

ANDHRA PRADESH

CODE OF TECHNICAL INTERFACE

SECTION 2.

PLANNING CODE

Table of Contents

- [2.1 Introduction](#)
- [2.1.1 Extension of Transmission System](#)
- [2.1.2 Types of Extension of Transmission System](#)
- [2.1.3 Need for Advance Planning Transmission System](#)
- [2.2 Objective](#)
- [2.2.1 Purpose of Standards and Procedures](#)
- [2.2.2 How the Objectives are achieved by PC](#)
- [2.2.3 Statement of Opportunity](#)
- [2.3 Scope](#)
- [2.3.1 Application of PC](#)
- [2.3.2 Application to Prospective Users](#)
- [2.4 Planning Criteria](#)
- [2.5 Planning and Development of the System](#)
- [2.5.1 Prospective Plan](#)
- [2.6 Basis of Planning](#)
- [2.6.1 Generation planning](#)
- [2.6.2 APTRANSCO System Planning](#)
- [2.6.3 Distribution Planning](#)

- 2.7 [Planning procedure](#)
 - 2.7.1 [Coordinating Entity](#)
 - 2.7.2 [Information to be furnished to APTRANSCO](#)
 - 2.7.3 [Information to be furnished by APTRANSCO](#)
- 2.8 [Planning Data to be supplied by APTRANSCO](#)
 - 2.8.1 [General](#)
 - 2.8.2 [APTRANSCO System Data](#)
 - 2.8.3 [Data to be furnished by APTRANSCO on Demand](#)
 - 2.8.4 [Charges for Data](#)
 - 2.8.5 [APTRANSCO's Right to withhold Information](#)
 - 2.8.6 [Confidentiality of Data](#)
- 2.9 [Planning Data Requirements of Users](#)
 - 2.9.1 [Disposition of Data to be supplied by Users to APTRANSCO](#)
 - 2.9.2 [Categories of Planning Data](#)
 - 2.9.3 [Additional Specific Data and confidentiality](#)
 - 2.9.4 [Preliminary Project Planning Data](#)
 - 2.9.5 [Committed Project Planning Data](#)
 - 2.9.6 [Registered Project Planning Data](#)
- 2.10 [Standard Planning Data](#)
 - 2.10.1 [Generators](#)
 - 2.10.2 [Transmission](#)
 - 2.10.3 [Distribution](#)
 - 2.10.4 [Formats](#)
- 2.11 [Detailed Planning Data](#)
 - 2.11.1 [Formats](#)
 - 2.11.2 [Data of Existing Users](#)
 - 2.11.3 [Data of prospective Users](#)

2.12 [Annual System Plan Data](#)

2.12.1 [Format](#)

2.12.2 [Time Scale](#)

2.13 [Five Year System Plan Data](#)

2.13.1 [Proforma](#)

2.13.2 [Time Scale](#)

2.14 [Works in Progress Data](#)

2.14.1 [Proforma](#)

2.14.2 [Time Scale](#)

2.15 [Completion Data](#)

2.15.1 [Format](#)

2.15.2 [Time Scale](#)

2.16 [Additional Data](#)

2.17 [Waiving of Data](#)

2.18 [Planning for upgradation and Modification of Existing Equipment and Systems](#)

2.18.1 [Introduction](#)

2.18.2 [Objectives](#)

2.18.3 [Transmission System](#)

2.18.4 [Distribution Systems](#)

2.18.5 [Generating Stations](#)

2.18.6 [Time Scales](#)

2.18.7 [Implementation](#)

Appendix A [Planning Data Requirements](#)

Appendix B [Generation Planning Criteria](#)

Appendix C [Protection Data](#)

1. Introduction

The Planning Code (**PC**) specifies the criteria and procedures to be applied by **APTRANSCO** in the planning and development of the **APTRANSCO** system.

Users of the **APTRANSCO** system shall take into account the Planning Code when planning and developing their own systems. **Users** are defined for the purpose of the Planning Code in para 2.3.

2.1.1 Extension of Transmission System

A requirement for reinforcement or extension of the APTRANSCO system may arise for a number of reasons including, but not limited to:

- i. a development on a **User's** system already connected to the **APTRANSCO** system as a **User Development**;
- ii. the introduction of a new Connection Point between a **User's** system and the **APTRANSCO** system;
- iii. the need to increase system capacity, remove operating constraints and maintain standards of security to accommodate an anticipated increase in **APTRANSCO Demand**;
- iv. transient or steady-state stability considerations;
- v. the cumulative effects of any combination of paragraphs i) to iv) above.

2. Types of Extension of Transmission System

Accordingly, the reinforcement or extension of the APTRANSCO system may involve work:

- i. at a Connection Point between a **User** system and the **APTRANSCO** system;
- ii. on transmission lines or other facilities which join a Connection Point to the remainder of the **APTRANSCO** system;
- iii. at or between points on the **APTRANSCO** system remote from Connection Points.

2. Need for Advance Planning Transmission System

The APTRANSCO system must be planned with sufficient lead time to allow any necessary statutory consents or way leaves to be obtained and detailed engineering design/construction work to be completed. This Planning Code therefore imposes time scales for the exchange of information between APTRANSCO and Users, subject to all parties having regard, where appropriate, to the confidentiality of such information.

2. Objective

1. Purpose of Standards and Procedures

The standards and procedures within this PC are intended to enable APTRANSCO in consultation with Users, to provide an efficient, coordinated, secure and economical Transmission System throughout its authorized area in order to satisfy requirements imposed by future levels and dispositions of Demand and Generation.

2.2.2 How the Objectives are achieved by PC

In pursuance of the above objective, the PC:

- i. defines the procedure for the exchange of information between **APTRANSCO** and a **User** in respect of any proposed **User** development on the **User's** system which may have an impact on the performance of the **APTRANSCO** system;
- ii. details the information which **APTRANSCO** shall make available to **Users** in order to facilitate the identification and evaluation of opportunities for use of or connection to the **APTRANSCO** system;
- iii. details the information required by **APTRANSCO** from **Users** in order for **APTRANSCO** to plan the development of its Transmission system to facilitate proposed **User** developments;
- iv. specifies the planning and design standards which will be applied by **APTRANSCO** in the planning and development of the **APTRANSCO** system.

3. Statement of Opportunity:

APTRANSCO shall publish annually a "Statement of Opportunity" which shall contain a summary of the prospective plan (Refer PC 2.5) and essential information required by existing and prospective Users whose systems are already connected and who are interested in applying for a connection. The format of the Opportunity Statement shall be included in future versions of the Grid Code. Till then APTRANSCO shall develop its own Format with due regard to the purpose of the Statement of Opportunity. To enable the Statement of Opportunity to be prepared, Users are required to submit to APTRANSCO the Standard Planning Data, Five Year System Plan Data and Preliminary System Planning Data as listed in Appendix-A and additional data specifically required by APTRANSCO. This data shall be submitted by 31st March of each year to cover each year of the ten succeeding years in the Plan. In the case of data being unchanged from one submission date to the next, a written statement to this effect will suffice. APTRANSCO shall make use of two-year ahead demand estimate prepared under 4.1.1 (short-term plan for operational purposes) also in preparing the Opportunity Statement.

2.3 Scope

2.3.1 Application of PC

The PC applies to APTRANSCO and to Users, and includes:

- i. (a) Generators which are directly connected to APTRANSCO Transmission

system.

- a. Generators having small generating units and embedded generators.
 - b. ISGS.
 - i. Suppliers (DISCOMS)
 - ii. Large Customers.
- 2.

3. *Application to Prospective Users*

Persons whose prospective activities would place them in any of the above **User** categories become bound by the **PC** prior to their generating, supplying or consuming power, as the case may be. All references to the various categories of **User** should, therefore be taken as reference to them in that prospective role, as well as to **Users** actually connected.

2.4 Planning Criteria

APTRANSCO and other **Users** using the **APTRANSCO** system shall follow the planning criteria in general for planning and development of the systems as detailed in Appendix-B

2.5 Planning and Development of the System

2.5.1 Prospective Plan

a) **APTRANSCO** shall develop a plan (the "Prospective Plan") which will form the basis of all further detailed planning in the power sector of A.P. All aspects of generation, transmission and distribution planning shall be done on the basis of this data.

b) (i) The prospective plan will cover a period of 15 years. The forecasted values of demand, peaking power, capacity, annual energy, losses and other important power system parameters and Transmission and Generation scenarios and shortages and surpluses must be clearly depicted at the end of each five year period so that the Prospective Plan for Ten Year Period as well as Fifteen Year Period are available at any time in a single document. General guidance may be obtained from the long term National Prospective Plan prepared by CEA wherein State-wise and Region-wise data are included. Effort shall be made to prepare the State Plan within the framework of the CEA's National Plan as far as possible.

- i. Reconciliation of Divergences between the estimates of **APTRANSCO** and CEA: -

Where there is substantial difference between the load forecast values and

therefore between generation requirement values for a future year, first it may be tried to reduce the gap by further realistic and systematic studies by APTRANSCO after obtaining data from CEA. If the difference cannot be reduced the final values shall be chosen as follows.

The AP State component values as per CEA's National Plan are adopted if they are limited by such obvious constraints as available fuel and fuel reserves or if CEA's estimates as verified by APTRANSCO are found to be based on validated data and sound methodology as accepted by APTRANSCO. Otherwise the values forecasted by APTRANSCO found realistic by a repeat study are adopted because APTRANSCO is answerable for the consequences of deviation between forecasted values and actual values, e.g., APTRANSCO will have to pay for excess scheduled generation not fully drawn from generators due to non-materialisation of high forecasted load and on the other hand, face consequences of shortage of generation when the total State generation cannot meet the actual load that is higher than the forecasted value in which case APTRANSCO will be forced to draw extra power not originally scheduled (if available) and pay at higher rates or alternatively resort to load shedding.

c) **APTRANSCO** shall conduct a sample Load Survey covering the following categories of Customers:

- i. Domestic
- ii. Commercial
- iii. Public Water Works, Sewage Pumping etc.
- iv. Irrigation Pumping and Agriculture
- v. Street Lighting
- vi. Industrial
- vii. Railway Traction
- viii. Bulk Supply to Non-industrial consumers
- ix. Public Institutions

The **DISCOMs** shall conduct detailed and exhaustive Load Survey covering all nine categories of customers mentioned above and furnish this data along with their plans to APTRANSCO. Similarly all the large power consumers shall submit their expansion plans and future power requirements to **DISCOMs** as well as **APTRANSCO**. **APTRANSCO** shall process all data and prepare a comprehensive plan.

The results of the sample survey by APTRANSCO are used to validate the data furnished by DISCOMs. For actual planning the data supplied by DISCOMs is used.

d) For the purpose of planning **APTRANSCO** shall estimate the percentage losses occurring in various sections of the **APTRANSCO** system with the help of the following means:

- i. On the basis of estimated peak load losses (expressed in units of power) of the **APTRANSCO** system determined by Load flow studies conducted with the help of computer programs.
- ii. By carrying out pilot studies in typical lines, after installing meters, to determine Energy sent out and Energy received at the end of a line.

e) **APTRANSCO** shall work out, on the basis of obtained data of projected Loads and losses of the system, the net Energy requirement at generation end, peak Load, installed capacity, peak availability, surplus and deficit both in Demand and Energy.

f) **APTRANSCO** shall work out additional generating capacity required after taking into account the existing capacity, assistance from captive power plants, projects under construction, proposed projects under JVCs and IPPs in the state sector and share of the state out of Central sector power projects both within and outside the A.P.

g) For the integrated planning and development of the **APTRANSCO** system each User, individually and jointly, shall participate in the process for its functional requirements.

h) In developing the Prospective Plan Guidelines no. 3 dated 28-02-2000 issued by APERC shall be complied with.

6. Basis of Planning

2.6.1 Generation Planning

a) The basis of generation planning shall be the prospective plan as formulated by **APTRANSCO** and shall be modified from time to time to suit the circumstances in the best interests of the **APTRANSCO** system as a whole.

b) The Generator with Independent Generating Plant shall prepare a 5 year plan for its development schemes and forward the same in the manner specified in this PC for **APTRANSCO**.

In the case of a Generator with CDGUs, its plant will be contracted to **APTRANSCO** under a PPA. To the extent that a modification to plant is required, the matter shall be addressed in the context of the PPA.

c) Any development envisaged by a Generator with Independent Generating Plant must ultimately result in an increase of its efficiency and capacity and may involve the following works:

- i. Addition of new units
- ii. Renovation and modernization of existing units.

d) Establishment of a new Generating Station sanctioned in accordance with the Electricity Supply Act, shall be subject to:

- i. Approval of **APERC** (and therefore compliance with **APERC's** Guidelines No. 3 from the proposal stage).
- i. Acceptance of bid against international competitive bidding
- ii. Sanction of State Government/Government of India.
- iii. Power Purchase Agreement between **APTRANSCO** and the Generator.

2.6.2 **APTRANSCO** System Planning

a) The basis of planning the development of the **APTRANSCO** system shall be the Prospective Plan and shall be modified from time to time by **APTRANSCO** to suit the circumstances in the best interests of the **APTRANSCO** system as a whole.

b) **APTRANSCO** will formulate the prospective plan of the **APTRANSCO** system on the basis of the following:

- i. Load flow studies
- ii. Short Circuit studies
- iii. Stability studies
- iv. Loss of Load Probability studies (LOLP)

While conducting the above studies, **APTRANSCO** will take into account the transmission lines belonging to Power grid and generating units belonging to ISGS, Independent Generating Plants, JVCs and CPPs.

c) The **APTRANSCO** shall prepare a 5 year plan for its own development schemes and forward the same to the Central Electricity Authority for their observations and recommendations before implementation, as provided in the Act.

d) **APTRANSCO** shall comply with Guidelines No. 3 issued by **APERC**

2.6.3 Distribution Planning

a) The basis of planning shall be the prospective plan as formulated by **APTRANSCO**; (for a **DISCOM** as prepared under the Distribution Code). It shall be modified from time to time to suit the circumstance in the best interest of the **APTRANSCO** system as a whole and shall be submitted to **APERC** for approval. After a period determined jointly by **APTRANSCO** and **DISCOMs**, **DISCOMs** shall independently formulate the prospective plans and submit to **APTRANSCO**. **APTRANSCO** shall validate and modify the plans, if necessary, after studying the methodology and comparing them with the historic data. Then **APTRANSCO** shall consolidate the prospective plan for the entire state and use this for formulating the prospective Transmission Plan.

b) After grant of a License for distribution and sale of electricity in a Licensed Zone, the Supplier (Licensee) shall conduct a verification of the existing loads, loading of the substations, feeders and distribution mains. He shall then formulate system improvement schemes and new schemes to be included in the planning and development of the Distribution system, to cater to the existing loads in the most economical and efficient manner and to account for the load growth envisaged in the plan period. The supplier shall comply this Planning Code and the Distribution Code.

c) The Suppliers shall prepare a 5 year plan for their development schemes in the manner specified in this Planning Code and the Distribution Code and forward the same to **APTRANSCO** and to **APERC**. The Development Plans approved by **APERC** are to be implemented and **APTRANSCO**'s transmission system planning shall be made compatible with the requirement of these schemes.

7. Planning Procedure

1. Coordinating Entity

APTRANSCO will coordinate the planning of the Users connected to the APTRANSCO system who shall provide planning data in the manner prescribed herein.

2. Information to be furnished to APTRANSCO

The Generator or Supplier connected or seeking connection to the APTRANSCO system shall be required to furnish information and data to APTRANSCO as specified in the PC. Generators planning to install CC GT Plant shall furnish the output for various combinations of Gas and Steam Turbines.

3. Information to be furnished by APTRANSCO

APTRANSCO will furnish information and data to the Generator or Supplier connected or seeking connection to the APTRANSCO system on request, as specified in the PC.

2.8 Planning Data to be supplied by APTRANSCO

2.8.1 General

Information and data shall be supplied by **APTRANSCO** to the **Users** upon request, relating to a part or parts of the **APTRANSCO** system as specified in the request, to enable them to assess opportunities for connecting to and using the **APTRANSCO** system. Such information and data are subject to reservation mentioned in Sections 2.8.4 and 2.8.5, and shall include but not be limited to the data specified in Sections 2.8.2 to 2.8.5.

2. APTRANSCO System Data

a) **APTRANSCO** system data consists of salient features of the existing system and future system as contained in the Perspective Plan. Such data shall include the following:

i) Single line diagram of the **APTRANSCO** system indicating the existing lines and proposed lines (shown dotted)

ii) Map of A.P. showing the existing lines of the **APTRANSCO** system and proposed lines (shown dotted) scale: 1cm = 10 km.

b) Distribution Data

Data shall be confined to Grid Substations indicating 33kV outlets. **APTRANSCO** will furnish a single line diagram of the Grid Substation nearest to the area in which the Supplier operates.

c) **APTRANSCO** shall publish the list of preferred points of connection to **APTRANSCO**.

d) **APTRANSCO** shall also furnish to Users the data specifically required by them. **APTRANSCO** shall obtain prior consent from a User for supplying the data of that User to another User.

3. Data to be furnished by APTRANSCO on Demand

APTRANSCO will furnish any other information as may be reasonably required to enable a User to identify and evaluate the opportunities available when connecting to and making use of the part or parts of APTRANSCO system specified in the request. If so required, APTRANSCO will also offer its views as to the suitability of the parts of the APTRANSCO system specified in the request for new connection and withdrawal of further quantities of electricity.

4.

5. Charges for Data

APTRANSCO shall be entitled to charge the User requesting any APTRANSCO system data any reasonable costs in providing the data and shall notify the User of such costs within a reasonable time (not exceeding fifteen days), after receipt of specific request. Subject to the User agreeing to pay the cost as notified within the specified time the APTRANSCO system data shall be furnished within one to two months following the User's request depending upon the nature and complexity of the data required.

5. APTRANSCO's Right to withhold Information

APTRANSCO shall be entitled to withhold any APTRANSCO system data if in the reasonable opinion of APTRANSCO disclosure of such information would seriously and prejudicially affect the commercial interests of APTRANSCO. However APTRANSCO shall not withhold the minimum data where it is clear, that the User cannot carry out his business without such data.

6. Confidentiality of Data

All data supplied by APTRANSCO to any User or vice versa shall be treated as confidential and should not be divulged to a third party. The data shall be used only for the purpose for which it is furnished.

2.9 Planning Data Requirements of Users

2.9.1 Disposition of Data to be supplied by Users to APTRANSCO

Each User shall furnish data to APTRANSCO regarding its system:

- a. to update the data base for carrying out system studies and system planning for **APTRANSCO** ;
- b. to formulate the overall annual plan for **APTRANSCO** system within the 5 year plan;
- c. to formulate the overall 5 year plan for the **APTRANSCO** system;
- d. to review the progress of new projects and developments earlier approved within the 5 year plan and
- e. to confirm compliance with the requirements under its License and under the CTI.

2.9.1.1 (a) Generators directly connected to APTRANSCO Transmission System,

DISCOMs and large consumers shall furnish data as per the Annexures of the Code.

- a. Generators having small units and embedded generators shall furnish data in the formats prescribed by APTRANSCO for each entity.
- b. In respect of ISGS the data shall be obtained by APTRANSCO direct from ISGS or from SREB and SRLDC in the formats mutually agreed.

2. Categories of Planning Data

To meet the requirements mentioned above the planning data from Users shall be categorized as follows:

- a.
- b. Standard Planning Data
- b. Detailed Planning Data;
- c. Annual System Planning Data;
- d. 5 year System Plan Data;
- e. Works in Progress Data;
- f. Completion Data
- g. Preliminary Project Planning Data
- h. Committed Project Planning Data

Every User shall furnish this data in relation to each Fiscal Year to **APTRANSCO** by 31st March of each year.

2. Additional specific Data and Confidentiality

In addition to the above, APTRANSCO may, following receipt of the Planning Data, seek clarification and/or additional information from User in respect of the data provided.

Until such time as a Connection Agreement is entered into between **APTRANSCO** and the **User**, the data shall be treated as confidential by **APTRANSCO** and shall not be disclosed to third parties.

2.9.4 Preliminary Project Planning Data

The following Project Planning Data shall be provided:

- a) Data submitted at the time of application for connection to or use of the **APTRANSCO** System shall be termed as Preliminary Project Planning Data.
- b) Preliminary Project Planning Data shall normally contain only Standard Planning Data unless Detailed Planning Data is specifically requested by **APTRANSCO** to permit detailed system studies.

2.9.5 Committed Project Planning Data

After the offer for a Connection Agreement has been accepted by the **User** the data submitted earlier and data subsequently received by **APTRANSCO** under the **PC** shall be termed as Committed Project Planning Data. This data shall form the background against which planning of the **APTRANSCO** system shall be undertaken. Accordingly, Committed Planning Data will not be treated as confidential to the extent that:

- a. **APTRANSCO** may include this data in their System Data in accordance with Section 2.8.2 of this **PC**.
- b. **APTRANSCO** may disclose this data to other **Users** while considering application from them for connection to and/or use of the **APTRANSCO** system, as may be considered proper and relevant for the purpose.

Committed Project Planning Data shall normally contain both Standard Planning Data and Detailed Planning Data.

2.9.6 Registered Project Planning Data

Before physical connection of a **User** to the **APTRANSCO** system it is necessary that any estimated data contained within the Committed Project Planning Data be replaced, where practicable, by validated actual values and by updated forecasts for future data items such as Demand. Such data at this stage shall be termed as Registered Project Planning Data. **APTRANSCO** shall treat this data as confidential, save that:

- a. **APTRANSCO** may disclose such data as **APTRANSCO** System Data.
- b. **APTRANSCO** may use this data while considering application from other **Users** for connection to or use of the **APTRANSCO** system. This may involve disclosures of the data to a third party.

9. Standard Planning Data

2.10.1 Generators

- a. The data required shall be as listed in paragraph A.1, Part-I Appendix-A.

- b. The data shall be submitted along with the application for new connections, for additions of a new Generating Unit, for any modification of Plant or equipment which may materially affect the performance of the **APTRANSCO** system.
- c. The data shall be submitted by **Users** connected to the **APTRANSCO** system in accordance with paragraph 2.9.2

2.10.2 Transmission

- a. The data required shall be as listed in paragraph A.2, Part-I Appendix-A.
- b. The compilation of the data is the internal matter of **APTRANSCO** and as such **APTRANSCO** shall make arrangements for getting the required data from different Divisions of **APTRANSCO** to update its Standard Planning Data in the format prescribed.
- c. The data shall be updated in accordance with Section 2.9.2

2.10.3 Distribution

- a. The data submitted shall be as listed in paragraph Part-I A-3 of Appendix-A.
- b. The data shall be submitted along with application for new connections, for addition of new lines and substations for any modification of lines and equipment which may materially affect the performance of the **APTRANSCO** system.
- c. The data shall be submitted by Users connected to the system in accordance with Section 2.9.2.
- d. In the case of CCGT modules the outputs for various possible combinations of Gas Turbines and Steam Turbines are to be furnished. Other data of CCGT modules shall be furnished by the Generators as specifically required by APTRANSCO.

4.

5. Formats

In all cases data must be submitted in the format prescribed in the Appendix and supported with a note covering the items not included in the Appendix.

2.11 Detailed Planning Data

1. Formats

The data required shall be as listed in paragraph Part-2 Appendix-A.

2. Data of Existing Users

Generators and Suppliers already connected to the APTRANSCO system shall provide the data at the end of each financial year ending on 31st March, no later than April 15 on a routine annual basis.

3. Data of Prospective Users

The data shall be submitted by all Generators and Suppliers seeking connection to the APTRANSCO system.

2.12 Annual System Plan Data

2.12.1 Format

The data required shall be as listed in paragraph Part 3-A, Appendix-A, Annual System Plan Data.

2. Time Scale

All Users connected to the APTRANSCO system at the end of each Fiscal Year ending on 31st March, on a routine shall submit the data by April 15 on annual basis.

2.13 Five Year System Plan Data

1. Proforma

The data required shall be as listed in paragraph Part III-B.

2. Time Scale

All Users connected to APTRANSCO system at the end of each Fiscal year ending on 31st March, shall submit the data by April 15 on a routine annual basis.

2.14 Works in Progress Data

1. Proforma

The data required shall be as listed in paragraph C, Part-3 of Appendix-A.

2. Time Scale

The data shall be submitted on a routine annual basis by all Users connected to the APTRANSCO system at the end of each Financial year ending on 31st March, by April 15.

15.

16. **Completion Data**

2.15.1 Format

The data required shall be as listed in paragraph D, Part-3 of Appendix-A.

2. Time Scale

All Users connected to the APTRANSCO system at the end of each Financial year ending on 31st March, shall submit the data by April 15, on a routine annual basis.

15. Additional Data

If, for carrying out planning or for discharging other functions of a utility, additional data other than what is prescribed in this PC and its Annexures is required by the utility from another utility, such data may be exchanged by mutual consent at any time between the utilities subject to the general conditions and reservations mentioned in this PC.

16. Waiving of Data

Supply of certain items of data prescribed in this PC may be waived at any time by means of a written statement by the recipient utility on request by the supplying utility.

18. Planning for Upgradation and Modification of Existing Equipment and Systems:

2.18.1 Introduction

This Sub Section deals with Planning for enhancement of performance of existing systems and equipment. The process may involve modification and / or total replacement of control equipment by executing a series of low cost works but not the main equipment. Minor modifications and repairs to main equipment only come under the scope of this Sub-Section. All utilities are expected to identify areas wherein modification works by investing small amounts would yield considerable qualitative and/ or quantitative benefits and to evolve plans for improving performance of their systems. APTransco shall initiate and coordinate the programmes of Users in evolving plans for renovation, modification, rehabilitation, upgradation, modernization, automation and computerisation. Works requiring large investment such as those involving new lines and sub-stations are outside the scope of this Sub-Section.

2.18.2 Objectives

The goals of such plans involving small investment are improving performance of equipment, quality of power supply, Grid stability and security and economy, reduction of energy losses and enhancement of safety standards and life of equipment.

2.18.3 Transmission System

APTransco shall evolve schemes to enhance the performance of its transmission system. The areas in which such improvements are planned are determined by APTransco from time to time. However examples are given below: -

- i. Wherever existing relays are not fast enough the relays shall be replaced by

fast acting relays.

- ii. The circuit breakers with long opening time are to be replaced by breakers with short opening time.
- iii. Carrier inter-trip for EHT feeders is to be provided.

The security and stability of the grid are enhanced by actions (i), (ii) and (iii) without large investment.

Users may require APTransco to modify its protection and control system and carry out minor modifications to the transmission system to prevent adverse impact on their systems. On studied consideration of the User's proposals APTransco may accept to implement them.

4. *Distribution Systems*

Discoms shall prepare plans for modification of their protection and switchgear and for installation of under frequency relays and obtain concurrence of APTransco. APTransco may advise suitable modifications and improvements to the distribution system like special maintenance and replacement of a few weak parts in order to reduce frequent fault trippings and their impact on the transmission system. (The schemes of DISCOMs to enhance sub-station capacities, for new lines, for reconductoring and re-configuration of lines for loss reduction and voltage improvement and to cater to load growth are not dealt in this Sub-Section).

Also when the parts of APTransco system at particular points are overloaded due to low power factor of power drawn by Suppliers the problem can be immediately mitigated by the action of DISCOMS by urgently installing shunt capacitors. APTRANSCO may require DISCOMS to install capacitors at specific locations urgently by invoking this Sub-Section of Planning Code. Failure to install capacitors by DISCOMS entails compulsory load relief. The foregoing is one instance wherein APTRANSCO requires modification / improvement of Distribution system to mitigate the strain on parts of Transmission System.

5. *Generating Stations*

APTransco may advise particular Generators to install Power System Stabilizers for their alternators if they are found essential for enhancing grid performance after detailed studies. APTransco may also advise generators to replace / modify AVR and turbine governors. The Generators shall carry out any modifications recommended by APTransco if technically feasible. Under this provision APTransco shall not demand replacement of the main capital equipment. The cost of modification is borne by the Generators though carried out at the instance of APTransco for enhancing grid stability and security. The specifications of the existing equipment (e.g. Excitor, Governor and AVR) shall be furnished by the Generators to APTransco on request for study and examining the suitability vis-à-vis grid performance and for advising

modifications / replacements.

6. *Time Scales*

Two-year plans (April to March year is followed) are prepared by APTransco and all Users for Renovation and Modification works in their systems and are finalized in January every year. The programme for the first year is updated. The two-year R&M plans of the Users shall be submitted to APTransco before 31st January. The plan of APTransco is submitted to APERC before 31st January. The R&M plan of APTransco or extracts from the plan are supplied by APTransco to any User on request. APERC may direct APTransco to revise its two-year R&M plan. APTransco shall either approve or indicate revisions of User's plans before 31st March.

2.18.7 #9; Implementation

The implementation of modification works may be re-scheduled or postponed by mutual consent. A utility may request for postponement for technical reasons or due to funding difficulties. If no agreement is reached between the utility proposing modification works and another utility, which is required to execute modification works, the matter is resolved by the procedure prescribed by Section 1.5 of General Code.