

Representation to CERC and SERCs Regarding Fixation of Tariff

Indian Railway is the largest Government institutional customer and purchaser of electricity of Electricity Boards and Electric Supply Authorities in various States. Though Indian Railway is an organisation with an inbuilt structure to discharge the social obligations of the nation, the Electricity Boards have taken the approach of fixing unreasonably high traction tariffs and keep on increasing the tariff year after year without any sound transparent costing principle in line with the spirit of an objective of power sector reforms. Indian Railways pays various Electricity Supply Authorities an amount of approximately **Rs. 4266 crore** every year. With such a big chunk of money going towards electric energy cost, the biggest issue for Indian Railways today is the electricity tariff fixed rationally and treating Indian Railway as cash compensatory bulk customer to supply Authorities. From time to time successive Hon'ble Railway Ministers have addressed to the Hon'ble CMs of various States and also Secretary, Power, Govt. of India, have taken up the issue with Chief Secretaries of States, emphasizing the need for fixing a rational tariff for electric traction for Indian Railways.

The following paragraphs bring out the facts as prevalent today and an insight into what should constitute the rationale tariff structure. With the inception of CERC and SERCs to look into the tariff structure, following is put up for consideration of the regulatory authorities:

1.0 Article 287 of the Constitution of India provides for “the price of electricity sold to the Govt. of India for consumption by that Government or to any such railway company as aforesaid for consumption in the construction, maintenance or operation of any Railway, shall be less by the amount of the tax than the price charged to other consumers as a substantial quantity of electricity.”

The spirit of the Constitution is that unduly high charges are not charged on IR and also that should be less than the tariff for other HT consumers. The present approach of all SEBs and Electricity Supply Authorities is clearly a violation of Article 287 of Constitution, since IR are being charged higher tariff than industrial consumers, while it should have been less.

2.0 Role of Electric Traction on Energy Security.

The growth of land based transport is given below:

Year	Freight billion Tonne		Passenger (Billion Kms)		Suburban (Rail)
	Rail	Road	Rail	Road	
1970	127	57	118	210	23

1980	158	98	208	543	41
1991	257	295	314	1200	63
2002	326	527	-	-	-

Land based freight traffic has grown at the rate 4% in 70s. The growth was around 10% during 80s and same has been around 6% during the period of 8th and 9th Plan. It is envisaged 9% growth rate in 11th Plan. The growth has been phenomenal in road sector. **The freight traffic carried on road has increased by 9% in last 30 years whereas freight traffic handled by Railway has increased by 2.5% during this period. The share of rail traffic was 89% in 1950-51, has come down to 38% during 2001-02.**

Transport is an energy intensive infrastructure. Analysis of energy efficiency of various mode of transport has proved superiority of movement of rail because of low coefficient of friction of 0.15 for steel to steel compared to 1 in road for rubber tyre. Energy consumed in moving in one tonne of traffic over 1 Km while rail is 1/6th of energy required by road. **It is in the interest of nation that IR shall become focal point for Indian transport policy to meet national energy security because of intrinsic advantage of railway energy efficient transport system. Railway shall undertake more Mass Urban Transport Project in comparison to road transport.** This will remove congestion on Roads and make nation more energy secured.

The share of oil consumption by various transport sector in 1999-2000 are shown below:

Sector	%age of total oil consumption in transport sector
Railways	10%
Road	77%
Airways	12%
Waterways	1%

Since India's own oil reserve caters only for 20% of present requirement there is urgent necessity to extensively use other source of energy i.e electricity in transport sector.

It is in the interest of nation that Railway shall take more responsibility in transport sector but unfortunately high traction tariff charged by Discoms are hampering growth of traffic handled by IR. The amount of subsidy charged by different Discoms on traction tariff is given in Annexure VI. In order to achieve Energy security, it is high time that traction tariff shall be rationalised so that IR can play vital role in transport sector and can take more urban transport projects.

Recently in landmark tariff order DERC has given relief to DMRC on this ground. Same approach shall also be undertaken by other SERCs.

3.0. IR fare structure is guided by the social principles and a very strict control is exercised by the Parliament. The rise in Railway fares, therefore, is guided by largely on social principles and monitored and controlled by Parliament. Against this background, it is brought out that Indian Railways passenger fares have gone up from Rs. 1.48 Ps per pkm in 50-51 to 24.40 Paise Per pkm in 04-05 i.e. average fares have gone up 16 times. This is against the price rise, based on WPI, of about 24 times. Taking WPI for 70-71 100 (base), WPI for 50-51 was 46.5 while for the year 04-05, as on March 2005, it was 1305.6. This indicates that the Railway fare structure has been kept subsidized and is much lower than the wholesale price rise based on WPI. The rise in Railways passenger fares charges vis-à-vis general price rise (based on WPI) for the period 1950-51 to 2004-05 is depicted in enclosed chart.

Taking WPI as the basis for price escalation, the tariff structures have gone many times more than what the WPI indicates. Since electric traction had spread out beyond Mumbai and Kolkata and has become national phenomenon since 70-71, analysis from 70-71 to 04-05 shows that the WPI which was 100 in 70-71 has risen to 1305.6 in 04-05 i.e about 13 times, Railway fares have gone up from 2.5 Paise to 24.40 Paise per pkm i.e 10 times, lower than the general price rise. Against this, the raise in traction tariff for the five major SEBs which have been supplying traction power to IR since 70-71, is as under:

Year	Whole sale price Index base 1970-71 as 100	Average Passenger Fare Paise/P-KM	Avg Tariff WBSEB Paise/KWH	Avg Tariff OSEB Paise/KWH	Avg Tariff BSEB Paise/KWH	Avg Tariff MSEB Paise/KWH	Avg Tariff GEB Paise/KWH
1970-71	100	2.5	10.56	9.74	15.18	12.44	10.32
1980-81	256.30	3.97	47.57	33.74	39.06	9.10	31
1985-86	385.10	7.15	85.62	108.03	85.00	73.17	67
1990-91	513.90	10.64	148.68	147.59	167.48	150	122
1993-94	697.10	16.51	202.96	172.80	244.59	234	234
1997-98	925.80	19.88	334.56	381.53	354.95	355	399
1999-00	1033.8	22.19	381.30	373.44	399.00	431	457
2000-01	1109.7	22.94	377.48	373.79	445.76	422	495
2001-02	1124.4	22.62	363.00	414.00	531.00	421.00	510.00
2002-03	1162.9	24.35	371.00	410.00	508.00	413.00	501.00
2003-04	1226.1	24.50	411.00	404.00	500.00	414.00	502.00
2004-05	1305.6	24.40	413.00	398.00	502.00	397.00	503.00

Situation on other SEBs has been similar. Thus, between 70-71 to 04-05, general prices have gone up by 13 times, Railway fares have gone up by 9 times while traction tariff has gone up by 35-40 times. The relative rise in prices is depicted in the enclosed chart. **Logically, the increase in traction tariff should have been in line with general price rise, based on Wholesale Price Index (WPI).**

4.0 NTPC and NHPC are major suppliers of electricity to SEBs. Against a total installed capacity in the country (as on April, 2006) of about 1,24,287 MW as on April 1, 2006, 82,410 is thermal and 32,326 is Hydro. NTPC, a Central Government body, alone contributed to about 19% of total installed capacity and contributes to about 27% of total power generation of the country as on 31.3.2006.

5.0. Presently NTPC's average unit cost charged from SEBs is Rs. 1.38 from MSEB, Rs. 1.50 from APTRANSC, Rs. 1.64 from GEB, etc i.e around Rs. 1.60 per unit. As against this, the tariff charged (average unit cost for Traction) by Discoms is given in Annexure I and station wise cost of Energy to SEBs by NTPC is given in Annexure X.

MSEB 3.97	MPEB	4.65	HVPN 3.90	UPPCL	4.45
BSEB 5.02	WBSEB	4.13	PSEB 4.32	TNEB	4.71
KSEB 3.70	APSTRANSC	4.43	GEB	5.03	RSEB 4.13
OSEB 3.98	DVC	3.60	NTPC	2.53	

It may be noted from the above that there is a wide variation in the rates fixed by various SEBs, from Rs. 3.60 of DVC to highest rate of Rs. 5.03 by GEB. The supply rate from NTPC to State Utilities is about Rs. 1.60 per unit. This brings out very clearly that the tariff fixed by various SEBs is totally on ad hoc basis and has no relation with the cost of service to them. The average unit cost on IR is Rs. 4.21 against supplies made by NTPC @ 1.60 and NHPC still further much lower. This aberration needs to be looked into and corrected through the regulatory mechanism as envisaged in new legislation.

The Cabinet Secretariat of Govt. of India, vide letter No. 26/OM/90(1) dated 12.6.1990, have directed that there would be 15% allocation of power as Central share of power from Central power generating stations. The country as a whole in the year 2003-2004 has generated 531 Billion Units and IR are consuming 1.8% of these units. NTPC alone is contributing 27% of the total units generated in the country. 15% of this 27% is about 4% and is well above IR's requirement, which is 1.8% only. **The IR being a Central Government organisation, therefore, needs to be given a better deal in tariff. The tariff charge for Railway shall be NTPC generation cost plus wheeling charges.**

6.0. **All Electricity Boards charge higher tariff rates from Railways, even much higher than the tariff to HT consumers, applicable to large industries.** This defies all logic, as would be seen from the following paragraphs:

6.1 The industries largely draw bulk of the electricity during daytime. As against this, Indian Railways draw power uniformly during 24 hours and in fact the peak demands, in most cases is, during midnight hours. Thus, IR draw power at the wee hours when there is no demand and the generating

capacity would have remained unutilized. In fact, this should be a ground to provide concessional rate of tariff for drawing power during off – peak period.

- 6.2 Indian Railways are the single largest consumer of each Electricity Supply organisation but the bulk consumer benefit is denied, so much so that IR is being charged with something like a penalty rate. This despite instruction from MOP to adopt simultaneous maximum demand as billing demand for IR..
- 6.3 Indian Railways are best pay master and invariably pay the bill on the last day of the month. This is a distinct feature from any of the consumers where lot of delay occurs between accruals and payment for various reasons. All SEBs admit that IR are good pay masters. In spite of these recently some utilities are demanding security deposits from IR which is Government organisation and which has good credentials. The President of India should not be required to furnish security deposit to Discoms when Railway actually never defaulted in payment.
- 6.4 Indian Railways draw power from SEBs at mostly 220/132 KV and in some cases 66/25 KV. From the main grid, from where supply is to be given to the Railway, the entire cost of HT transmission lines and associated equipments are paid fully by Indian Railway, in advance. The SEBs do not incur any expenditure on transmission lines etc. for supply to Indian Railway. Though IR in this manner have spent huge amount of money on transmission lines etc., the benefit does not accrue in form of a reasonable tariff. This despite instruction from MOP that these last mile cost for traction are to be met from Annual Plan allocation to SEBs by Central Government. In fact, as the supply is taken at EHT, the wheeling charges are minimal. **IR is actual customer of TRANSCOs and embedded customer of Discoms.**
- 6.5 **High rate of Traction tariff in comparison to HT tariff:**

Initially, State Electricity Boards were charging Railways at the same tariff as applicable to HT industrial consumers. But during the past decade the SEBs have been raising their tariffs disproportionately with respect to the increase in cost of generation and distribution.

Ministry of Energy in their letter no.27/34/90-D (SEB) dt. 01.05.91 (annexure-II) have advised all State Electricity Boards to charge Railways at a rate not higher than the high tension industrial tariff. Most of the supply authorities have not followed this directive.

Andhra Pradesh, Bihar, Madhya Pradesh, Maharashtra, Punjab, Rajasthan and Gujarat are higher as compared to other industrial consumers. The Electricity Tariff (as per latest tariff order; maximum tariff charge for different categories) is shown in annexure III. Industries work

towards generating individual wealth, IR work towards growth for national wealth.

SERCs must be impressed upon to reduce traction tariff in States of AP, Bihar, MP etc.

7.0 Railway’s role in Urban Transport:

The situation in Metros is full of paradox. Kolkata Metro has been constructed on the demand of State and for the benefit of inhabitants of Kolkata, at a cost of Rs. 1704 crore, annual cost of running alone for Metro is Rs. 86 crores while the earning of Metro is Rs. 32 crores per year, i.e. the fares are very much subsidized and not even the running cost is recovered. Energy bill alone is about Rs. 30 crore per year. Paradoxically, even for such a social service, the Electricity Supply Authorities are making heavy profit by selling electricity at the rate of Rs. 4.80 per unit. At least for this social cause, there should have been a reasonable tariff structure. Similar is the situation for all Suburban Railways at Mumbai, Delhi, Chennai, etc. where the monthly season tickets are much less than the cost of operation. As brought out in para 1 above, the rail fares are as such subsidized for suburban services, it is further subsidized in that only 6.75 return journeys are charged for monthly season tickets against the usual 25 journeys undertaken by the MST holder. At least Metro services and the suburban services need consideration in a social context to give a concessional tariff by the Supply Undertakings, as commutation of citizens of these Metros are largely contributing towards the economies of the concerned States and ultimate beneficiaries are the States and not Indian Railways. **Recently DERC has issued concessional tariff for DMRC is a path breaking burning example to boost urban transport in national interest.**

Comparison of Traction tariff.

Consumer	Existing Tariff	
	Demand Charges (Rs./KVA/month)	Energy Charges (paise/KVAh)
Railway Traction	150	375
DMRC	75	230

One must appreciate what DMRC does for Delhi, IR does for India yet DERC has discriminated for favorable Tariff to DMRC and kept Railway Traction tariff high. Both Railway and DMRC are same type of consumers and handles suburban traffic. Railway must point out this anomaly in front of SERCs. If necessary, energy consumed for suburban passenger’s traffic shall be calculated by Northern Railway and DERC should be requested to give tariff relief for this consumption as applicable to DMRC.

8.0. Key issues for Traction Tariff:

It is generally mentioned by SEBs justifying higher tariff for Railways on the grounds of reliability, single-phase supply, low power factor, etc. without giving any credence to IR's contribution to energy efficiency enhancement through Electric traction in particular and rail transport in general. It is astonishing on the face of reliability that a service provider fails to provide reliable service and thus charging extra for reliability. This is a unique argument and perhaps holds only in our country. The factual position is as under:

8.1 Though the electric traction on IR is on single-phase the supply is taken from the SEBs on three-phase. For achieving this, IR incur heavy expenditure by providing Scott-connected transformers, running three-phase line along the track and adjacent TSSs are fed from different phases and neutral sections are provided at considerable cost between adjacent traction substations. Through these means the Voltage unbalance between different phases of the grid is strictly maintained within permissible limits as laid down in Indian Electricity Supply Code.

8.2 Railway takes supply from Discoms at various load point and sometimes maximum demand is bursted for one feeding zone (TSS) on account of reasons beyond IR control such as opening and closing of level crossing gates for public convenience, public agitation, accidents, traction supply interruption by SEBs and low voltage input supply. IR shall not be penalized on account of Maximum demand bursting.

Traction loads are continuously moving in nature. Some utilities considers 15 minutes integration period and 5 minutes sliding window for recording maximum demand. Maharashtra, Gujarat, Rajasthan, Tamil Nadu, Kerala, Karnataka, Orissa etc. follow 30 minute integration period. MP and other utilities follow 15 minutes integration period and 5 minute sliding window is unjustified for traction load. All SERCs shall be requested to follow 30 minute integrated period (in place of 15 minute period with 5 minute sliding window).

8.3 Adoption of simultaneous maximum demand (SMD) for billing:

A way-side Sub-station of Indian Railways, by the side of track feeds for about 50 to 60 KMs of Railway track. This is a small distance and since the number of trains moved at any point of time varies widely, the load factor for individual sub-station is about 20 to 25%. This is quoted by SEBs as one of the reasons for charging higher tariff. It is pointed out here that it is seldom that a single sub-stations are served by one grid and the load factor considerably improves. If two substations are combined then, the load factor is about 35% and if 5 to 6 are combined then the load factor will be above 70%. So the load factor at the SEB transmission line is above 70% and that too during night hours also, which is the time of surplus generation capacity available. The argument at SEBs therefore, does not merit any consideration. In fact there is a case that instead of

providing individual meters for each sub-station, the States should provide meters at the grid point, where they feed number of sub-stations. If this is done, the electric bill of Indian Railways will come down considerably. While this is not being done, and Railways are paying much more through maximum demand penalties, this argument of 25% load factor on Railways' TSS is quoted to justify unreasonable high electric tariff. Thus, Railways are being penalized in two ways.

Open Access Regulation also imply SMD, because

- a) Railway, as a single buyer of electricity, can avail power at many points from the generating company;
- b) Tariff charge by generating company will not depend on location of access;
- c) Transmission company will get due billing charges as applicable irrespective of location;

Central Electricity Authority (CEA) in their letter no. 5-M(E&C) (16)/88, dated 21.10.88 (annexure-IV) have also advised that the billable demand for traction loads should be the simultaneous maximum demand registered by the continuous sub-stations of a given section falling within the jurisdiction of a SEB rather than sum of individual maximum demands.

RERC has issued order that billable demand shall be SMD and methodology adopted by Jaipur Vidyut Vitran Nigam Ltd (JVVNL) is given in Annexure V.

8.4 Blocking of leading power factor for penalty by Discoms:

Railways load is inductive where power factor may dip to 0.7 and Railways have incurred heavy expenditure in providing Capacitor banks at Railway sub-stations at considerable cost to bring up the power factor. In most of the places the P.F is maintained above 0.9 which is beneficial to SEBs. Some State Utilities penalise Railways for low leading power factor.

As we all know leading power factor is advantageous to the supplier as it helps the system as other loads are generally lagging power factor. However, IR are being forced to pay penalty under leading power factor condition. **SERCs therefore need to block leading power factor as it has been done by MPERC in recent tariff order.**

8.5 As brought out earlier, the supply is taken from the existing National Grids or State electricity grids at 220/132 KV and the feeder HT transmission lines from these grids to Railway premises is fully paid by Indian Railways in advance, the States hardly incur any expenditure for higher reliability. It is unlike small consumers of 11 KV and below where efforts are to be

made by the SEBs to ensure higher reliability. SEBs do not incur any expenditure for reliability of supply for Railways as the supplies are from National/State grids.

Indian Railways have faced situations of supply failures, but it has never been so that electricity Boards did compensate Railways for huge losses incurred due to dislocation of traffic, cancellation of trains, etc. It is, therefore, unfair for the State Electricity Boards to charge high tariffs in the name of reliability of electric supply.

9.0 With the background of SEBs charging exorbitantly high tariff for electric traction, Indian Railways have embarked upon the schemes of taking electric supply directly from NTPC through its own transmission lines. As mentioned above, NTPC is charging electricity at average unit rate of Rs. 2.51. While Railways justify this investment based on saving on the energy bill, it is in the larger interest of Nation that Indian Railways are not compelled to draw their own distribution network, just because Discoms are not making any attempt to rationalize the traction tariff.

10.0 **Energy Conservation and Carbon Credit initiation Benefit through Electric Traction:-**

After enactment of EC Act, 2001, there is already thrust for reducing energy consumption by adopting energy efficiency measures in various sectors of our economy. Transport sector consume substantial portion of national energy consumption. The improvement in energy efficiency in the transport sector is of vital importance in the context of energy economy as well as energy saving. Railways are far more energy efficient in comparison to road transport and within the railways, electric traction has proved to be the most energy efficient. Electric Traction increase energy efficiency in transport sector and also result in substantial environment benefits in terms of reduced GHG emission. But unreasonable traction tariff do not promote electric traction which is energy efficient in terms of energy intensity. EC Act 2001 aim for better energy utilisation and reduction of energy intensity in various sector of economy. The specific energy consumption for different mode of transport is given below:

Mode of Transport	BTU	Kwh	Energy Consumption Index
'A' Passenger Transport – Per Passenger KM			
<u>Rail Traction</u>			
Electric	64.6	0.019	1.0 (assumed)
Diesel	160.2	0.047	2.51
<u>Road – Bus</u>			
Diesel	317.7	0.093	4.99
Petrol	533.5	0.163	8.60
'B' Freight Transport – Per Tonne KM			

<u>Electric</u>	84.6	0.025	1.0(assumed)
<u>Diesel</u>	255.5	0.075	3.02
<u>Road</u>			
<u>Diesel Truck</u>	1587.3	0.465	18.76
Source: Report on National Transport Committee – May 1980			

10.1 **Cogeneration of Electrical Energy by Three phase Electric Locomotives & EMUs:**

Three phase Electric Locomotives and DC/AC EMU inducted by Indian Railways have feature of Regenerative braking. The architecture of these three phase locomotive and DC/AC EMU enable these rolling stocks to work as generator by converting kinetic energy into Electrical energy. **Though it is kinetic energy recovery in its attributes; it is more akin to cogeneration.** One three phase locomotive on an average regenerate 2233 Kwh per day and one DC/AC EMU unit regenerate 882 Kwh energy per day. This energy is fed to IR OHE's grid. At present 130 three phase locomotives and 50 DC/AC EMU units are running in system and this regenerative energy is reducing the need to create new capacity requiring mobilization of huge resources and is also resulting in substantial environmental benefits in terms of reduced green house gas emission. The details of it are enclosed in Annexure. This amounts to saving of 75 cr in infrastructure cost in terms of setting up new power plant in India and reducing CO2 emission about 12877 Tonnes per year to Nation. In view of contribution of IR in cogeneration and reduction in CHG emission by these rolling stock, IR must get tariff relief in terms of tariff policy.

10.2 The Electric Traction is more energy efficient in comparison to Diesel Traction. The comparison of Energy saving accrued and advantage in terms of lower GHG emission even after taking generation through coal based thermal power plant is enumerated in Annexure VIII.

10.3 As per para 5.3 (i) of Tariff Policy

Benefit under CDM

“Tariff fixation for all electricity projects (Generation, transmission and distribution) that result in lower Green House Gas (GHG) emissions than the relevant base line should take into account the benefits obtained from the Clean Development Mechanism (CDM) into consideration, in a manner so as to provide adequate incentive to the project developers.”

State Electricity Regulatory Commission are requested to pass benefit for Electric Traction as it is energy efficient and it is almost pollution free and its tariff fixed for all Electric Traction need to be made more rational in terms of new Tariff policy 5-3 (i). In fact new Electrification Projects must get concessional tariff so

as to contribute for Energy independence and lower GHG emission. Some SERCs like MPERC and RERC has given concessional tariff to new Electrification Project in this regard.

11. Linkage of traction tariff to cost of supply by Distribution Companies:

In term of section 61(g) of EA, 2003 the appropriate commission shall be guided by the objective that tariff progressively reflects the efficient and prudent cost of supply.

As per para 8.3 tariff must be linked to cost of service. For achieving the objective that the tariff progressively reflects the cost of supply of electricity, the SERC would notify roadmap within six months with a target that latest by the end of year 2010-2011 tariffs are within $\pm 20\%$ of the average cost of supply. The road map would also have intermediate milestones, based on the approach of a gradual reduction in cross subsidy. For example if the average cost of service is Rs. 3 per unit, at the end of year 2010-2011 the tariff for the cross subsidized categories excluding those referred to in para 1 above should not be lower than Rs. 2.40 per unit and that for any of the cross-subsidising categories should not go beyond Rs. 3.60 per unit.

The cost to serve for Traction tariff by different utilities and element of cross subsidy is shown in Annexure VI.

Regulators must give roadmap to reduce the cross subsidy to 20% by 2010-11.

12. National Tariff Policy also mandates for following important points:

- i) MYT framework is to be adopted for any tariff to be determined from April 1, 2006.
- ii) Regulatory commission need to strike the right balance between the requirements of the commercial viability of distribution licensees and consumer interests. Loss making utilities need to be transformed into profited ventures.
- iii) MYT must aim for efficiency and appropriate reduction of system losses.
- iv) SERC may also encourage suitable local area based incentive and disincentive scheme for the staff of utilities.
- v) Third party verification of energy audit results to reduce AT&C.
- vi) SERC shall undertake independent assessment of baseline data for various parameters for energy distribution circle of the licensee and this exercise shall be completed by March, 2007.
- vii) SERC shall also institute a system of independent scrutiny of financial and technical data submitted by licensees.

13. **Issues to be raised against ARR filed by Discoms by Railways:**

ARR of Discoms are posted on website of State Electricity Regulatory Commission and SERC ask for comments from various Commissions and Stakeholders. Railway must furnish comments in definite time frame to SERC. Objection raised by SERC is one of ARR filed by CSEB are enclosed in Annexure VII for guidance and ratings of power sector issued by MOP is enclosed in Annexure IX.

- 13.1. Railways shall analyze the ARR's filed by Transco and Discoms. Railways must analyze the cost of power purchase from central sector, private sector, state generation companies from which Transco are purchasing power.

Thermal power plant in Central Sector has not increased rate of electricity for year 2005-06. CERC has notified works for tariff determination for Central Generating station. These norms stipulate better plant load factor and more energy efficiency for auxiliary consumption. Although there is increase in price of coal and but due to new CERC's norm there is no increase in electricity price for year 2005-06.

Similar analysis shall be done for other power plants from where Discoms are purchasing electricity.

- 13.2. AT&C losses have declined marginally from 37.75% in 2003-04 to 36.44% in 2004-05. The western region has shown reduction of 3% over the previous year. This improvement must be shared on 50-50 by State Utilities. The Report on Performance of State Power Utilities for the year 2002-03 to 2004-05 available on PFC (Power Finance Corporate website) indicate some utilities have reduced AT&C losses by more than 4% like West Bengal, Assam, Mizoram, Nagaland, Delhi, Rajasthan, Uttar Pradesh, Goa and Maharashtra (Annexure XI).

- 13.3. The operating expenses, R&M expenses, employee cost of different Utilities shall be compared for the last five years. If there is any deterioration, reason shall be asked from the Discoms. If there is any improvement, relief shall be asked for traction tariff. After enactment of EA, 2003 unbundling of State Electricity Board has been done to achieve efficiency and create competitive environment and thus gets better price of electricity to consumers.

- 13.4. The cost of electricity charged in Central Sector is done on the basis of recommendation of CERC. The various impact of cost component is given in Annexure XII. The cost impact due to variation of different attributes is also listed in Annexure XII. the impact of escalation of cost of

coal is also given in Annexure XII. This may be used as tool to give comment on purchase of power by Transcos..

14. **Nomination of Railway representative in State Advisory Committee:**

In Electricity Act 2003, there is a provision of State Advisory Committee. This consist of Members who represent the interest of commerce industry transport, agriculture, labour, consumers, non-government organisations and academic and research bodies in electricity sectors. As per section 88 of Electricity Act, the object of State Advisory Committee shall be to advise the Commission on –

- i) major questions of policy;
- ii) matters relating to quality, continuity and extent of service provided by the licensees;
- iii) compliance by licensees with the conditions and requirements of their licence;
- iv) protection of consumer interest; and
- v) electricity supply and overall standards of performance by utilities.

All nodal Railways must get nominated one of the nominee in State Advisory. This will help in putting Railway view point.

15. **Some historical landmark in terms of relief to traction tariff in recent times are given in Annexure XIV.** These shall be used by Railways for tariff petition whichever Railways find fit.

16. In consideration of the above paragraphs, Hon'ble SERCs are prayed to consider reasonable fixation of tariff in terms of **Section 61 (c), (d), (e), (f), (g) of Electricity Act, 2003**. The ends of justice will be met, both for Indian Railways and Supply authorities, if the rates are fixed on uniform guidelines for all Supply Authorities and with such stipulation that adhocism is taken away and year after year the Hon'ble Commission are not burdened with repeated petitions. Following is suggested:

- (a) Traction tariff be fixed at the prevailing purchase rate of the State from NTPC, plus wheeling charges.
- (b) For electric supply authorities who largely drawing power from Hydro (e.g. KSEB), the rate should be fixed at the rate of NHPC plus wheeling charges.
- (c) For limited supplies to Metro services and suburban services in Kolkata, Mumbai, Chennai, etc. a uniform rate of tariff at NTPC rate may be fixed, considering the heavy subsidies on passenger localized for the benefit of the State and economic progress of these States.

Since Indian Railways contribute only 3 to 3.5% of any SEBs earnings, this downward revision in tariff will not significantly affect the finances of any of the SEBs.

References:-

- i) Website of Ministry of Power
- ii) Annual Report and Accounts 2004-05
- iii) All India Electricity Statistics published by CEA.
- iv) Annual report on the working of State Electricity Board and Electrical Departments published by Power & Energy Division, Planning Commission, Government of India.
- v) Electricity Act, 2003.
- vi) Tariff order issued by different State Regulatory Bodies.
- vii) National Tariff Policy and National Electricity Policy.
- viii) Energy Security in Transport Sector by IERI.
- ix) Tariff Petition filed by Zonal Railways.

Abbreviations:-

ARR	Average Revenue Realisation
ATC	Aggregate Technical and Commercial losses.
CEA	Central Electric Authorities
CERC	Central Electricity Regulatory Commission
CDM	Clear Development Mechanism
CSEB	Chattisgarh State Electricity Regulatory
DISCOMs	Distribution Companies
DMRC	Delhi Metro Rail Corporation
DVC	Damodar Valley Corporation
EA	Electricity Act
GEB	Gujarat State Electricity Board
GHG	Green House Gas
HT	High Tension
IR	Indian Railway
MPERC	Madhya Pradesh Electricity Regulatory
MST	Monthly Season Ticket
MYT	Multi Year Tariff
NEP	National Electricity Policy
NTPC	National Thermal Power Limited
NTP	National Tariff Policy
PLF	Plant Load Factor
SEB	State Electricity Board
SERC	State Electricity Regulatory Commission
SMD	Simultaneous Maximum Demand
TRANSCO	Transmission Company
TSS	Traction Substation
WPI	Wholesale Price Index

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Annexure V

Railways avail power at 132 KV from JVVNL for eight number of traction substations (TSSs), each of the eight traction substations has an individual contract demand and the simultaneous maximum demand of the eight TSSs, and the individual maximum demands as used for billing for the individual substations are arrived at as detailed below:

- Every traction substation has a stipulated contract demand. There are eight traction substations fed by JVVNL.
- The simultaneous contract demand (SCD) is the sum of the individual contract demands of all the eight traction substations.
- The actual demands at each of the traction substations for every time slot of integration (i.e. for each 15 min period, viz 0 to 15 min, 15 min to 30 min, 30 min to 45 min, and so on) are recorded for the entire month. For example, during a month of 30 days there will be 30x24x4 number of recordings (i.e. 2880 readings) for the actual demand for each of the traction substations.
- The simultaneous actual demand of all the traction substations in any time slot is calculated as the sum of the individual actual demands recorded in that particular time slot at all the traction substations.
- The simultaneous maximum demand (SMD) in any month is the maximum of all the simultaneous actual demand recorded in that month.
- The simultaneous maximum demand is apportioned pro rata to all the individual traction substations based on the individual contract demands, calculated mathematically as given below:

$$MD_i = (SMD/SCD) \times C_{di}$$

Where $i = 1, \dots, n$

n = number of substations

MD_i = Maximum Demand of i^{th} substation

C_{di} = Contract Demand of i^{th} substation.

$$SCD = \sum_{i=1}^n C_{di}$$

Annexure VI

TRACTION TARIFF

Utility Name/ Distribution Company	State Regularoty	Traction Tariff in Rs./Unit	Cost to serve in Rs. / Unit	Present Cross subsidy in Rs./Unit	Surcharge for Open access in Rs./ Unit	References
Northern Power Distribution Company of AP Ltd.	APERC	4.40	3.23	1.17	1.17	CESE/SCR Letter No. E.19/5/1/3/APERC/NTPC Supply/Vol.1 dt 10.02.2006.
Eastern Power Distribution Company of AP Ltd.	APERC	4.40	2.72	1.68	1.68	CESE/SCR Letter No. E.19/5/1/3/APERC/NTPC Supply/Vol.1 dt 10.02.2006
Southern Power Distribution Company of AP Ltd.	APERC	4.40	3.09	1.31	1.31	CESE/SCR Letter No. E.19/5/1/3/APERC/NTPC Supply/Vol.1 dt 10.02.2006
Central Power Distribution Company of AP Ltd.	APERC	4.40	3.00	1.40	1.40	CESE/SCR Letter No. E.19/5/1/3/APERC/NTPC Supply/Vol.1 dt 10.02.2006
CSEB	CSERC	4.51	3.45	1.06	0.46	CEE/SECR Letter No. Elect/209/Dt 03.02.2006.
MPEB	MPERC	4.13	3.19	0.94	0.94	CEDE/WR Letter No. EL.84/17 (CERC) Dt. 17.11.2005.
MSEB	MERC	3.85	2.83	1.02	1.02	CEDE/CR Letter No. LRE.233.P.8 MERC Dt. 23.02.2006
TATA	MERC	3.43	2.84	0.59	0.59	CEDE/CR Letter No. LRE.233.P.8 MERC Dt 23.02.2006
GSEB	GECRC	5.10	2.30	2.80	2.80	GERC Discussion Paper on "Open Access" Transmission charge, Wheeling Charge & Cross-Subsidy Surcharge" May-2005.
TNEB	TNERC	4.67	2.84	1.83	1.83	CEE SR letter E/46/ET/1/SERC dt 24/6/2006 and as per para 4.2.3, Table 3 of petition no. TP1/2005 filed by TNEB on Cross subsidy surcharge and additional surcharge during September 2005.
KEB	KERC	3.46	2.99	0.47	0.47	CEE SR letter E/46/ET/1/SERC dt 24/6/2006 and as per para 7.3 of Chapter VII of order of KSERC on ARR ERC for 2006-07 dt 30.3.2006.
PSEB	PSERC	4.32	2.069	1.63	1.63	CEDE to NR letter no. 230/Elect/TRD/Rly Bd at 9.5.06.
HVPL	HERC	3.90	2.21	1.69	1.69	CEDE to NR letter no. 230/Elect/TRD/Rly Bd at

						9.5.06.
BSES	DERC	4.62	2.32	2.30	2.30	CEDE to NR letter no. 230/Elect/TRD/Rly Bd at 9.5.06.
NDPL	DERC	4.51	2.32	2.30	2.30	CEDE to NR letter no. 230/Elect/TRD/Rly Bd at 9.5.06.

Annexure III

Electricity tariff (as per latest tariff order ; maximum tariff charged in a category)

SEB/PHs	Indian Railway (Traction) 2004-05	Indian Railway (Traction Tariff) 2004-05		Domestic *		HT *		Agriculture *	
	Avg. Cost (Rs./Units)	Fixed charges (Rs./month)	Energy charges (Rs./Units)	Fixed charges (Rs./month)	Energy charges (Rs./Units)	Fixed charges (Rs./month)	Energy charges (Rs./Units)	Fixed charges (Rs./month)	Energy charges (Rs./Units)
AP	4.43	-	4.40	-	5.50	195/KVA	4.40	44	-
Bihar	5.02	140 KVA	1.94	24	1.60	125/KVA	1.78	125/BHP	1.78
Chhattisgarh	4.44	139 KVA	2.95	100	2.05	310/KVA	3.80	75/HP	1.00
Delhi	4.69	150 KVA	3.75	-	-	150/KVA	4.30	12/KW	1.50
Gujarat	5.03	180 KVA	4.55	15	4.70	215/KVA	4.10	10/BHP	0.50
Haryana	3.90	60 KVA	3.85	-	4.25	-	4.09	100/BHP	0.62
Jharkhand	4.79	140 KVA	4.30	40/con	1.70	140/KVA	4.00	200/HP	0.75
Karnataka	3.70	180 KVA	3.80	50/KW	4.70	180/KVA	4.30	20/HP	0.40
Kerala	4.76	230 KVA	2.25	-	5.25	270/KVA	3.00	6/KW	0.65
MP	4.65	150 KVA	3.91	475/con	3.40	400/KVA	4.10	-	2.50
Maharashtra	3.97	-	3.35	40/KVA	4.00	-	2.10	180/HP	1.10
Orissa	3.98	200 KVA	2.90	-	4.50	200/KW	3.00	30/KW	1.10
Punjab	4.32	-	4.02	-	3.89	-	3.72	208/BHP	-
Rajasthan	4.13	90 KVA	4.01	105	3.50	60/KVA	4.01	50	230/HP
Tamil Nadu	4.71	300 KVA	3.50	5	3.05	300/KVA	3.50	21/HP	2.00
Utter Pradesh	4.45	185KVA	3.35	50/Kw	3.00	180/KVA	3.50	15/BHP	0.75
West Bengal	4.13	180 KVA	3.57	-	200	180/KVA	5.55	-	1.95

* Sources: Indian Infrastructure 1 April 2006.

REPRESENTATION TO SERCs

REGARDING

FIXATION OF
TRACTION TARIFF

