Forum of Regulators (FOR)

REPORT OF THE FORUM OF REGULATORS ON "ANALYSIS OF FACTORS IMPACTING RETAIL TARIFF AND MEASURES TO ADDRESS THEM"

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1. Introduction

The Forum of Regulators (FOR), in its Special Meeting held on 16.10.2020 deliberated on various factors leading to high cost of power, several of which are beyond the control of the electricity regulators and felt the need to analyse and evolve measures towards reduction or at least containment of retail tariff. The FOR also decided to form a Working Group (WG) to look into the issues raised during the meeting.

Accordingly, this Working Group was constituted with the following composition:-

- Chairperson, Punjab State Electricity Regulatory Commission – Chairperson
- Chairperson, Gujarat Electricity Regulatory Commission – Member
- Chairperson, West Bengal Regulatory Commission – Member
- Chairperson, Odisha Regulatory Commission – Member
- Chairperson, Tamil Nadu Regulatory Commission – Member
- Chairperson, Joint Electricity Regulatory Commission (Goa &UTs) – Member
- Chief, (Regulatory Affairs), Central Electricity Regulatory Commission-Convener

The broad scope of work of the Working Group included the following:-

a) Analysis of various components of power purchase cost (PPC) and their impact on retail tariff.
b) Analysis of external factors (i.e. factors external to electricity sector) and internal factors (across the value chain of generation, transmission and distribution) impacting retail tariff.
c) To suggest measures for addressing the issues arising out of the analysis from (a) & (b) above.
d) Any other matter related and incidental to the above.

A copy of the order constituting the Working Group is **enclosed** as **Annexure - I**

The first meeting of the WG was held on 2nd November 2020 (minutes **enclosed** as **Annexure II**). The second meeting was held on 7th December 2020 (minutes **enclosed** as **Annexure III**). The

3rd, 4th and 5th meeting for finalizing the recommendations were held on 11th December 2020, 28th December 2020 and 30th December 2020 respectively through virtual mode.

In the first meeting, the WG decided that the factors impacting retail tariff were to be examined in detail and for this purpose, the possibility of seeking the assistance of consultants who could help in terms of simulation of data be explored. Accordingly, the services of a consortium of consultants- M/s KPMG, M/s ABPS and CER of IIT Kanpur were made available to the WG with the approval of the Chairperson, FOR. This consortium was already assisting FOR under the PSR program under the aegis of an MOU between the Government of India and the Government of UK. The consultants carried out simulation of data for 12 States, namely Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Uttar Pradesh and Uttarakhand. Cumulatively, these States account for 50% of the total energy consumed in the country.

A detailed presentation was made by the consulting agencies highlighting the respective contribution of various factors in the Average Cost of Service (ACoS) which forms the basis for the determination of retail tariff. The presentation made by the consulting agencies has been provided at **Annexure-IV(a), IV(b), IV (C), IV (d) and IV (e)** to this report. Various data sets as in the presentation were noted by the Working Group and after further discussions on various aspects including the factors highlighted by the consulting agencies, the WG arrived at the findings and recommendations which were presented to the Forum of Regulators for consideration.

The Forum deliberated the report in detail in its 75th Meeting held on 30th April, 2021 and finalized the recommendations as outlined in subsequent sections.

2. Analysis

Based on the details of the analysis of data for 12 States, the WG found that the PPC accounts for about 67% - 78% of the ARR, followed by transmission charges and the O&M expenses. Transmission charges are seen to be contributing in the range of 9.5% - 13.5% and O&M expenses in the range of about 6% - 21%. Accordingly, the WG felt the need to deep dive into the factors of PPC, transmission charges, O&M charges and other factors.

2.1. Details of Analysis

The details of analysis carried out have been provided below:

2.1.1 Power Purchase Cost

Since the PPC is the greatest contributor to the costs in the ARR, further analysis was undertaken in terms of the contribution of the sub components of PPC such as fuel cost, railway freight charges, distribution losses etc., The following insights emerged:-

- In the power purchase cost for sample station, the contribution of coal price has been in the range of 25%, rail freight at 41%, road transportation charges at 11%, clean energy cess at 11% and others at 12%.
- The Impact analysis of clean energy cess was also made. It was found that clean energy cess has increased over time, from Rs 50 per tonne in June, 2010 to Rs 400 per tonne of coal since March 2016. The total impact of coal cess on the power sector is around Rs 25000 Crore per year during last 3 years. Presently, the impact assessment shows that a reduction in clean energy cess of Rs 100 per metric tonne (MT) would lead to a saving of about 6 paisa per unit which would translate into a saving of 3% of the Average Cost of Supply (ACoS). Similarly, a reduction of Rs 50 per MT of clean energy cess would lead to a saving of 3 paisa per unit.
- The next element examined was the impact of GCV loss. The GCV loss has a direct impact on the overall energy charges. The GCV loss due to grade slippage between "as billed" and "as received" has been in the range of approximately 600 kCal/ kg. Analysis

reveals that every 100 Kcal/ kg saving in GCV loss would translate into a saving of energy charges in the range of 3%. Thus, this is an important area which deserves immediate attention and can substantially reduce the retail tariff for electricity consumers.

- On the coal price front, it was revealed that the prices of G11 to G14 grade of coal (used for generation in power plants) have increased since FY 2016, the increase being in the range of 13% - 18%. It was also revealed that this increase in price was 28% higher in comparison to the estimated price increase based on the weighted average of WPI and CPI.
- The analysis of the railway freight charges revealed that for coal and coke, freight charges have increased twice during the calendar year 2018, the increase being 21% in January 2018 and 9% in November 2018. The increase in railway freight charges in November 2018 was 30% higher as compared to the estimated increase computed based on weighted average of WPI and CPI.
- Thus, both Coal and Railway freight issues are external factors which need to be regulated.

2.1.2. Transmission Charge

Another important element in the power purchase cost is the transmission charge. The data analysis revealed that a huge investment has been made in the inter-state transmission sector in the past 10 years.

The annual transmission charges for inter-state transmission have increased from Rs 9,000 crore in FY 2011-12 to more than Rs 39,000 crore in the FY 2019-20 translating into a CAGR 21% during this period. Per unit charges for energy transmitted through interstate transmission system have increased at a CAGR of 15% over the same period.

A comparison of CTU and STU charges, between FY 2016-17 to FY 2019-20, for the 12 study states, was also undertaken. The CAGR of CTU charges and the STU charges during this period, for the study States, were found to be as under:

S No	State	CTU charges (CAGR)	STU charges (CAGR)
1	Odisha	23%	4%
2	Uttarakhand	10%	-1%
3	Madhya Pradesh	1%	7%
4	Karnataka	24%	4%
5	Kerala	4%	-3%

S No	State	CTU charges (CAGR)	STU charges (CAGR)
6	Jharkhand	9%	32%
7	Assam	0%	7%
8	Uttar Pradesh	25%	3%
9	Gujarat	11%	10%
10	Haryana	40%	3%
11	Bihar	6%	63%
12	Andhra Pradesh	59%	18%

The analysis shows that the inter-State transmission system was designed for projected peak demand of 2,01,000 MW for FY 2019-20 whereas the actual peak demand for the same year turned out to be 1,84,000 MW. Actual energy requirement in FY 2019-20 was 1,290 BU as against the projection of 1,400 BU. Similar trends are seen in previous years as well. Demand not increasing as per projections is one of the reasons for higher per unit transmission charge.

Another important finding that emerged is that competition in the transmission service procurement has led to substantial decrease in overall costs. Recent trends of competitive bidding in transmission reveal that the levelised tariffs for competitively bid projects have been lower than those on cost plus basis.

It was also noted that green corridor related energy transmission costs are being loaded on to the CTU cost.

The group also felt that the central transmission utility works are taken up without the SERCs being apprised of the plan at any stage, This needs to be remedied.

2.1.3. Fixed Cost related factors

The impact of other factors on the retail tariff including the fixed cost elements (RoE, O&M and depreciation cost) was then taken up.

A comparison of the RoE allowed by different States for generation, transmission and distribution revealed that the post-tax RoE has been in the range of 14% - 16%. An analysis was also made regarding the prevailing cost of debt and it was found that the lending rate has been on the lower side for quite some time. While the RoE has an element of risk premium, the data analysis

revealed the need for reconsidering the RoE keeping in view the prevailing prime lending rate and 10 - year G-Sec rate. The contribution of RoE on generation, transmission and distribution, in respect of 12 States were studied. It transpired that if the RoE was reduced from 15.5% to 14%, there would be reduction of 2 paisa per unit of retail tariff and if it was reduced further to the level of 12%, it will lead to a reduction of 7 paisa per unit of retail tariff.

The next issue which was examined in detail was depreciation cost. Regulatory practices in other sectors on this front were also analysed. The impact/contribution of depreciation on overall ARR was presented. It emerged that if the loan repayment period considered for depreciation is extended from 12 years to 15 years, it would decrease the ACoS by 8 paisa per unit of retail tariff. Further, if the depreciation rate is reduced to 4.3%, considering the loan period of 15 years to repay 65% of the capital cost, the reduction in retail tariff could be in the range of 10 paisa.

Analysis of internal factors was also undertaken. It revealed that substantial savings can be made if distribution losses are reduced. The impact of O&M charges and interest and finance charges were also analysed. It revealed that the approved O&M expenses for the FY 2020-21 in the 12 study States ranged between 6% -21%. For example, in Assam the O&M charge was in the range of Re 1 per unit of energy handled by the Discom. The O&M charges of the generator of the study States varied in the range of 10% -16%. The interest and financing charges for the study States varied in the range of approximately 1% - 9%. For example, in Kerala, the interest and financing charges were about 50 paisa per unit of energy handled. There is a significant scope of reducing AT&C losses by better reactive power management as has been adopted in Tamil Nadu. Details have been provided in **Annexure-V**.

Apart from the above factors, other external factors, especially the impact of under-utilisation of assets and the impact of compliance of environmental norms were also undertaken. It was revealed that retiring inefficient old plants which have been in use for more than 30 years would reduce the energy charges by 4% - 23%. For the Flue Gas Desulfurisation (FGD) components, estimate was made based on the benchmark capital cost provided by CEA and operational and financial norms provided by CERC. The total impact of FGD was computed to be in the range of about 24 paisa per unit of the energy.

The Ministry of Environment, Forest and Climate Change vide its Draft Notification dated 22nd April 2021 seeks to make the Thermal Power Plants (TPPs) responsible for 100% utilisation of

ash (fly ash and bottom ash) generated by it for eco-friendly purposes like manufacturing of brick /blocks/tiles, cement manufacturing, road construction etc. As per the draft notification every coal or lignite based TPPs shall ensure that loading, unloading, transport, storage and disposal of ash is done in an environmentally sound manner and that all precautions to prevent air and water pollution are taken.

The Draft Notification also stipulates that all agencies (Government, Semi Government and Private) engaged in construction activities such as road laying, road and flyover embankments, shoreline protection structures in coastal districts and dams within 300 km from the lignite/coal based TPPs shall mandatorily utilise ash in these activities, provided it is delivered at the project site free of cost and transportation cost is borne by such coal/lignite based thermal power plants.

Hence, as per the Draft notification, the cost of transportation of fly ash is to be borne by TPPs, which will have substantial impact on cost of generation on thermal power plants. Assuming an average generation of 250 gm/kwh and ash transportation cost of Rs 2-3/MT/300km, the total impact on cost of generation works out to be around 15-23 paise/unit for 300 km of ash transportation.

3. Recommendations

The WG, based on the details of the analysis for 12 States, observed that PPC is the largest contributor to the average cost of supply, having on an average more than 70% share in the cost for a distribution company. Following PPC, transmission charges and O&M Expenses have a major share. The WG delved deep into these factors and found that several of them are external to the electricity sector and need intervention of the Central Government/agencies. There are internal factors, equally important, deserving attention. Accordingly, the WG has made recommendations under these two broad heads, viz., external and internal, thereby highlighting the need for a coordinated effort by the Centre and the States to address the issue of high retail tariff.

3.1. External Factors

3.1.1. Coal

Coal cost is a major contributor in PPC. The increase in coal price was 28% higher in comparison to the estimated price increase based on the weighted average of WPI and CPI. It has also been observed that a number of inefficiencies of the coal sector are being passed on to the power sector. There is significant grade slippage (exceeding 600 Kcal/kg in many cases), the cost of which is borne by electricity consumers. As evident from the analysis, every 100 Kcal/ kg saving in GCV loss would translate into energy charges saving of approximately 5 paise per unit. Hence, it is recommended that the coal sector be brought under an independent regulator at the earliest. Regulation of coal sector is required to stem inefficiency and improve performance so that consumers (of coal) including the power sector, benefit.

Coupled with this, is the need for the electricity regulators to monitor and suitably regulate Station Heat Rate (SHR) and GCV of coal based power plants. These two factors, if regulated properly, can reduce energy charge significantly. GCV should not be allowed on "as fired" basis as is still being done by several States. Rather, it should be based on "as received" basis or "as billed" plus margin of errors (due to transportation and other losses) as payment is made to the coal companies on the basis of billed GCV. Third party assessment/measurement of GCV is important. There is an

urgent need for evolving a proper sampling and measurement mechanism to control the grade slippage and GCV losses. CERC should empanel a list of independent technically qualified agencies/labs for this purpose.

As per the fuel supply agreement (FSA) between the coal supplier and the generators, the coal supplier does not provide any compensation for surface moisture of coal upto 7% in dry season and 9% in wet season. Full compensation should be provided for the surface moisture as it has no heat value

Thus, Ministry of Power and Ministry of Coal need to find out a solution to the issue of grade slippage and losses due to moisture content. Coal pricing needs to be regulated as in other sectors, since it is virtually a monopoly.

3.1.2. Railway freight

Another considerably significant portion of the PPC is contributed by railway freight. There has been an increase of 40% in the railway freight charges in the past 4 years The increase in freight charges has been unbridled and significantly higher than what WPI/CPI could justify. It is suggested that the RoE for railways be regulated. Railways should also be brought under an independent regulatory body as they enjoy monopoly position. The Central Government may also consider subsidizing railway freight for a distance beyond 750 kms.

3.1.3. Clean Energy Cess

Clean energy cess has increased from Rs. 50/- per ton in June 2010 to Rs. 400/- per ton at present, thereby impacting retail tariff.

The total impact of Clean Energy cess since FY 2010-11 based on the coal consumption each year for the power sector is shown in the table below:

S. No.	Year	Coal Consumption for the Power Sector (Million metric tonne)	Clean Energy Cess (Rs Crore)
1	2010-11	396	990
2	2011-12	438	2,188
3	2012-13	485	2,427

S. No.	Year	Coal Consumption for the Power Sector (Million metric tonne)	Clean Energy Cess (Rs Crore)
4	2013-14	493	2,466
5	2014-15	498	3,733
6	2015-16	518	9,492
7	2016-17	535	19,618
8	2017-18	608	24,320
9	2018-19	629	25,144
10	2019-20	622	24,883

Source(Coal Consumption): MOSPI(Energy Statistics,2019)

With the increasing investment in renewables, the rationale for continuation of this cess needs review. If it is to be continued then it is recommended that the proceeds from this cess be ploughed back to the electricity sector to mitigate the incremental cost on account of new environmental norms as per contribution made by each State.

3.1.4. New Environmental Norms

With the implementation of new environmental norms, the cost per unit of energy is going to increase substantially. This increase in cost should be compensated from the clean energy cess which has been collected from the consumers of the electricity sector. This cess should be used to reduce retail tariff impact as a result of FGD installation in the thermal plants.

3.1.5. New Norms for disposal and transportation of fly ash

As per the draft notification dated 22nd April, 2021, issued by the Ministry of Environment, Forest and Climate Change, the cost of transportation of fly ash is to be borne by the thermal power plants (TPPs), which will have substantial impact on cost of generation on thermal power plants. Assuming an average generation of 250 gm/kwh and ash transportation cost of Rs 2-3/MT/300km, the total impact on cost of generation works out to be around 15-23 paise/ unit for 300 km of ash transportation. As this will have substantial impact on cost of generation and hence on consumer tariff, it is recommended that the cost of transportation of fly ash be partially borne by the Central/ State Government.

3.2. Internal Factors

3.2.1. High transmission costs

There has been huge investment in inter-state transmission but utilization of the assets has not been commensurate with the investment**.** Reliability of supply and market access have definitely increased due to construction of transmission systems but the disconnect in planning is obvious. Owing to the under-utilisation of transmission assets, a high cost is being paid by the consumers. The retail electricity consumers should not be burdened with the monetary implications arising due to forecasts of transmission planners, especially when the forecasts have not been fully achieved resulting in low or partial use of the system. It is recommended that in future, transmission planning should be based on accurate demand forecasts by discoms and STUs.

The Central Government should share the cost of the stranded assets, by utilising the clean energy cess. As the cess is being collected from power sector, it should be used to provide relief to the sector.

As per the Tariff Policy, tariff of all new transmission projects, including state owned projects, should be determined on the basis of a competitive bidding process for projects, costing above a threshold limit which shall be decided by the SERCs. Some SERCs (like Punjab and Bihar) have defined threshold limit for this purpose. It is recommended that all SERCs should decide a normative threshold above which projects be selected through tariff based competitive bidding.

It is also suggested that FOR may also have a special meeting on this issue to work out a solution.

3.2.2. Generation assets are also stranded. Old gas plants are too expensive and fixed costs are being paid without any utilization.

As in the case of transmission assets, the fixed cost of stranded generation assets is being paid for by the consumers without getting any benefit. The stranded costs (in respect of 12 States studied), due to under-utilisation of generation assets have been provided at the table below

S No.	State	Year	Surplus Energy (MU)	Fixed Cost for Surplus Energy (Rs Crore)
1	Odisha	FY 2020-21	5,941	348
2	Uttarakhand	FY 2020-21	(536)	NIL

S No.	State	Year	Surplus Energy (MU)	Fixed Cost for Surplus Energy (Rs Crore)
3	Madhya Pradesh	FY 2019-20	28,636	4,325
4	Kerala	FY 2020-21	782	121
5	Jharkhand	FY 2020-21	5,707	563
6	Assam	FY 2018-19	864	294
7	Uttar Pradesh	FY 2020-21	22,416	4,394
8	Gujarat	FY 2020-21	11,220	1,528
9	Haryana	FY 2020-21	14,870	1,719
10	Bihar	FY 2020-21	14,301	1,294
11	Andhra Pradesh	FY 2020-21	9,504	917
12	Punjab	FY 2019-20	15546.18	1879.45
	Total		129251.18	**17442.45**

Surplus energy of this magnitude and resultant costs (in the range of Rs. 1.34 per unit) are a matter of great concern. Further, the cost of balancing renewables has been estimated to be in the range of Rs.1.10/unit by CEA. In addition, the additional stranded capacity cost (incremental fixed charge) estimated on account of RE integration is in the range of Rs.1.02/ unit (Reference Minutes of FOR meeting held on 20th September, 2019 at Amritsar). Government should extend help to the discoms to meet the fixed cost of the PPAs associated with the stranded assets. The burden of the stranded generation assets should be shared by the Central Government and the State Government respectively in the ratio of 60:40, in line with central plan funding. Further, the stranded asset costs should also cover the impact in respect of plants that are under annual maintenance and R&M.

3.2.3. Return on equity allowed to Generation / Transmission and distribution companies needs to be made more realistic and at par with interest rates.

In the entire value chain, transmission business has the lowest risk. The RoE for transmission companies should therefore, be reviewed immediately. RoE for generation and transmission should be linked to the 10 year G Sec rate (average rate for last 5 years) plus risk premium subject

to a cap as may be decided by Appropriate Commission. For a discom, the RoE could be fixed based on the risk premium assessed by the State Commission . Income tax reimbursement should be limited to the RoE component only.

Performance of Distribution licensees has a significant impact on retail tariff for the consumers. Therefore there is a need to link recovery of RoE with the performance of the utilities, based on indicators such as supply availability, network availability, AT&C loss reduction.

3.2.4. Impact of depreciation on tariff

Depreciation rate should be rationalized and the period of depreciation should be extended. Depreciation period could be extended to 15 years from 12 years and the rate could be 4.3% based on straight line method for the first 15 years and the remaining depreciation to be recovered during the balance useful life. Accumulated depreciation, over and above debt repayment, should be used to reduce the equity base for RoE.

3.2.5. Growing share of Renewable Energy

Although green power is available at ₹ 2.5/unit or less now, the costs of transmission and balancing cost are eating into the benefits it could have brought. Initially, the renewable power policy laid emphasis on distributed generation which could have avoided transmission asset creation. However, the current focus seems to have shifted to large scale renewable projects. In the large RE segment, hybrid renewable (combination of wind and solar), round the clock (RTC) schedulable power and renewable with energy storage should be encouraged, which could lead to better utilization of transmission assets. Apart from large scale renewable projects, focus in future should also be on distributed generation that would minimize transmission infrastructure and would help reduce the cost.

3.2.6. Right Energy mix and right mix of long term, medium term and short term PPAs – Best practices

DISCOMs willing to exit from PPAs of old plants that have outlived their life or are very costly should not be tied to BPSA. Furthermore, 25 years life of PPAs for new projects contracted through competitive bidding is too long and shorter duration PPAs with exit clause should be promoted. It should also be ensured that the exit clause is not very stringent.

3.2.7. Cost optimisation through greater use of market – Best practices

There is a lot of scope for reduction of power purchase cost if Merit order dispatch (MoD) is followed strictly and power market and other platforms are used for optimisation of power procurement. This exercise needs to be followed by all States by making a comparison of their own generation variable cost with the likely power exchange price and procuring power from the exchange if the latter is lower. Some of the best practices in this context have been provided at **Annexure-VI.** Also, the Security Constrained Economic Despatch (SCED) framework which has yielded substantial savings at the national level, should be adopted in States, provided it brings benefit to the consumers in terms of overall tariff.

SLDCs should be given independent status and it should be their responsibility to ensure merit order dispatch of electricity on day ahead and real time basis. Merit order must be prepared by SLDC every month based on the actual fuel prices of the last month.

3.2.8. Trading Margin be curtailed

Trading margin, as stipulated by CERC, can be made more equitable. Although the current average trading margin lies within approximately 3-4 paise/unit, the ceiling of 7 paise/unit provided by CERC, along with the "as per mutually negotiated" clause is being misused by public sector traders. CERC should look into the matter and cap the same at 2 paise/unit. Similar cap can be specified by SERCs and discoms should be directed to adhere to this cap while giving consent to bids for procurement through any trader.

3.2.9. Waiver of water usage charges for Hydro Projects

The matter of waiver of water usage charges for hydro projects may be taken up by the FOR and MoP.

3.2.10. Distribution level efficiency in operation

There is a significant scope of reducing AT&C losses by better reactive power management as has been adopted in Tamil Nadu. Further, the SERCs should provide for long term trajectory for loss reduction and ensure that the trajectory is adhered to by the Discoms strictly. AT&C loss reduction has the potential of reducing the retail tariff significantly.

A common regulation also needs to be brought in to curtail the losses of DISCOMs. Losses above the prescribed should not be allowed and the gains accruing from over achievement of loss reduction targets should be shared with the consumers. In Odisha, for instance a 10-year loss reduction trajectory has been fixed by the regulator as part of the privatisation strategy.

3.2.11. Other suggestions

All future generation projects, except hydro power projects and nuclear power projects should be set up only through competitive bidding.

The norms for O&M Expenses should be made more stringent by CERC. The norms of interest on working capital should also be reviewed by CERC keeping in view the current realities of decreasing level of PLF resulting in reduced fuel stock requirement, etc.

4. Summary of Recommendations

The recommendations, as suggested by the WG, to address the issues related to retail tariff of electricity have been summarised below:

4.1. External Factors

4.1.1. Coal

- Coal sector be brought under an independent regulator at the earliest.
- Electricity regulators should monitor and suitably regulate SHR and GCV of coal based power plants.
- GCV should not be allowed on "as fired" basis. Rather, it should be based on "as received" basis or "as billed" plus margin of errors (due to transportation and other losses). Third party assessment/measurement of GCV is important. CERC should empanel a list of independent technically qualified agencies/ labs for this purpose.
- There is an urgent need for evolving a proper sampling and measurement mechanism to control the grade slippage and GCV losses.
- Full compensation should be provided by the coal company for surface moisture in coal as it has no heat value. Ministry of Power and Ministry of Coal need to find out a solution to the issue of grade slippage and losses due to moisture content.

4.1.2. Railway freight

- Railways should be brought under an independent regulatory body as they enjoy monopoly position and are still unregulated at present.
- RoE for railways should be regulated.
- Central Government may consider subsidizing railway freight for coal for a distance beyond 750 kms

4.1.3. Clean Energy Cess

- With due regard to the increasing investment in renewable, the rationale for continuation of this cess needs review. There is a strong case for reduction in clean energy cess.
- Proceeds from this cess be ploughed back to the electricity sector to mitigate incremental cost on account of new environmental norms as per contribution made by each State.

4.1.4. New Environmental Norms

- With the implementation of new environmental norms, the cost per unit of energy is certainly going to increase. This increase in cost should be compensated from the clean energy cess.
- The energy cess should be used to reduce retail tariff impact as a result of FGD installation in the thermal plants.

4.1.5. New Norms for disposal and transportation of fly ash

- Proposed norms for disposal and transportation of fly ash will have substantial impact on cost of generation and hence on consumers tariff. It is recommended that the cost of transportation of fly ash be partially borne by the Central/ State Government.

4.2. Internal Factors

4.2.1. High transmission costs

- It is recommended that in future, transmission planning should be based on accurate demand forecasts by discoms and STUs.
- The retail electricity consumers should be compensated for the monetary implications arising due to under-utilisation of transmission assets.
- The Central Government should share the cost of the stranded transmission assets by utilising the clean energy cess.

- Tariff policy provides that tariff of all new transmission projects including state owned projects, costing above a normative threshold limit which shall be decided by the ERCs, should be determined on the basis of a competitive bidding process. All SERCs should decide threshold limit (say, 100 Crore or so) above which projects be selected through tariff based competitive bidding.

4.2.2. Generation assets are also stranded. Old gas plants are too expensive now and fixed costs are being paid without any utilization.

- Government should extend help to discoms to meet the fixed cost of the PPAs associated with the stranded assets.
- The burden of the stranded generation assets should be shared by the Central Government and the State Government respectively in the ratio of 60:40, in line with central plan funding.
- Further, the stranded asset costs should also cover the impact in respect of plants that are under annual maintenance and R&M.

4.2.3. Return on equity allowed to Generation/ Transmission and distribution companies needs to be made more realistic and at par with interest rates.

- RoE for generation and transmission should be linked to the 10 year G Sec rate (average rate for the previous 5 years) plus risk premium subject to a cap as may be decided by appropriate Commission.
- For a discom, the RoE could be fixed based on the risk premium assessed by the State Commission. Income tax reimbursement should be limited to the RoE component only.
- Performance of Distribution licensees has a significant impact on retail tariff for the consumers. Therefore, there is a need to link recovery of RoE with the performance of the utilities, based on the indicators such as supply availability, network availability, AT&C loss reduction .

4.2.4. Impact of depreciation on tariff

- Depreciation rate should be rationalized and the period of initial higher depreciation rate be extended to 15 years from 12 years.
- The rate of depreciation should be 4.3% for the first 15 years based on straight line method, instead of around 5.28% for the first 12 years and the remaining depreciation should be recovered during the balance useful life.
- Accumulated depreciation, over and above debt repayment, should be used to reduce the equity base for RoE after debt repayment is over.

4.2.5. Growing Share of Renewable Energy

- In the large RE segment, hybrid renewable (combination of wind and solar) and renewable with energy storage should be encouraged, which could lead to better utilization of transmission assets.
- Apart from large scale renewable projects, the focus, in future, should be on distributed generation (preferably in agriculture segment) that would minimize the requirement for transmission infrastructure and would help reduce the cost.
- The expenditure to meet statutory requirements (for instance, costs towards meeting environmental norms) should not be passed on completely to the consumers. Instead, the clean energy cess should be utilized to meet these requirements.

4.2.6. Right Energy mix and right mix of long term, medium term and short term PPAs – Best practices

- DISCOMs willing to exit from PPAs of old plants, that have outlived their life or are very costly, should not be tied to BPSA.
- 25 years life of PPAs for new projects contracted through competitive bidding is too long and shorter duration PPAs with exit clause should be promoted. It should also be ensured that the exit clause is not very stringent.

4.2.7. Cost optimisation through greater use of market – Best practices

- There is a lot of scope for reduction of power purchase cost if Merit order dispatch (MoD) is followed strictly and power market and other platforms are used for optimisation of power procurement. This exercise needs to be followed by all the States.
- The Security Constrained Economic Despatch (SCED) framework should be adopted in States for cost optimization, provided it brings benefit to the consumers in terms of overall tariff.
- SLDCs should be given independent status. It should be their responsibility to ensure merit order dispatch of electricity on day ahead and real time basis. Merit order must be prepared by SLDC every month based on the actual fuel prices of last month.

4.2.8. Trading Margin be curtailed

- Trading margin, as stipulated by CERC, can be made more equitable. It should be capped at 2 paise per unit.
- Similar cap can be specified by SERCs and discoms should be directed to adhere to this cap while giving consent to bids for procurement through any trader.

4.2.9. Waiver of water usage charges for Hydro Projects

- The matter of waiver of water usage charges may be taken up by the FOR and MoP with the respective State Governments.

4.2.10. Distribution level efficiency in operation

- There is a significant scope of reducing AT&C losses by better reactive power management as has been adopted in Tamil Nadu.
- SERCs should specify long term trajectory for loss reduction and ensure that the trajectory is adhered to by the Discoms strictly.

- A common regulation needs to be brought in to curtail the losses of DISCOMs. Losses above a pre-specified limit should not be allowed, and the gains accruing from over achievement of loss reduction targets should be shared with the consumers.

4.2.11. Other suggestions

- All future generation projects, except hydro power projects and nuclear power projects should be procured through competitive bidding.
- The norms for O&M Expenses should be made more stringent by CERC.
- The norms of interest on working capital should also be reviewed by CERC keeping in view the current realities of decreasing level of PLF resulting in reduced fuel stock requirement, etc.