



## ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION

(Regulatory Commission for the States of Andhra Pradesh and Telangana)  
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From

Commission Secretary,  
APERC, 4<sup>th</sup> & 5<sup>th</sup> Floors,  
# 11-4-660, Singareni Bhavan,  
Red Hills, Lakdi-ka-pul,  
Hyderabad 500 004..

To

- 1) The Principal Secretary to Govt.,  
Energy Department,  
Government of Andhra Pradesh,  
Andhra Pradesh Secretariat,  
Hyderabad 500 004.
- 2) The Principal Secretary to Govt.,  
Energy Department,  
Government of Telangana,  
Telangana Secretariat,  
Hyderabad 500 004.

Lr. No.APERC/Secy/F:State Reorganistion/2014-4 Dated 14.08.2014

Sir,

Sub:- APERC – Andhra Pradesh Reorganization Act, 2014 –  
Advisory # 3 of 2014 u/s 86(2) of the Electricity Act, 2003  
– Reg.

- Ref:- 1) Advisory#1 of 2014 issued to erstwhile GoAP in Lr. No.  
APERC/ Secy/F:State Reorganistion/2014-1 Dt.14.08.2014  
2) Advisory#2 of 2014 issued to GoAP in Lr. No. APERC/  
Secy/F:State Reorganistion/2014-2 Dt.16.06.2014  
3) Advisory#2 of 2014 issued to GoTS in Lr. No. APERC/  
Secy/F:State Reorganistion/2014-3 Dt.16.06.2014

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I am directed to communicate a Common Advisory # 3 of 2014  
(Enclosed) of APERC (Regulatory Commission for the States of Andhra  
Pradesh and Telangana) to both the Governments Andhra Pradesh and  
Telangana under section 86(2) of the Electricity Act, 2003.

Encl.: As above

Yours faithfully,

Sd/-  
Commission Secretary

Copy to:

The Secretary (Power), Ministry of Power, Shram Shakti Bhawan, Rafi marg,  
New Delhi 110 001. Fax No.(011)23717519

The Director (OM) & Member Secretary, Government of India, Ministry of  
Power, Shram Shakti Bhawan, Rafi Marg, New Delhi 110 001.

The Joint Chief (RA), CERC, Forum of Regulators (FOR), C/o CERC, 3<sup>rd</sup> & 4<sup>th</sup>  
Floor, Chandralok Building, 36, Janpath, New Delhi 110 001.

The Director (Engineering)/APERC  
The Director (Tariff)/APERC  
The Joint Director (Law)/APERC

PS to the Chairman/APERC  
PS to the Member (A)/APERC  
PS to the Member (R)/APERC

**Andhra Pradesh Electricity Regulatory Commission**  
**(Regulatory Commission for the States of**  
**Andhra Pradesh and Telangana)**  
**Advisory # 3 of 2014**  
**Joint Advisory for Andhra Pradesh and Telangana**

**Introduction**

1. Under Section 86(2) of the Electricity Act 2003, the APERC is required to advise the State Government on all or any of the following matters namely
  - i. promotion of competition, efficiency and economy in activities of the electricity industry;
  - ii. promotion of investment in electricity industry;
  - iii. reorganization and restructuring of electricity industry in the State;
  - iv. matters concerning generation, transmission , distribution and trading of electricity or any other matter referred to the State Commission by that Government.
  
2. In its Advisory # 1 of 2014, the Commission made six recommendations to the erstwhile state government of Andhra Pradesh on certain aspects of reorganization of the electricity industry in the state consequent to the passage of the Andhra Pradesh Re-organization Act 2014.
  
3. In its Advisory # 2 the Commission made six recommendations to the states of Andhra Pradesh and Telangana respectively. These recommendations covered issues relating to promoting competition, measuring agricultural consumption, improving demand side management and promoting renewable energy generation.
  
4. The Commission notes that consequent to the reorganisation of Andhra Pradesh, disagreements relating to the reorganisation and restructuring of the electricity industry in two states have arisen. The Commission notes that it had highlighted some of these issues as causes for concern in its Advisory # 1 issued on 15-04-2014. While the Commission had recommended timely prior remedial action therein, this could not be undertaken.
  
5. One of the main issues of disagreement between the two states is the disposition of Power Purchase Agreements entered into by the then DISCOMs and the then APGENCO (hereinafter called PPAs). The Commission has separately issued its orders under Section 86(1)(b) of the Electricity Act and Regulation 1 of 2008 on the validity and currency of the

PPAs. This advisory on the economic consequences of the PPAs entered into between the then APGENCO and the then DISCOMs, is issued with a view to contribute to the ongoing debate on the allocation of the power generation linked to these PPAs so that if and when necessary, the Central Government can invoke its powers under Section 69 and 107 of the AP Reorganisation Act 2014 to reach a solution.

6. Section 92 of the AP Reorganisation Act 2014 provides as under:

*“92. Successor States to follow principles, guidelines, etc., issued by Central Government. The principles, guidelines, directions and orders issued by the Central Government, on and from the appointed day, on matters relating to coal, oil and natural gas, and power generation, transmission and distribution as enumerated in the Twelfth Schedule shall be implemented by the successor States.”*

7. The part of the 12th Schedule referred to in section 92 which deals with the subject “power” and is relevant to this advisory is extracted below.

*C. Power*

*“1. Units of APGENCO shall be divided based on geographical location of power plants.*

*2. Existing Power Purchase Agreements (PPAs) with respective DISCOMS shall continue for both on-going projects and projects under construction.*

8. There is considerable ambiguity in the disposition of power generated by the then APGENCO’s units if these two clauses are read together.

9. As per clause 1, the units of APGENCO will be divided on geographical basis. The implication of this clause seems to be that the state where the plant is located will be the complete owner of the plant. This position appears to be buttressed by section 48 (1) of the A P Reorganisation Act. Thus the state which owns the assets will also be entitled to the disposition of its assets including the disposition of the power generated by the plants located therein.

10. As per clause 2, the existing PPAs with the four DISCOMs shall continue for both ongoing projects and projects under construction. Even though the PPAs do not contain details of the power to be shared between the four DISCOMS inter-se , it is presumed that this clause requires that the arrangements for sharing of power between the DISCOM as it existed on the appointed date be continued for both ongoing and under construction projects.

11. Clause 1 and Clause 2 suggest different outcomes. Under Clause 1, the state in which the generating plant is located is entitled to all the power it generates and it need not be shared with the other state.

12. Under Clause 2, the sharing of power between two states shall be as it existed on the appointed date and such an arrangement shall continue irrespective of the location of the generating unit. This implies that power will be shared between the four DISCOMS in the two states of Andhra Pradesh and Telangana as per the orders of the then Government of Andhra Pradesh issued in GOMS 20 of 8.5.2014 which amended the earlier disposition under the Third Transfer Scheme to allow for the transfer of two districts from TSSPDCL to APSPDCL. This is shown in Table 1 below.

**Table 1:**

Name of the DISCOM	Percentage Allocation as per Third Transfer Scheme(2008)	Revised Percentage Allocation- Post Bifurcation GO Ms No 20, dt 08-05-2014
APEPDCL- AP	15.80%	15.80%
APSPDCL- AP	22.27%	30.31%
TSSPDCL- Telangana	46.06%	38.02%
TSNPDCL- Telangana	15.87%	15.87%
Andhra Pradesh	38.07%	46.11%
Telangana	61.93%	53.89%

13. The purpose of this advisory is to examine the different economic consequences to both the states if the above interpretation of the two clauses are implemented . For the purpose of convenience, the model based on Clause 1 above - where a state's power eligibility is based solely on geographical location will, henceforth in this advisory be called the independent model. The model based on Clause 2- allocation of power based upon GOMs 20, dated 08-05-2014 will hence forth in this advisory be called the interdependent model.

**Existing Demand – Supply Scenario in successor States:**

14. The maximum Demand experienced and Average daily energy supplied – in both successor states as obtained from the daily reports of the State Load Despatch Centres (SLDCs) are placed at Table 2 below. The average over the two month period between June 14 and July 14 has been computed. The unrestricted maximum demand and maximum shortage are over the same period.

**Table: 2**

Existing Demand - Supply Scenario		
Parameter	AP	Telangana
Average daily Requirement (MU)	135.6	135.25
Average Daily Supply (MU)	125.6	121.4
Average daily Shortage (MU)	10	13.85
Average daily percentage Shortage (%)	7.37%	10.24%
Unrestricted Maximum Demand reached (MW)	6859	6472
Maximum Shortage (MW)	1025	1375

### Model Wise Allocation of Existing Installed Capacities :

15. The existing installed generating capacities in the erstwhile state of Andhra Pradesh as on 1st July 2014, segregated between the two successor states as per the independent model based upon geographical location, are placed at Table 3 below.

**Table: 3**

Installed Generating Capacities in both the States as per independent model - geographical location as on 1st July 2014			
Name of the Station / Capacity (MW)	AP	Telangana	Total
GENCO (Thermal)	2810	2282.5	5092.5
GENCO (Hydel)	1748.6	2080.8	3829.4
<b>Central Generating Stations</b>	<b>1615.4</b>	<b>1887.98</b>	<b>3503.4</b>
IPPs & Joint Sector	2823	0	2823
Non-Conventional & RE Sources	954.5	169.5	1124
<b>Total</b>	<b>9951.5</b>	<b>6420.8</b>	<b>16372.3</b>

- **Note: 1.**The allocated capacities to erstwhile AP from interstate projects i.e. Machkund, Tungabhadra & Hampi Power Houses are treated as Installed Capacities.
- 2.** Percentage Allocations of power from Central Generating Stations have been taken as 46.11% to Andhra Pradesh and 53.89% to Telangana as per GO Ms No.20 and the same are treated as Installed capacities.
- 3.** Only power projects supplying at least part of their energy to DISCOMS under long term contracts have been included in this list.

16. The contracted generating capacities in the erstwhile state of Andhra Pradesh as on 1st July 2014, segregated between the two successor states following the interdependent model based upon GOMs 20 is placed at Table 4 below.

**Table: 4**

Contracted Generating Capacities as per GO Ms No. 20 Dated 08-05-2014			
Name of the Station / Capacity (MW)	AP	Telangana	Total
APGENCO (Thermal)	2348.2	2744.3	5092.5
APGENCO (Hydel)	1711.79	2000.61	3712.4
Central Generating Stations	1615.4	1887.98	3503.4
IPPs & Joint Sector	1231.7	1377.58	2609.28
Non-Conventional & RE Sources	954.5	169.5	1124
<b>*Total</b>	<b>7861.59</b>	<b>8179.97</b>	<b>16041.6</b>

- **Percentage Allocations of power generated by APGENCO Stations, Central Generating Stations IPPs have been taken as 46.11% to Andhra Pradesh and 53.89% to Telangana as per the GO Ms No. 20 Dt 08-05-2014, issued by the erstwhile GoAP.**
- **IPPs Srivatsa and LVS are allocated to AP based on GO Ms 53**
- **Capacities of NCE projects have been allotted based on their geographical location in accordance with the GO Ms No. 53.**

- **There is a difference between installed capacity( Table 3) and contracted capacity ( Table 4) of about 330 MW. This is accounted for by power allocated to Karnataka from Priyadarshini Jurala project & sharing of certain contracted capacity from APGPCL project to private consumers.**

17. The Power Purchase Agreements (PPAs) entered into relating to the output of erstwhile APGENCO's generating plants comprise two distinct categories. The first category of plants which were in existence as on 1<sup>st</sup> April 2006 have been grouped in a composite PPA covering the aggregate generation of 5 thermal, 15 hydel and 1 wind generating project . This composite PPA is valid till 31-3-2019. The Second category of PPAs cover individual power plants commissioned after 1<sup>st</sup> April 2006. The power generation mix between the individual and composite PPAs is placed at Table 5 below. Only those plants which have achieved COD as on 1st August 2014 have been included in Table 5 below.

**Table: 5 All figures in MW**

<b>GENCO Thermal - Composite PPA</b>		<b>2962.5</b>
<b>New Thermal Stations</b>		<b>2130</b>
	VTPS-IV	500
	RTPP-II	420
	RTPP-III	210
	KTPP-I	500
	KTPS-VI	500
<b>TOTAL GENCO Thermal</b>		<b>5092.5</b>
<b>GENCO Hydel - Composite</b>		<b>3586.4</b>
<b>New Hydel Stations</b>		<b>126</b>
	Priyadarshini-Jurala	<b>117</b>
	Pochampad-IV	9
<b>TOTAL GENCO Hydel</b>		<b>3712.4</b>
<b>TOTAL GENCO</b>		<b>8804.9</b>

18. Out of total contracted capacity of 8804.9 MW, the composite PPA of erstwhile APGENCO covers 6549 MW, i.e almost 74.4% of existing contracted capacity of erstwhile APGENCO. The composite PPA will expire by 31-03-2019. After March 2019, the generating units covered under composite PPA are not required to continue sharing power as per the GO Ms No. 20.

19. List of APGENCO and TSGENCO's Projects which are under construction, for which PPAs have been entered into with the then four DISCOMs and where power needs to be shared as per the interdependent model is shown in Table 6 below. The allocation of power as per the independent model – based on geographical location is also shown at the last row of Table 6.

**Table: 6: Under Construction Projects- Interdependent Model**

Name of the Station/Capacity (MW)	Capacity	Andhra Pradesh	Telangana
GENCO –Krishnapatnam Stage –I	1600	737.8	862.2
GENCO –RTPP-Stage IV	600	276.7	323.3
GENCO-Bhupalpalli Stage –II	600	276.7	323.3
GENCO-Pulichintala	120	55.3	64.7
GENCO-Lower Jurala	240	110.7	129.3
GENCO-Nagarjunasagar -tailpond	50	23.06	26.94
<b>Total from GENCO Stations</b>	<b>3210</b>	<b>1480.25</b>	<b>1729.75</b>
Hinduja -IPP	1040	479.5	560.5
Singareni - IPP	1200	553.3	646.7
Thermal Powertech – Case-I	500	230.6	269.5
<b>Total</b>	<b>5950</b>	<b>2743.65</b>	<b>3206.45</b>
<b>GENCO Projects under implementation based independent model- location based</b>	3210	2250	960

20. Out of the total under construction capacity of 5,950 MW, plants under construction by both State Generating Companies (APGENCO & TS GENCO) aggregate to 3210 MW. Within this subgroup, GENCO plants, which are under construction / yet to declare Commercial Operation, located in AP constitute 2250 MW and those located in Telangana are 960 MW.

#### Sharing of Renewable Energy Sources:

21. Historically, the PPAs in respect of Renewable energy Sources have been entered into with the territorial DISCOMs, and the energy generated from such plants has been procured by such DISCOMs. Earlier orders of the then State government have also spelled out such a mechanism. The existing share of capacities of Renewable /NCE projects as on 1st July 2014, are as shown in Table 7 below.

**Table: 7**

Capacities in MW			
Sl. No.	Category	Andhra Pradesh	Telangana
1	Bagasse based Cogeneration	105.2	73.95
2	Biomass based power projects	143.5	45
3	Mini Hydel	51.84	5.95
4	Municipal / Industrial waste based	20.16	17.6
5	Wind	601.8	0
6	Solar Energy	32	27
<b>TOTAL</b>		<b>954.5</b>	<b>169.5</b>

22. Anantapur & Kurnool Districts which were part of the erstwhile APCPDCL (now TSSPDCL) are now part of the residual Andhra Pradesh. These two districts were accordingly

transferred from TSSPDCL to APSPDCL. It is understood that PPAs entered into by TSSPDCL before the appointed date, include some entered into with the RE generators located in Anantapur & Kurnool Districts.

23. A number of operational issues may arise if these relatively low capacity Renewable Energy Plants are included as part of the interdependent model. Some of these are listed below.

- i. There are more than 200 such plants. Individually monitoring their generation and paying for power from each of them separately will require deployment of significant resources by the DISCOMs.
- ii. These relatively small plants, will be treated as inter state generators, and consequently will have to bear a high regulatory compliance cost including scheduling of unreliable power to the RLDC and levy of UI charges.
- iii. Another consequence of their becoming inter state generators is that they may have to approach the Central Electricity Regulatory Commission for tariff determination as well redressal of disputes. This will impose a substantial burden on the capacity of these plants.
- iv. These burdens will be further enhanced as and when the Renewable Regulatory Fund (RRF) mechanism as contemplated by Indian Electricity Grid Code (IEGC) and issued by the Central Commission, is made commercially operational.

24. In view of the above, it may be appropriate, if the interdependent model is adopted, to allocate the generation relating to Renewable/ NCE sources to the States where they are located with suitable compensation to be paid to the 'losing' state.

**Un allocated Share in GENCO Thermal Projects:**

25. The original transfer scheme issued by GoAP in GO Ms No. 58, dated 07-06-2005 transferred PPAs to DISCOMs from APTRANSCO and fully allocated the capacities of all IPPs, CGS, and all APGENCO stations and NCE Projects to the four DISCOMs. Thus 100% of their generation was allocated amongst DISCOMs on the basis of the sharing formula. In the amendment in GO MsNo.53, dated 28-04-2008, only in respect of APGENCO Thermal stations, 80% of their generating capacity was allocated as per the sharing formula amongst the DISCOMs. The unallocated share of 20% of the capacity of APGENCO thermal stations was to be allocated every month by APPCC to the needy DISCOMs. APPCC was required to allocate this 20% generating capacity to the needy DISCOMs based on the seasonal variation and load growth of the DISCOM.



26. GO Ms No. 20, dated 08-05-2014 which amended the sharing percentage is a simple amendment to GO Ms No 53 indicating the change in the percentage allocation, keeping, all other conditions mandated in GOMS 53 unaltered.

27. After the Appointed date, the Telangana State Power Coordination Committee (TSPCC) has been formed. The residual Andhra Pradesh Power Coordination Committee continues. Assuming that allocation of thermal capacities of State GENCO stations were to follow the GO guidelines, 20% of the thermal generating capacities of GENCO stations in both the states have to be kept at the disposal of respective PCCs for reallocation among needy DISCOMs. This change will result in changes in the allocated capacities of Thermal generating stations for both the states as shown in Table 8 below.

**Table: 8. Thermal generating stations of APGENCO**

All figures in MW	AP	Telangana	Total
As per Geographical Location (Table 3 Row 1)	2810.0	2282.5	5092.5
100% allocation as per GO Ms 20 (Table 4 Row 1)	2348.2	2744.3	5092.5
80% allocation as per GO Ms 20 & 20% allocated to respective DISCOMS as per location.	2440.5	2652.0	5092.5

As seen in Table 8, the change in reallocation narrows down the gap in allocations of thermal generating capacity of APGENCO between the two states arising from implementation of the independent model and the interdependent model.

**Energy Requirement in successor States for FY 2014-15:**

28. As per the Commission’s internal workings based upon the ARR filings made by all the four DISCOMs in November 2013, it is estimated that the erstwhile AP state required a total energy of 93,800 MU per annum for FY 2014-15. After allowing for transfer of the consumption in Anantapur & Kurnool Districts to APSPDCL, it is observed that the energy requirement of the successor states of Andhra Pradesh and Telangana is almost equal at 50.5% for Andhra Pradesh and 49.5% for Telangana.

29. As against this, the energy availability to the two states based upon the two models is shown in Table 9 below

**Table: 9: Surplus / Deficit Estimation. All figures in MU.**

Name of the Station / Energy (MU)	Interdependent Model -As per GO Ms No. 20		Independent model - as per Geographical Location GENCO, & NCEs	
	AP	Telangana	AP	Telangana
APGENCO (Thermal)	18473.89	19321.46	22659.71	15135.63

Name of the Station / Energy (MU)	Interdependent Model -As per GO Ms No. 20		Independent model - as per Geographical Location GENCO, & NCEs	
	AP	Telangana	AP	Telangana
APGENCO (Hydel)	3382.2	3952.8	3385.65	3949.35
Central Generating Stations	11089.92	12961.08	11089.92	12961.08
IPPs & Joint Sector	2735.97	3152.02	2735.97	3152.02
Non-Conventional & RE Sources	2309.2	465.8	2309.2	465.8
Others & Market	7356.9	8598.1	7356.9	8598.1
<b>Total Energy Allocation</b>	<b>45348.1</b>	<b>48451.26</b>	<b>49537.4</b>	<b>44262</b>
<b>Percentage of Total</b>	<b>48.35%</b>	<b>51.65%</b>	<b>52.81%</b>	<b>47.19%</b>

<b>Energy Requirement (MU)</b>	<b>47351.0</b>	<b>46448.0</b>	<b>47351.0</b>	<b>46448.0</b>
<b>Percentage Requirement</b>	<b>50.5%</b>	<b>49.5%</b>	<b>50.5%</b>	<b>49.5%</b>
<b>Surplus / (-Deficit)</b>	<b>-2002</b>	<b>2002</b>	<b>2186</b>	<b>-2186</b>

30. While energy allocation based on interdependent method (as per the GO Ms No 20) entails a surplus of about 2002 MU to the State of Telangana, allocation based on geographical location (independent method) makes AP a surplus state by 2186 MU. These two diametrically opposite outcomes appear to form the background for the present differences of opinion on sharing of power between the two states. If output of AP GENCO's plants are allocated based upon location, Telangana's net deficit works out to 2186 MU for FY 2014-15, treating output from all IPPs, expected procurement from M/s Hinduja, Medium term procurement from M/s KSK & other Market / Short-Term bilateral procurement in sharing mode as per GO Ms. 20.

31. A brief comparison of the operational, commercial and regulatory challenges envisaged while allocating power to the two states based upon (a) the interdependent model based upon GOMs 20 (b) and the independent model based upon geographical allocation is placed in Table 10 below.

**Table: 10: Challenges in implementing the interdependent model.**

Sl.No	Parameter	Interdependent Model of Operation	Independent Mode of Operation
1	<b>Raising of Invoices by Generators &amp; ensuring prompt payments</b>	Generators have to raise invoices on all DISCOMs located in both the States, and have to ensure payments are made from DISCOMs, two of which will not be located in their states and who thus will have lesser incentives to pay promptly.	Generators have to raise invoices on territorial DISCOMs only who will have stronger incentives to pay promptly.
2	<b>Change of Character of</b>	As power will be sold to more than one state, the Generating Plants will be	Generating plants remain as state generating plants

Sl.No	Parameter	Interdependent Model of Operation	Independent Mode of Operation
	<b>State Generating Plants</b>	classified as inter-state generating plants which may attract jurisdiction of CERC and scheduling will have to be done by RLDC Bengaluru.	under the regulatory jurisdiction of the respective state regulators.
3	<b>Incidence of additional Charges</b>	The DISCOMS will be subject to additional charges for Inter-State Transmission & Dispatch undertaken by RLDCs, on account of inter-state transfer of power. <b>This is estimated to contribute additionally to procurement costs by Rs 816 crores per annum towards inter state Transmission, SLDC and UI charges</b>	No-incidence of inter-state charges what so ever.
4	<b>Incidence of UI Charges</b>	Since power is transferred between two states, Un scheduled inter change charges will be leviable	No such incidence of UI charges.
5	<b>Procurement of required Fuel (imported Coal / RLNG or NG allocation)</b>	Presently the two State Governments are taking steps for procurement of Coal, and securing gas allocations. The States are also taking costly decisions with regard to quantity and price of imported coal / RLNG to be procured for power generation from the State Generating Stations. The two states could have different perceptions on these issues. When power generated is to be shared as per GoMs 20, the state in which the generator is located will face a moral hazard problem since it will not bear a significant part of the economic costs of its decisions. The state may be unable or unwilling to take an optimum economic and cost effective decision.	No such issue will arise. Each state will fully bear the economic cost of its procurement decisions.
6	<b>Annual Maintenance of Plants</b>	If plants capacities are in sharing mode, all the procurers have to be consulted by the generator before shutting down for annual overhaul of the generating plants. As the load pattern is different across the two states, one state may need power and issue a dispatch instruction, while the state where the plant is located may decide to go in for overhaul. This dilemma must be seen in the light of the compulsion for all plants to undergo Annual overhaul and / or maintenance which cannot be delayed or neglected as this may endanger the life of the plant or cause frequent forced outages.	This dilemma for the generator to resolve the conflicting interests of the two states can be avoided in the independent model when the generating units will be allocated geographically.
7.	<b>Backing Down</b>	If plant capacities are shared by two	This issue may not be

Sl.No	Parameter	Interdependent Model of Operation	Independent Mode of Operation
	<b>Instructions</b>	states, issue of backing down instructions and their compliance would pose problems, since these plants would be subject to the dispatch instructions from the SLDCs of both the States. Old thermal plants which are under operation by State Generating companies may not be able to respond as quickly as possible, to mitigate the grid disturbances.	significant in the independent model since a generating unit will be reporting to a single SLDC.
8.	<b>Power Generation coupled with Water sharing.</b>	Along with power sharing from Hydro plants, water resources are also being shared by both the States. Excluding the Sileru basin, generation from the hydro plants in both the states is governed by the respective irrigation requirements. Discharge of water for irrigation purposes will be consequent to the decisions of respective Water Boards constituted by the Reorganization Act, based upon the varying agricultural requirements of the two states. If both water sharing and sharing of hydro generation are inter twined, it would significantly add to the difficulties in operating hydro plants in a coordinated and cost effective manner.	Even though power will still be generated consequent to the requirements of irrigation, the complexities will be relatively lower.
9.	<b>Customer satisfaction, investor sentiment and growth prospects</b>	Implementing the Interdependent model requires significant coordination which will demand deployment of substantial human and technical resources in an environment of mutual trust. Various day to day dispatch and backing down requirements of each state must be handled promptly and efficiently so that customer satisfaction, investor sentiment and growth prospects remain unimpaired.	Such inter state issues will not arise.
10	<b>Jurisdiction of State Electricity Regulatory Commission</b>	Since generating plants will be transformed into inter-state plants under this model, regulatory jurisdiction may shift to the Central Electricity Regulatory Commission (CERC). The CERC will have jurisdiction for determination of Tariff as well as resolution of disputes. The role and functions of the respective State Regulatory Commissions may be marginalised.	Since there will be no inter state plants, the jurisdiction of the State Commission will not be diluted. In only some circumstances will references have to be made to the CERC.

32. Electricity cannot be transferred commercially across two states without incurring transmission costs and transmission losses. Under the inter dependent model , the cost of procurement and transfer of power from a different state will be associated with levy of inter state transmission charges, Load Dispatch charges and incurring of Unscheduled Interchange charges(UI) etc.

33. Even if transmission charges and losses are discounted on the ground that intra state networks of both the states will be involved in the transfer of power , the potential impact of UI may be significant in the short term considering that GENCO based stations are yet to adapt to an ABT regime.

34. The profile of these costs over the long term horizon would need to be carefully studied to determine if the impact of interstate losses, additional transmission & SLDC costs & UI charges, would cast a greater burden on costs or not.

**Long–Term impact of Energy procurement from GENCO Stations:**

35. A model of the long term impact of interdependent mode in terms of energy available to each state and its comparison with respect to independent mode of procurement has been developed. Taking FY 2023-24 as the horizon, the expected generation from GENCO stations have been projected for the ten year period 2014-2024 and allocated to different states based on the following assumptions:

- i. The actual generation of all existing APGENCO for FY 2013-14, has been assumed to be the same over the next ten years.
- ii. All the new Thermal plants which come into stream are expected to operate at 80% of PLF. The Hydro Plants are expected to operate at their designed energy. Their COD dates have been assumed as per the Commission’s estimates based on available data.
- iii. The interdependent model has been computed assuming that 20% of power from Thermal projects will be exclusively allocated to states where the generation is located as mentioned in Para 27 above.
- iv. Generation from the plants included in the composite PPA mentioned in Para 19 above, has been allocated to the States where the plant is located with effect from 1.4.2019 when the composite PPA expires.

36. A summary of the annual projections of energy from GENCO plants of both states for the ten year period i.e. upto 2023-24 is presented in Table 11 below. Information with regard to change in allocated energy between two states over the long term horizon is also shown.

**Table: 11**

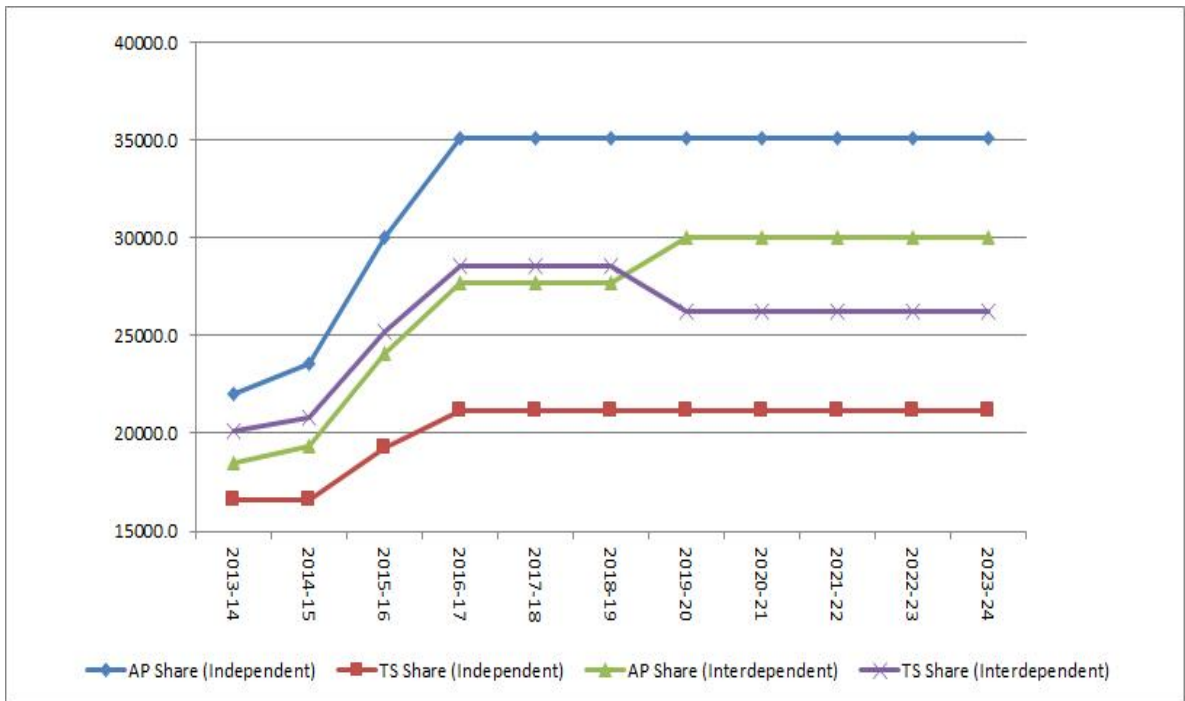
Energy (MU)/Year	FY 2013-14	FY 2014-15	FY 2018-19	FY2019-20	FY 2023-24
AP Share (Independent)	22056.0	23569.7	35097.9	35097.9	35097.9
TS Share (Independent)	16622.8	16622.8	21141.3	21141.3	21141.3
AP Share (Interdependent)	18519.1	19380.2	27654.0	30024.7	30024.7
TS Share (Interdependent)	20159.7	20812.3	28585.3	26214.6	26214.6

Energy Available for two States	38678.8	40192.5	56239.3	56239.3	56239.3
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Energy % share	FY 2013-14	FY 2014-15	FY 2018-19	FY2019-20	FY 2023-24
AP Share (Independent)	57.02%	58.64%	62.41%	62.41%	62.41%
TS Share (Independent)	42.98%	41.36%	37.59%	37.59%	37.59%
AP Share (Interdependent)	47.88%	48.22%	49.17%	53.39%	53.39%
TS Share (Interdependent)	52.12%	51.78%	50.83%	46.61%	46.61%

Energy Available for two States	100.00%	100.00%	100.00%	100.00%	100.00%
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A chart showing the pattern of energy allocation between two models for this ten year period is presented



37. A projection of the cross border flows between Andhra Pradesh and Telangana in the independent and interdependent models for 13-14 and 18-19 is placed in Table 12 below. The year 13-14 has been taken since data for that year is available even though the first relevant year after reorganisation is 14-15.

**Table 12 Figures in MU**

Sl. No	Parameter	Base Year (2013-14)	FY 2018-19
1	AP Share (Independent )	22056.0	35097.9
2	TS Share (Independent)	16622.8	21141.3
3	AP Share (Interdependent)	18519.1	27654.0
4	TS Share (Interdependent)	20159.7	28585.3
5	Cross - Border Flow AP > TS	9936.4	15577.9
6	Cross - Border Flow TS > AP	6399.5	8134.0
7	Net Cross Border Flow (MU)	3536.9	7443.9
8	<b>Net Cross Border Power Flow (MW) @ 80% Annual P.L.F</b>	<b>504.7</b>	<b>1062.2</b>

38. As seen from Table 12 above, in the interdependent model, for AP and TSGENCO plants for the base year 13-14, AP will export 9936.4 MU to Telangana state and Telangana in turn will export 6399.50 MU to Andhra Pradesh. Effectively, this reduces to an export of 3536.9 MU from Andhra Pradesh to Telangana. This energy is equivalent to a generation capacity of 504.7 MW assuming a PLF of 80%. However the interdependent model imposes additional costs on both the states through inter state transmission charges, load dispatch charges, and UI charges. In addition, the states will also have to bear costs on account of transmission losses. The aggregate costs to both the states has been estimated by the Commission to be about Rs 800 crore per annum, which figure will gradually increase to Rs 1200 crore per annum in 2018-19. To this extent, the tariff in both states will increase additionally if the interdependent model is adopted and the consumers in both the states will get burdened additionally.

**Based upon the above analysis, the Commission's advice U/s 86 (2) of the Electricity Act 2003, for consideration of the States of Andhra Pradesh and Telangana is as under.**

1. *The power disagreement between the two states on the disposition of generation of APGENCO and TSGENCO plants is effectively over 3536 MU energy per annum. This works to a generation capacity of about 504 MW. If additional power to the extent of 500 MW is allocated by the Centre, then these differences between the two states can be bridged. This gap of 500 MW may narrow further after 2019 as new generation will come into stream.*
2. *In the event of the above option not fructifying, a choice may have to be made between the independent mode and the interdependent mode. The*

*decision on which model to adopt may have to be taken based on a number of factors some of which have not been assessed by this Commission. This Commission, consciously does not make any recommendation in this regard. This Commission however suggests that irrespective of which model is finally adopted, for the reasons mentioned in Table 10 and Para 38 above, the channelization of the resource allocation may be done following the independent model. The difference between the interdependent model and the independent model works out to an allocation of 500 MW presently. If the interdependent model is adopted, this entire allocation can be made from one generating station exclusively. Such a nominated station would be the only inter state station among the APGENCO stations which will supply the required power from Andhra Pradesh to Telangana. Such an arrangement, if adopted will considerably alleviate the operational, commercial and regulatory challenges envisaged in Table 10 above. If the saved additional costs associated with the interdependent model are utilised to purchase power at Rs 5 per unit, an additional 230 MW can flow into the system. This will reduce the gap mentioned above from 500 MW to 270 MW if the independent model is implemented in form.*

- 3. The shortages in each state will be significantly bridged through improved supply position over the next three years. To ensure timely addition of generation capacity, both states must ensure that unlike in the past, there are no implementation slippages in bringing these generation stations on stream. Both states could also fruitfully implement demand management strategies addressed by the Commission in its Advisory # 2.*

Two caveats need to be kept in mind. First, the analysis in this advisory is based upon the assumption that allocation of power based upon geographic location in the independent model is applied only to APGENCO stations. Allocations based upon GOMs 20 continue to be applied for CGS and IPP stations in the independent model since this is the more practically implementable option for a number of reasons. Second, the demand projections have been computed based upon the available past data and filings made before the Commission. They could change depending upon growth strategy adopted by the states so they should be treated as indicative only.