

## **SECTION – 1**

### **INTRODUCTION**

#### **1.1 THE CONSULTANCY ASSIGNMENT**

The Central Electricity Regulatory Commission (CERC) have awarded the consultancy assignment for formulation of operational cost norms including O&M and escalation for hydro power to Water and Power Consultancy Services (India) Ltd. (WAPCOS). A copy of CERC letter No. 20/6 (I) /99-CERC dt. 20<sup>th</sup> June, 2000 indicating Terms and Conditions of the assignment is enclosed at Annex-1.

#### **1.2 TERMS OF REFERENCE**

The Terms of Reference of the assignment are as under :

- i) Review operational costs including O&M costs for hydro power internationally as well as within India with a view to develop industry best practice bench marks.
- ii) Review the existing norms for hydro power operational costs and O&M costs in India and advise on their efficacy from the view point of economy and efficiency.
- iii) Develop operational cost norms and O&M cost norms for hydro power stations and assist the commission in the subsequent proceedings for notifying these norms.

### **1.3 METHODOLOGY**

To undertake necessary studies for the assignment, data on operation of a large number of hydro power stations located in India as well as abroad was collected and analysed. The data on Availability for all the hydro power stations in the country, compiled by the Central Electricity Authority (CEA) for the years, 1993-94, 1994-95 & 1995-96 was also made use of. To have an idea of cost of completion of hydro plants, the information about the projects, techno-economically cleared by CEA in last three years was collected. In addition, a few power purchase agreements relating to projects under construction in private sector located in India and abroad were referred.

Subsequent to the submission of first Report, some hydro power stations in operation, underground as well as surface type, were visited and spot studies were carried out. Information has also since been received from National Hydro Electric Power Corporation (NHPC) about the stations owned by them. This additional information has also been considered in recommending the Operational Cost Norms for Hydro Power.

### **1.4 OUT PUTS**

As per the Terms and Condition of the assignment, the following outputs were to be provided by the WAPCOS in the time frame mentioned against each.

- (i) Review paper on bench marking industry - 30 days from the date of best practice for operational costs including award of contract O&M of hydro power using international and domestic data
- (ii) Paper reviewing the analysis of existing 30 days from the date of operational cost norms including O&M award of contract costs for hydro power in India.
- (iii) Proposal for operating cost norms 60 days from the date of including O&M cost norms for hydro award of contract power stations

## 1.5 SUBMISSION OF REPORTS BY WAPCOS

WAPCOS submitted the first report entitled “Report on Industry best Practice and analysis of Operational Cost Norms for Hydro Power” vide letter no. WAP/P/CERC/2K dt/ 21<sup>st</sup> July, 2000 covering the outputs at (i) and (ii) above.

This report cover the proposal for Operation Cost Norms of Hydro Power Stations finalised based on the extensive data obtained for a large number of power plants in operation, practice being followed in developing and developed countries, analysis of existing Operational Cost Norms in India etc. The report covers the Norms on the following.

- (i) Design Energy
- (ii) Auxiliary consumption and Transformation losses
- (iii) Availability
- (iv) Operation and Maintenance expenses and Escalation
- (v) Deemed Generation
- (vi) Incentives
- (vii) Working capital