues open to negotiation;
- (viii) the proposed timetable and procedures for conducting the competitive process and announcing the outcome.

### **4.3.3 Principles of Competitive Procurement**

Licensee's procurement process shall

- (i) conform to the technical, economic, or other criteria laid down by the Commission in accordance with the Act, Regulations, and/or the applicable licence;
- (ii) provide for the RFP to be advertised with the widest publicity through widely accessed channels, including national dailies with the widest circulation within and outside the State, so as to come to the notice of a sufficiently large number of qualified potential bidders;
- (iii) allow bidders a reasonable time to prepare their bids;

- (iv) provide bidders with adequate information to identify Licensee's requirement for power and the terms on which it wishes to purchase it;
- (v) secure integrity, objectivity, transparency and effectiveness of the process by, in particular:
  - (a) providing information made available by the Licensee to any one bidder, for the purpose of preparing a proposal or by way of clarification of any aspect of the proposal process, to all bidders;
  - (b) assuring bidders and ensuring that the proposed procedures for responding to questions from bidders and for evaluation do not favour or disadvantage any bidder unfairly;
  - (c) adopting a bid evaluation or scoring system that is sufficiently comprehensive and transparent to permit a competitive result which identifies the least cost proposal taking into account the risk;
  - (d) specifying tender terms that are sufficiently open to allow a maximum range of proposals to be submitted, while ensuring that the evaluation criteria for evaluating the proposals are sufficiently well-defined to allow for comparability across all submitted proposals;
  - (e) establishing a procedure for notifying the bidders and other stakeholders of the outcome of the tender that is transparent and open;
- (vi) ensure that the procedures for the post-bid negotiations, if permitted, shall not produce a contract that deviates materially from the original terms of the tender to the disadvantage of the Licensee;
- (vii) pay due regard to the requirements of funding agencies in relation to the design and implementation of power projects (including requirements in relation to environmental standards) that may affect the availability of finance for such projects.

#### **4.4 Commission Review of Proposed Procurement Process**

4.4.1 The Commission may, at any time during the review process, require the Licensee to provide additional information, explanations or justifications relevant to the Commission's evaluation of the Licensee's proposals, as to whether it satisfies requirements arising from these guidelines and its obligations in relation to power procurement under the Act. The Commission may order the Licensee not to proceed with the proposed procurement until further orders or for a specified period, after the Licensee has supplied the required additional information.

4.4.2 The Licensee may, with the approval of the Commission, modify the proposed Competitive Procurement Process.

4.4.3 Subject to provisions of this paragraph, no Power Purchase Process shall be deemed to be complete and implement able without the approval of the PPA by the

Commission. The Licensee may proceed to implement its proposed procurement process in accordance with the proposals submitted, subject to changes approved by the Commission, when authorised to do so by the Commission; or if the Commission has not taken any action in relation to the proposal for 60 days after submission or after the Licensee has provided all of the additional information required by the Commission in accordance with these guidelines, as may relevant, with fifteen days notice to the Commission.

4.4.4 The Commission may at any time during the implementation of the procurement process consult with the Licensee to assure itself that the procurement process is being conducted in accordance with the Licensee's proposals.

4.4.5 The Licensee shall provide the Commission on demand with a copy of the RFP proposals and other documents relevant to the procurement process (whether received or issued by Licensee), and documents reflecting the Licensee's review and evaluation of the bids received by it. The Commission shall keep such documents confidential until the procurement process has been completed.

4.4.6 After reviewing the Licensee's filing, the Commission, at its discretion, may issue a notice of inquiry to consider any issue relating to the proposed procurement.

#### **4.5 Licensee Notification of Outcome of Procurement Process**

4.5.1 Licensee shall notify the public, all bidders and the Commission of the winning bidder at least seven days before making any binding commitment to the winning bidder to procure power in accordance with that bid. This notification shall include, subject to legal confidentiality requirements, at minimum, the following information:

- (a) Name and address of the signatories to the proposed PPA;
- (b) General information on the terms and conditions of the proposed PPA;
- (c) A brief description of the project including the nature of the technologies employed;
- (d) "Nameplate" Capacity;
- (e) Location and other physical characteristics;
- (f) Fuel type; and
- (g) Anticipated operational date.
- (h) Essential details of the selection process.

Copies of objections received in response to such information being made public or otherwise received shall be provided to the Commission with the petition seeking approval of the PPA.

4.5.2 The Licensee shall retain, in clean and legible form, all application materials, proposals, and other ancillary materials, relevant to the Procurement Process and its outcome, received by the Licensee, as also all Licensee records related to the review and evaluation carried out, for a period not less than 5 years, in the Licensee's office premises.

## **4.6 Intervention in the Procurement Process**

4.6.1 Once the Licensee has begun to implement a procurement process in accordance with these guidelines, the Commission shall only issue an order interrupting the process prior to the declaration of the winning bidder on grounds

- (a) of mala-fide or improper conduct; and/or
- (b) on the grounds that the manner in which the Licensee is conducting the procurement process differs materially from its proposal as reviewed by the Commission

4.6.2 The Commission may investigate any procurement of power following completion of the procurement process before or during the process of granting approval to the PPA by the Commission:

- (a) if the winning bid is unreasonably high;
- (b) in response to a complaint lodged with the Commission from a bidder or other interested party on grounds of improper conduct in the procurement process ;
- (c) if the Commission has reason to believe that the procurement process was not conducted by Licensee in accordance with its proposal as reviewed by the Commission.
- (d) On other reasonable grounds

These provisions are without prejudice to the Commission's right to investigate and take appropriate action on credible information of malpractice becoming available to it.

4.6.3 Any investigation of a procurement process will be initiated by a notice of inquiry and conducted in accordance with Chapter II of the Commission's Conduct of Business Regulations. The Licensee shall not enter into any commitment to procure power or act upon such a commitment pending the outcome of the investigation.

4.6.4 If the Commission determines that the procurement process was unsatisfactory with reference to criteria given in these guideline, the Commission may order the Licensee to take necessary corrective steps, including requiring it temporarily to suspend the procurement process, or to cancel it and declare the results null and void.

4.6.5 If the results of the Procurement process are declared null and void, the Licensee shall so notify the public and bidders.

## **4.7 Continuing Commission Role**

Nothing in these guidelines shall prevent the Commission from investigating or taking such other action as it deems appropriate with respect to a completed power purchase agreement in the exercise of its responsibilities under the Act.