BEFORE THE ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION * HYDERABAD

A Public Notice was published on 24 October, 2001 in The Hindu by the APTRANSCO calling for comments/objections on fixing the 'tariffs for wheeling of energy' for 2001-2 submitted by APTRANSCO and the four Distribution companies. Objections need to be filed before the APERC on or before 26 November 2001.

1. Introduction

This joint application by APTRANSCO and the four DISCOMs of Andhra Pradesh is to fix the tariff for wheeling of power from private power producers to HT consumers who have contractual agreements with these power producers. Both are linked to the grid of APTRANSCO/DISCOMs (the Transmission & Distribution - T&D - utilities in the state of AP) and both are located within the state. For clarity, the terms used in this document are as below:

- Generator: Private power producer (like APGPCL, RCL, MPPs, Non- Conventional, etc) who pumps in power to the grid and has contractual agreements with some consumers to sell power
- Consumer: HT consumer (132, 33 or 11 kV) connected to the grid, who has contractual agreements with some generators to buy power
- T&D Utility: TRANSCO and DISCOMs
- Wheeling charge: The charge that the consumer pays to the T&D utility for retail wheeling of power (from the generator to the consumer) through the T&D utility's grid (Rs/kWh)

We understand that this application is **not** addressing the subject of inter-state and inter-region wheeling of power using the APTRANSCO grid. (CEA and CERC have addressed this subject). APERC has the onerous task of pioneering finalisation of the methodology for fixing the retail wheeling charges in AP. It is best that all issues are addressed and a sound methodology finalised, as many others may use this procedure as precedence.

2. Approach to Wheeling

2.1 We support the proposal of APTRANSO and DISCOMs that they should receive wheeling charge on a per-unit basis, and not 'in kind' as before. This proposal is an attempt to plug a revenue leak - of utility not being sufficiently compensated for services rendered to private parties. In a way, this proposal is long delayed and T&D utilities are fully justified to get compensation for the wheeling service.

2.2 For a variety of reasons, giving reasonable compensation to the T&D utility for power wheeling is a 'win-win' situation since the utility can offer 'value added good quality

wheeled power' to consumers and make it an attractive business proposition. Some reasons are listed below:

i) Private generator can continue to generate on a 24 hours basis and the consumer can draw power from the grid whenever required. T&D utility acts like a 'power bank' to the advantage of both the producer and the consumer-producer by having higher utilisation factor and consumer by having better reliability & quality of supply.

ii) T&D utility's 'power bank' can provide emergency reactive power support whenever needed.

iii) Power producers and consumers need not invest on T&D infrastructure - setting up and O&M.

iv) Since the grid of the T&D utility is geographically widespread, power producer connected to this grid gets access to a good market and the consumer a wide choice for purchase.

v) If reasonable tariff is given, wheeling is a commercially viable business activity for the T&D utility.

2.3 In the un-bundled regulated power sector envisaged in AP, wheeling charges become an integral part of tariff fixation process. RC has the overall responsibility of fixing tariff. **We suggest that wheeling charge fixing be integrated to the tariff process in the coming years**. For 2001-02, the process for fixing wheeling charges has been delayed by about 6 months. **We suggest that the charges are finalised at the earliest and they should be loaded for the 12-month financial year, 2001-02.**

2.4 APTRANSCO and DISCOMs have presented a methodology (called as TRANSCO methodology for clarity) in their joint submission for arriving at the wheeling charges. We submit that this proposed methodology is not fully to the advantage of the T&D utility and the majority consumers in the state. Comments and Clarifications on this proposal are given in section 3 and section 4. We are proposing an alternate methodology for consideration by APERC and APTRANSCO/DISCOMs. This methodology (called as PMG methodology for clarity) uses the TRANSCO methodology with some modifications. This is given in section 5 for comments and consideration.

3. Questions/Clarifications on TRANSCO's calculation methodology

Annexure A2 of the APTRANSCO submission gives details of the calculation. Questions/Clarifications given below refer to Annexure A2.

3.1 Point 5. S.No 5, Approved Loan & Interest: This comes to nearly 26% of the total expense. Are the loans from World Bank and other international agencies included in this? The figure is quite high. This needs to be clarified by the Applicants.

3.2 Point 5, S.No 12, Special appropriation permitted by the Commission: An amount of Rs. 90.29 Crores is mentioned under this head, all under TRANSCO head. This needs to be clarified by the Applicants.

3.3 Point 5, S.No 15, Reasonable return: Please clarify the basis for this amount, which is about 12% of the total expense.

3.4 Point 6, S.No. 2: The contribution of T&D loss to wheeling charges is 30.63 Paise, that is 30.63%. Loss upto33 kV has been taken as 8.5 % and in the 33 kV & 11 kV network as 11%. These loss figures are quite high compared to international figures. APTRANSCO/DISCOMs should provide the details on how these loss figures were arrived at. We presume that instead of actual loss figures, technical T&D loss figure targets fixed for TRANSCO/DISCOMs are used to arrive at the wheeling charges- as this will provide an incentive for efficiency improvement. In this connection, we wish to know the progress of the CPRI study commissioned by APERC to arrive at the T&D losses on June 15, 2001 with 2-month study duration. Wheeling charges should be re-worked if more reliable figures are available. As a step towards improving efficiency, TRANSCO/DISCOMs should work towards reducing these technical T&D losses so that consumers are not penalised for their inefficiency.

3.5 Point 6, S.No. 2: the Energy loss in MU is multiplied by the average cost of power purchase (Rs.1.65/kWh) to arrive at the revenue loss due to T&D loss as Rs. 1250.29 Cr. If one looks at TRANSCO/DISCOMs as business entities engaged in selling power, is it not fair to use the average price of power supply (say Rs. 2.56 for APGPCL) to calculate the revenue loss due to T&D loss? (Unlike a merchant selling commodities in a market for whom goods lost in shipment only reduces his sales, the T&D utility has to replenish the T&D loss before supplying to the consumer. It has not only to buy the power lost because of T&D loss, but also has to transport it. All these point out to using price of power rather than cost). Using this method gives a revenue loss of Rs 1939.8 Cr and a contribution of 65.42 paise to wheeling charge. This needs to be clarified by the Applicants.

3.6 Point 6, S.No 4, Transmission & Wheeling Charges (External): Is this the tariff APTRANSCO pays to POWERGRID for transmission of Central Sector power? Since this power is wheeled to other states, APTRANSCO can recover this from those states. Is it correct to load the state consumers with this charge? By the same token, if POWERGRID demands charges for supporting retail wheeling within the state, will the demand be supported?

3.7 Point 6, S.No 5, Surplus recovery: 19.26 Paise is mentioned here as the amount. Other than the fact that this helps to round off the wheeling charge to Rs.1.00/kWh, it is not clear how this figure was arrived at. Will it remain same every year? How will it change? The method proposed to be adopted to calculate this figure need to be clarified by the Applicants.

3.8 Point 7 &8, 25-75% division of wheeling charges: It is mentioned that the wheeling charges for 33 and 11 kV levels will be shared in the ratio of 25: 75 between TRANSCO and DISCOM. A qualitative explanation is given, but there is no quantitative basis or guideline provided. Will this ratio remain constant? If the ratio of EHT: HT network changes, will this change? We request APTRANSCO to provide the basis for the division of charges in the ratio 25:75.

4. Additional Questions/Clarifications on TRANSCO's proposal

4.1 Uniform wheeling charge: As per the proposal, consumers drawing power at 132 kV, 33 kV or 11 kV will have to pay Rs1.00/kWh. Some may argue that the 33 and 11 kV consumers should have higher wheeling charges compared to the 132 kV consumers. We do not support such an argument since a uniform tariff approach has been consciously adopted for determining HT tariff in the state.

4.2 Reactive power wheeling: APTRANSCO/DISCOMs may have to wheel reactive power also. A minimum reasonable amount or emergency support for short duration may be fine, but if the consumers do not implement sufficient reactive power compensation, APTRANSCO/DISCOMs network will be burdened with reactive power flows, which will contribute to losses and overloading of the system. The arrangement of charging at kWh consumed does not allow the utility to penalise the erring consumer. What arrangement is proposed by APTRANSCO/DISCOMs to ensure that its network is not overloaded by reactive power flows - both in the planning and operation stages?

4.3 Contribution to Cross Subsidy by wheeling power consumers: Is it not fair to expect reasonable contribution to cross subsidy (by way of a surcharge perhaps) from consumers taking wheeled power, just as the industrial consumers (in this submission all industrial consumers are referred to as HT consumers. This is for facility of expression only and this term also includes LT industrial consumers also) who buy power from DISCOMs? If this is not the case, there will be a large difference between the HT Tariff and the tariff for wheeled power.

Wheeled power tariff =
Average cost of purchase + Wheeling Charges = Rs.1.65 +1 = Rs.2.65/kWh
Average HT Tariff = Rs. 3.90/ kWh

In fact, in the case of APGPCL as a generator, the cost of generation is lower than Rs.1.65/kWh (it is Rs.1.27/kWh) and the difference in tariffs will be higher. This will result in HT consumers deserting DISCOMs. Since the sector is in transition, no policy decision should create major imbalances like such a large tariff difference and possible bankruptcy of institutions like DISCOMs. This aspect needs to be clarified by the Applicants.

4.4 Estimate of Wheeled energy: How many MUs are proposed to be wheeled from private generators to consumers in 2001-02? How many generators and consumers are there in the state using wheeled power? What was the revenue loss to TRANSCO because of un-collected wheeling charges in 2000-01?

4.5 Implications of wheeling contract to T&D utility: What charges are levied by the T&D utility from the consumers during scheduled and forced outages of generator? What are the obligations of the T&D utility to the consumer in terms of quality and reliability of supply?

4.6 Corporatisation and privatisation of DISCOMs: As per the reform timetable, DISCOM privatisation is to happen by 2005-6. In any case, they are being corporatised and therefore days of joint operation and planning of DISCOMs and TRANSCO are numbered. In the light of this, is it not better that all generators in the state sell power to TRANSCO, and TRANSCO & the DISCOMs separately calculate

wheeling charges? DISCOMs will have to pay wheeling charges to TRANSCO and collect tariff from all consumers - except direct consumers of TRANSCO (if any).

4.7 Planning the T&D system: TRANSCO and the DISCOMs may take up Retail wheeling as a business activity. They will have to work in close co-ordination for planning and operation of these wheeling arrangements. As these bodies are privatised/corporatised, each will have its own business goals and strategies, some of which may work at cross-purposes. What arrangement is proposed in the state to co-ordinate the T&D system planning?

5. Alternate Methodology to Calculate Wheeling Charges

Ideally, it should be possible to have sufficient metering, communication and computation facilities to measure on-line the quantum of wheeled energy. TRANSCO and DISCOMs can use this on-line data to compile annual statistics on the contribution to wheeling. This could be used to arrive at the gross wheeling charges on an annual basis, which could be modified to arrive on-line the spot pricing for wheeled energy. All this may not be currently possible and hence the necessity to arrive at an easier method.

The method proposed by TRANSCO has some advantages and some disadvantages. This section describes an alternate method of calculating the wheeling charges. This method builds on the proposal of TRANSCO.

5.1 Wheeling charge has to be finalised for each contract of power transfer between generator and consumer (as defined in Section 1). Thus, there could be as many wheeling charges as there are private generators in the state, which have wheeling arrangements.

5.2 The following points are considered:

i)   HT consumers in the state of AP can **not** be differentiated in the tariff they incur. This is in the spirit of Section 26(8) of the AP Electricity Reforms Act 1998. *("The Commission also shall endeavour to fix tariff in such a manner that, as far as possible, similarly placed consumers in different areas pay similar tariff").* All HT consumers in the state should pay similar tariff.

ii)   Reasonable profit to be given to the private generator participating in the wheeling arrangement needs to be examined. APERC should validate the cost of generation by the generator and fix the price at which it sells to a consumer.

iii)   T&D utility should be given reasonable charges which include cost and a profit to have business interest in wheeling

5.3 For clarity, terms used for one generator and consumer are given below:

- CG = average cost of generation in Rs/kWh
- PG = price in Rs/kWh this generator gets from consumer
- MG = % margin for generator; that is the % difference of PG from CG
- HT -Av = Average HT tariff in Rs/kWh in state

- HT-W = Tariff to the wheeling consumer - Rs/kWh
- MH = % margin for the HT wheeling consumer; that is the % difference of HT-W from HT-Av
- WC =Wheeling Charge in Rs/kWh given by the consumer to the T&D utility
- WC-M =Minimum wheeling charge, Rs/kWh
- MT = % margin of the wheeling charge; that is the % difference of WC from WC-M

5.4 A minimum wheeling charge (WC-M) in Rs./kWh is to be arrived using the method similar to that employed by APTRANSCO/DISCOMs in their submission. This is arrived by dividing the total O&M expenditure and T&D loss contribution of TRANSCO and DISCOMs by the total energy purchase by TRANSCO for the year.

Minimum Wheeling Charge =
(Total Expenditure) / (Total Energy Purchase)

WC-M is calculated as 80.74 Paise/kWh in the TRANSCO submission.

5.5 Calculation

5.5.1   Refer to Tables 1 to 3 in Annexure. All Tables give different charges received by the generator, consumer and the T&D utility in different scenarios. Table-1 has minimum wheeling charge of 0.81 (same as given in the TRANSCO submission, except the surplus recovery part), Table -2 takes it as 0.66 (considering a lower % of T&D losses) and Table-3 takes it as 0.97 (taking T&D energy loss as proposed, but the revenue loss calculated on price of energy - Rs. 2.56/kWh and not cost of energy - Rs.1.65/kWh).

5.5.2   First rows of Table-1 have values like Cost of generation etc. APGPCL is taken as the generator. Table has 3 main columns - one each for generator, consumer and T&D utility. The column headings are explained in the notes given in Table. S.No1 shows the scenario of treating the consumer like any other HT Consumer. This requires a wheeling charge of Rs 2.63/kWh. S.No 12 shows the fair scenario when generator, consumer and T&D utility has equal margins; in this case equal to 30.4%. In this case, the wheeling charge is Rs. 1.06/kWh. S.No 13 shows the scenario where the consumer is considered like any other HT consumer and the margins are distributed between generator and T&D utility in the ration of 2:1. This ratio can be discussed and finalised, but this is reasonable since generators need to be given some incentive.(In the Annexures the example of APGPCL is taken and the cost of power from APGPCL includes reasonable return) S.Nos 16-19 shows the unfair scenario with the current rate of wheeling charges- where generator and consumer make profit at the cost of the T&D utility.

5.5.3   Summary results: Results are summarised below.

S.No	Scenario	Wheeling Charge (Rs/kWh)		
		WC-M = 0.81 Rs/kWh (Table-1)	WC-M = 0.66 Rs/kWh (Table-2)	WC-M=0.97 Rs/kWh (Table-3)
1	Same margins for Generator, Consumer, T&D (S.No 12 in Table)	1.06	0.88	1.23
2	Consumer at HT-Av tariff, Margins of generator and T&D in 2:1 ratio (S.No 13 in Table)	1.25	1.07	1.43
3	No Margins for generator and consumer	2.63	2.63	2.63

5.5.4   Once the wheeling charge is arrived at, division between TRANSCO and DISCOM can be as below:
- 132 kV wheeling: 100% to TRANSCO, 0% to DISCOM
- 33,11 kV wheeling: Higher percentage to DISCOM compared to TRANSCO. Proportion has to be worked out.

5.5.5   Some of the advantages of this alternate method are as below:

i)   Each generator can have appropriate wheeling charge. Thus, it is easier to introduce variations if generators have to be differentiated (e.g. Have lower wheeling charges for non-conventional generators etc).

ii)   All HT consumers in the state contribute to cross subsidy. Ensures that some HT consumers do not get incentive at the cost of other consumers.

iii)   Does not give unfair advantage to generators and consumers who have retail wheeling agreements.

iv)   Provides scope for giving business orientation to TRANSCO/DISCOMs

PRAYER TO THE APERC:

I.   Not to discriminate industrial consumers (both LT and HT consumers) while fixing the wheeling charges and see that all the industrial consumers contribute to the cross subsidy equally.
II.   To direct the Licensees to make public all the documents related to the wheeling charges.
III.   To allow the petitioner to be heard in person before APERC takes any decision on this petition

M.Thimma Reddy

26-11-2001