

## Chapter 10 Power

### 10.1 Present Status of Power Development in Andhra Pradesh

The total installed capacity of power in the state of Andhra Pradesh as on 31.03.2002 is 9207.90 MW in which the share of the State from central Sector is 1500 MW. The category wise break-up of installed capacity of power is given in Table 10.1.

**Table 10.1**  
**Category-wise Break-up of Installed Capacity in Andhra Pradesh**  
**Unit: MW**

Sl. No	Category	AP Genco	Joint Sector	Private Sector	Central Share	Total
1	Hydel	3132.21	-	-	-	3132.21
2	Thermal	2952.50	-	-	1357	4309.50
3	Gas	-	272	918.90	-	1190.90
4	Mini Hydel	-	-	76.95	-	76.95
5	Wind	2.00	-	92.43	-	94.43
6	Co-generation	-	-	120.70	-	120.70
7	Mini Power plants	-	-	78.11	-	78.11
8	Others	-	-	62.10	-	62.10
9	Atomic	-	-	-	143	143.00
	<b>Total</b>	<b>6086.71</b>	<b>272</b>	<b>1349.19</b>	<b>1500</b>	<b>9207.90</b>

*Source: AP TRANSCO- Power Development in AP (Statistics), 2001-02.*

#### 10.1.1 Available Generating Capacity in the State from Different Sources – Category-wise as on 31.03.2002

Available generating capacity and energy available in Andhra Pradesh state from different sources is given in Table 10.2.

**Table 10.2**  
**Source-wise Generating Capacity and Energy Available**

Sl. No	Name of the Power House	No. of Units X Capacity (MW)	Installed capacity (MW)	Generation during 2001-02 (MU)
<b>A.</b>	<b>A.P. GENCO</b>			
<b>I</b>	<b>HYDEL</b>			
1	Machkund	3 x 17 } 3 x 23 }	* 84	448.30
2	TBHES (T.B.Dam & Hampi)	4 x 9 } 4 x 9 }	* 57.60	116.07
3	Nizam Sugar	2 x 5	10	3.49
4	Upper Sileru	4 x 60	460	1056.37
5	Donkarayi	1 x 25	770	1942.25
6	Lower Sileru	4 x 115	450	381.91
7	Srisaillam RBHS	7 x 110	15	5.15
8	Srisaillam LBHS	3 x 150		
9	Singur	2 x 7.5		
10	Nagarjunasagar RC PH	3 x 30	90	61.02
11	Nagarjunasagar	1 x 110 } 7 x 100.8 }	815.61	1067.22
12	Nagarjunasagar LC PH	2 x 30	60	23.82
13	Pochampad	3 x 9	27	102.70
14	Penna Ahobilam	2 x 10	20	5.05
15	Mini Hydro	7	7	12.56
	Aux. Consumption			- 28.87
			<b>3132.21</b>	<b>5727.78</b>
<b>II</b>	<b>THERMAL</b>			
1	Kothagudem 'A'	4 x 60	240	1753.26
2	Kothagudem 'B'	2 x 110	220	1064.37
3	Kothagudem 'C'	2 x 110	220	1354.51
4	Kothagudem 'D'	2 x 250	500	3862.49
5	Vijayawada – I	2 x 210	420	3352.37
6	Vijayawada – II	2 x 210	420	3498.86
7	Vijayawada – III	2 x 210	420	3376.84
8	R.T.P.P	2 x 210	420	3400.81
9	RTS – B	1 x 62.5	62.50	425.40
10	NTS	1 x 30	30	156.09
	Aux. Consumption			- 2000.38
			<b>2952.50</b>	<b>20244.62</b>

Sl. No	Name of the Power House	No. of Units X Capacity (MW)	Installed capacity (MW)	Generation during 2001-02 (MU)
<b>III</b>	<b>WIND ENERGY</b>			
1.	Ramagiri	10 x 0.2	2	0.44
<b>B</b>	<b>Joint Sector</b>			
<b>1</b>	<b>Gas Based</b>			
	a)VGTS – I	(2x33) + ( 1.34)	100	739.15
	b) VGTS-II	(1x112) +(1x60)	172	1212.20
	Aux. Consumption			- 31.82
	<b>Total</b>		<b>272</b>	<b>1919.53</b>
<b>C</b>	<b>Central Projects</b>			
1	NTPC		1080	
2	M.A.P.P. & Kaiga		143	8037.16
3	NLC-2MC		277	
	<b>Total</b>		<b>1500</b>	
<b>D</b>	<b>Private sector Generation</b>		1349.19	5237.66
<b>E</b>	<b>Purchases from other states / Regions</b>			3722.85
	<b>Grand Total</b>		<b>9207.90</b>	<b>44890.04</b>

\* Share of Andhra Pradesh State

Source: AP TRANSCO- Power Development in AP (Statistics), 2001-02

### 10.1.2 Present Status of Utilization of Power Produced in Andhra Pradesh

The present share of various uses as percentage of total consumption for 2001-02 is furnished in Table 10.3.

**Table 10.3**  
**Present share of various uses of Power**

Sl.No.	Use	Percent
1	Domestic	22.89
2	Non-Domestic	4.78
3	Agricultural	41.54
4	Industry	20.94@
5	Railway Traction	3.28
6	Others	6.57
	<b>Total</b>	<b>100.00</b>

@ includes LT Industrial & Cottage Industrial and H.T. industrial Cat –I, cat-II & Power Intensive

Note: Only sales within the state are considered

Source: AP TRANSCO – Power Development in AP (Statistic), 2001-02

### 10.1.3 Schemes under Construction as on 31.03.2002

Various generating schemes under execution as on 31.03.2002 in A.P. state are given in Table 10.4.

**Table 10.4**  
**Schemes under Construction as on 31.3.2002**

<b>Sl. No</b>	<b>Scheme</b>	<b>Capacity (MW)</b>	<b>Date/Expected date of commissioning</b>
A	Hydel 1. Srisaillam Left Bank PH	6 x 150	3 units are commissioned in 2001-02 Balance units by August, 2003

*Source: AP TRANSCO – Power Development in A.P (Statistics), 2001-02*

### 10.1.4 Exports / Imports of Power

The total exports and imports of energy in the State of A.P. during 2001-02 are as under:

Import including purchases	=	16319.08 MU
Export to Other States	=	Nil

### 10.1.5 Future Plans for Power Development in the State

Various schemes likely to be taken up in future for power development in the state of Andhra Pradesh are listed in Table 10.5.

**Table 10.5**  
**Capacity Additions Programme for 10<sup>th</sup> plan (2002-2007) as per**  
**APERC'S Approval**  
**(Gross capacities in MW)**

S.No	Name of the project	2002-03	2003-04	2004-05	2005-06	2006-07
<b>I</b>	<b>State Sector</b>					
1	Rayalaseema stage –II					420
<b>II</b>	<b>Central sector</b>					
2	NTPC Simhadri	500				
<b>III</b>	<b>Private sector</b>					
3	GVK Extn – I				220	
4	Vemagiri Stage – I				370	
5	Gautami Stage – I				464	
6	BSES. Andhra	80				
7	Konaseema			445.00		
8	BPL Ramagundam					520
<b>IV</b>	<b>Other projects</b>					
9	Mini Power plants			60.00		
10	Non Conventional (NEDCAP)	47	47			
11	Share from Ramagundam Extn				148	
12	Share from Talcher TPs		106.25	212.50	106.25	
	<b>Total</b>	<b>627</b>	<b>153.25</b>	<b>717.50</b>	<b>1308.25</b>	<b>940</b>
	<b>Grand Total</b>			<b>3746.00</b>		

*Source: AP TRANSCO- Power Development in AP(Statistic),2001-02*

## **10.2 Power generation at Inchampalli dam**

### **10.2.1 Proposed powerhouse at headworks**

As brought out in Chapter on "Water Resources and Hydrology", the Inchampalli dam toe powerhouse can not be operated through out the year, and hence it is proposed to convert the same into pumped storage scheme operating during peak hours demand. The reservoir simulation study carried out at Inchampalli dam using 30 years flow data shows that considerable quantum of spills are available after meeting all the committed and proposed demands. These spills are proposed to be passed through the powerhouse before released into river in the downstream. It is proposed to install 13 units of 75 MW capacities each reversible turbines including two stand by units. The installed capacity of the powerhouse would be 975 MW. A power block with 13 penstocks of dia. 7.00 m each and powerhouse of size 346 m x 24 m is proposed on

the right flank of the dam. The following civil and electrical works would be required to be undertaken for the proposed dam powerhouse.

#### **Civil works**

- i) 13 Nos. of trash rack structures
- ii) Powerhouse civil works
- iii) 13 Nos. of penstocks
- iv) Intake gate shafts
- v) Powerhouse pit to accommodate 13 Nos. of turbines and generating units
- vi) Draft tubes
- vii) Switch yard
- viii) Tail pond in downstream with retention structure

#### **Electrical works**

- i) Power generation & control equipment
- ii) Power station auxiliaries
- iii) Power transformer and outdoor equipment

### **10.2.2 Proposed powerhouse on link canal**

The link canal is designed to carry the monthly requirements of Nagarjunasagar right bank canal upto the proposed Pulichintala reservoir at the tail end. The topography enroute of the link canal near outfall is very steep which necessitates a structure of canal fall of 27 m before water is let into Pulichintla dam. This canal fall is proposed for power generation, with power houses at 3 places utilizing 9 m head each. The powerhouse is proposed with 3 units of 3 MW each, of which one would be a stand by unit. The total installed capacity of each of the powerhouse would be 9 MW for one stage and it would be 27 MW for the all three stages. The power block will be of 18 m in length to accommodate 3 penstocks of 2.85 m dia each. The power house dimension will be 26.0 m x 14.5 m. The following civil and electrical works would be required to be undertaken for the proposed powerhouse.

#### **Civil works**

- i) 3 Nos. of trash rack structures
- ii) Powerhouse civil works
- iii) 3 Nos. of penstocks of 2.85 m dia.
- iv) Intake gate shafts
- v) Powerhouse pit to accommodate 3 Nos. of turbines and generating units
- vi) Draft tube

- vii) Switch yard
- viii) Tail race pool
- ix) Fore bay and by pass arrangement

### **Electrical works**

- i) Power generation & control equipment
- ii) Power station auxiliaries
- iii) Power transformer and outdoor equipment

### **10.2.3 Average annual power generation**

The average annual power generation is worked out to be 2477 MU (including 1807 MU peaking energy) and 109.7 MU at Inchampalli dam powerhouse and link canal powerhouses respectively.

### **10.3 Power requirements of link canal**

The topography along the link canal necessitates the provision of lifting arrangements at certain places to irrigate the command area. It is proposed a pump house at RD 200 km to feed the NSLBC command including the area identified beyond Tammileru. The installed capacity of pump house will be 59 MW consisting 10 units of 5.9 MW each. Similarly a pump house is also proposed on the right flank of Pulichintala reservoir to pump water that is released to Pulichintala dam from the link canal to command the NSRBC area. The installed capacity of the pump house will be 36.0 Mw, which consist of 15 units of 2.4 MW each. The design of its various components are discussed and furnished in Chapter on Design & layout. The following civil and electrical works would be required to be undertaken for each of the lifting arrangements.

#### **Civil works**

- i) Unitised sump
- ii) Suction pipes
- iii) Pump house to accommodate pumps and motors
- iv) Delivery pipes
- v) Delivery mains
- vi) Delivery cistern

#### **Electrical works**

- i) Pumps & control equipment
- ii) Pump auxiliaries
- iii) Transformer and outdoor equipment

The annual power requirement of the link canal project for lifting waters is worked out to be 285 MU.

#### **10.4 Effect of Inchampalli - Pulichintala link on the state power scenario**

The energy requirement of the link canal is 285 MU whereas the power generation from the link canal would be 109.7 MU. Thus, the net power required for the link canal would be 175.3 MU.

There are number of power schemes like thermal and hydel, which are proposed by the state of Andhra Pradesh as well as Central Authority to meet the future demands of the region. The above power requirement to lift the water under the link canal can be met from the regional grid or through the adjoining power grid.