POWER GRID CORPORATION OF INDIA LIMITED

(A Government of India Enterprise)

Comments on the CERC's Draft Terms and Conditions of Tariff Regulations 2008 (2009-14)

November 3, 2008

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Regulation-15 : Return on Equity

Issue:

- Lower rate of Return on Equity i.e. 14% provided in the Draft Regulations

Comments:

- POWERGRID has to infuse about Rs. 16,500 crore of equity in the XI plan
- CERC order dated 16.01.2004 in petition n. 67/2003:
  - *"…to provide for a return on equity corresponding to the increase in interest rates.."*
- Considering the increased interest rate, yield of G-sec, other money market instruments like corporate bonds, the inflation and the expected rate of return on investments as compared to those prevailing during 2004, the ROE needs an upward revision.
  - SBI PLR has increased to 13.75% in October, 2008 from 10.25% in March, 2004.
  - Yield of 10-year G-sec. has increased to 7.58% from 5.22% as on March,2004
  - the corresponding yield on corporate bonds increased to 11.15% from 6.07% over this period.
- Maintaining the ROE of 14% will not be sufficient to generate required Internal Resource (IR) to be invested in XI th Plan period.
- **RoE should correctly reflect the present market expectation, and should be computed using CAPM**
- **RoE should be in the range of 18-20%. Even with 18% ROE, the effective rate of return will be 15%(approx) considering no return during the minimum construction period of 3 Yrs.**

RoE Computation using CAPM

- Risk Free rate (R_f): 7.58%
  - 10 year Government bond yield as on date
- Market Premium ***(R_m – R_f):*** 16.9%-17.67 %
  - Scenario 1: CAGR between Jan 1991 and average of daily closing of last one year (1st Oct 07 to 30th Sep 08)
  - Scenario 2: CAGR between Jan 1991 and average of daily closing of last six months (1st April 08 to 30th Sep 08)
- Industry levered beta – 1.09
- RoE –
  - Scenario 1 – [7.58% + 1.09 * (10.09%)] = 18.58%
  - Scenario 2 – [7.58% + 1.09 * (9.32%)] = 17.74%

Cost of equity calculated using CAPM

$k_e = R_f + \beta (R_m - R_f)$

k_e = Cost of equity
R_f = Risk free rate of return
β = equity beta
R_m = Return on the market

Company	Unlevered Beta	Average M.Cap (Rs Cr.)	Weights	Weights* Unlevered Beta
NTPC	0.63	165,675	0.53	0.33
TATA Power	0.95	26,620	0.09	0.08
Reliance Infrastructures	1.01	33,550	0.11	0.11
Neyveli Lignite	1.40	24,610	0.08	0.11
JaiprakashHydro	1.08	3,572	0.01	0.01
PGCIL	0.81	46,261	0.15	0.12
CESC	0.57	5,646	0.02	0.01
Torrent Power	0.85	6,414	0.02	0.02
Unlevered weighted average Industry Beta				**0.80**

Levered Beta : Unlevered Beta[1+ (Industry average DE ratio)* (1-Average effective tax rate)]*

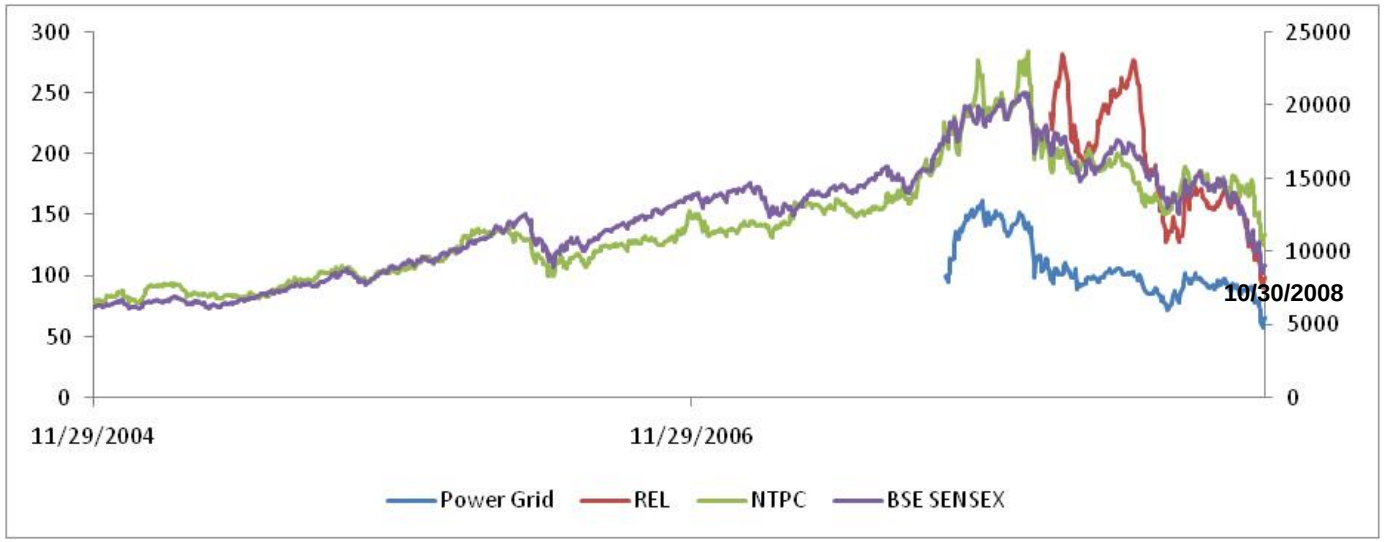
: 0.80[1+ (0.46)*(1-20%)] = 1.09*

Linking RoE to market sentiments may not be correct

CERC Explanatory Memorandum:

"The recent IPO floated by NTPC, PGCIL & Reliance Power shows that even with existing post tax return of 14%, the IPOs were able to create sufficient enthusiasm amongst the investors"

- Enthusiasm shown by investors to subscribe the IPOs may not reflect the correct returns for the sector
- In case of REL, portfolio of projects were inclusive of merchant capacity which was perceived to have higher returns



- Share prices of all companies have been following market sentiments
  - Reflected by the highly correlated share price movement with the overall sensex
  - Same IPOs floated in the current downside scenario may not get fully subscribed

RoE for the sector should be based on the principles of sustainability and future growth outlook through adequate public/private investments

RoE to be allowed during construction period

- The accounting returns allowed by the regulator yield much lower effective returns
  - No RoE currently allowed during construction period.

- The construction period on transmission project varies from 2 to 4 years
  - depending upon the size & complexity of the project.

- **For a project having gestation period of three years, the effective rate of return is merely in the range of 11.5-12 % per annum against the 14% return allowed in tariff.**
  - For a project having a gestation period of three years, to earn an effective rate of return of 18%, the corresponding accounting return after gestation period would be 21.8%.

As an alternative, Hon'ble Commission may allow capitalization of RoE during construction similar to the treatment of IDC.

Regulation-23 : Incentive

Issue

- Linking of Incentive to higher availability without considering the aspect of ageing
- Payment of incentives linked to monthly availability

Comments

- Highly difficult to maintain consistently the availability of transmission system beyond 98%.
- Payment of incentive as also the recovery of transmission charges is linked to the availability
- The proposed incentive is directly proportional to the transmission tariff. As per current estimate this would come down to the level of almost 40% of the prevailing incentive as a percentage of equity.
- **Incentive to the utilities should be higher than the disincentive to keep the utilities motivated**
- **It should be kept as per the existing methodology i.e. % on Equity instead of transmission tariff.**
- **Further, payment of incentive should not be linked to monthly availability**
  - **Will lead to lot of fluctuation in the monthly billing since the availability varies on month to month basis.**
  - **difficult for RPC to issue availability certificate by 3rd or 4th day of every month, i.e. the day on which monthly billing is done.**

Regulation 19 : Operations and Maintenance Expenses

Normalization

Failure of convertor transformers

Normalized No. of Employee for PGCIL = Average of last 3 yrs for all Regions

(Actual Ckt Km & Actual Bay) x Actual per person employees cost each region = Normalized Employee cost

Methodology of CERC for working out the normative O & M Expenses

Normalized Expenses for each Region

Actual Expenses for each Region

Lower of the two considered for norms and all such regional normalized expenses summed

Regression Analysis

Result scaled down by 10%

Proposed average norms for O&M works out on per km, per bay and per 100 MW for HVDC

Regulation 19 : Operations and Maintenance Expenses

Comments

- Normalization of O&M Expenses
  - Till 2004-09 tariff block, actual employee cost was considered in normalization of O&M expenses.
  - In stead of considering either minimum of actual manpower cost or normalized manpower cost, **Commisson should consider actual employee cost based on last five years average.**
  - POWERGRID has no option but to continue with the actual manpower

Year	Actual Manpower (AC TL &S/Stn, HVDC TL.)	Normalised manpower (AC TL, S/Stn & HVDC TL)	Difference
2002-03	3756	2563	1193
2003-04	3641	2730	911
2004-05	3618	2931	687
2005-06	3627	3257	370
2006-07	3832	3539	293

There should also be a true-up on the employee cost specifically after the implementation of the recommendations of the sixth pay commission

Regulation 19 : Operations and Maintenance Expenses

Comments

- Scaling down of expenses by 10%
  - Commission may allow the rates for the year 2006-07 as arrived at applying Regression analysis.

- Escalation in the control period should be at current escalation rate rather than the average of past years

Regulation 19 : Operations and Maintenance Expenses

Comments

- Assumption made by Hon'ble commission regarding segregation of O & M expenses between substations and transmission lines does not reflect actual scenario.
- Actual segregation of O&M expenses for POWERGRID between substations and transmission lines, works out to around 70: 30.
- The same should be considered by the Commission for allowing the O & M expenses.

PARTICULARS	NR		SR		WR		ER		NER		TOTAL	
YEAR	2005-06	2006-07	2005-06	2006-07	2005-06	2006-07	2005-06	2006-07	2005-06	2006-07	2005-06	2006-07
PERCENTAGE OF O&M TO TOTAL : S/S	68%	77%	73%	72%	69%	70%	79%	74%	70%	69%	72%	74%
PERCENTAGE OF O&M TO TOTAL: T/L	32%	23%	27%	28%	31%	30%	21%	26%	30%	31%	28%	26%

Regulation 19 : Operations and Maintenance Expenses

Comments

- Non-consideration of failure of converter transformer under normalized O&M expenses
  - Failure of converter transformer is high all over the world
  - Repairing cost of converter transformers will be always high and in some cases it is to the tune of Rs. 10 Crs.
- Treatment of Insurance Cost
  - POWERGRID has created a Self Insurance Reserve (SIR)
    - appropriation of 0.1% of the gross block as on close of every year
    - Created to meet the future losses arising from uninsured risks
  - SIR covers risks of fire, lightning, explosion/implosion, natural calamity, floods, earth quake, riots, theft etc. but do not cover the risk of machinery break down.
  - Failure of most of the equipment like ICT, Reactor etc is not covered under SIR.
  - As the draft regulations (Regulation 10) doesn't allow for "any additional works/service which has become necessary for efficient and successful operation of the plant.." to be included in the additional capital expenditure post Commissioning, the PGCIL may be allowed to an additional insurance cost to cover failure of equipment.

Regulation:10 – Additional Capitalisation (After Cut-off date)

Issue :

- In the previous regulations the capital expenditure of the following nature actually incurred after the cut off date used to be admitted by the Commission subject to prudence check:
  - (i) Deferred liabilities relating to works/services within the original scope of work;
  - --
  - (iv) Any additional works/service which has become necessary for efficient and successful operation of plant but not included in the original capital cost.

Comments on (i)

- In view of *material reconciliation with contractors, enforcement of warranty clause, unsatisfactory performance of equipments, disputes, etc. certain payments / works* may take place after the cut off date. These items should be allowed as additional capitalization even after the cut off date as these activities are beyond the control of POWERGRID. **Therefore, the provision at 53 (2)(i) of the previous regulations should be restored.**

Regulation:10 – Additional Capitalisation (After Cut-off date)

Comments on (iv)

- Following works not within the scope of original costs also needs to be carried out even after the cut off date
  - Replacement of obsolete /worn out equipment / system
  - Replacement of equipment damaged by accident / breakdown / malfunctioning
  - Safety and security expenses
  - Capital spares
  - Capitalization of cost of installation of new technology.
  - Improvement in efficiency and performance.
  - Further, growth of generation and transmission system has direct impact on system short circuit level.
    - From the short circuit studies, short circuit level at various existing substations will exceed 40 KA by 2012
      - may reach a value of 55-80 KA by year 2020-25.
    - it will be desirable to upgrade the equipment designed for 40 KA in the existing S/S to a higher Short Circuit level for which suitable provision of capitalization of such expenditure in the draft tariff regulation may be considered.
- **The clause 53 (2) under additional capitalization of regulation 2004-09 may be maintained status-quo in Tariff Regulations 2009-14.**

Regulation:28- Normative Annual Transmission Availability Factor

Issue

- High Normative Annual Tr. System availability is proposed :
  - AC system : 98 %
  - HVDC bi-pole links and HVDC Bi-pole links : 95%

Comments

- POWERGRID is facing serious challenges in maintaining HVDC systems at 95% due to various problems like,
  - Repeated premature failure of converter transformers, water leakage problem in valve cooling system, failures of coupling capacity units, wall bushings , thyristors, optodynes etc.
  - HVDC line is also subjected to high level pollution and systems demands frequent cleaning of insulators for higher reliability and grid stability.
- Due to technological intricacy associated with HVDC system, the outage on account of annual maintenance is 7 to 8 days per pole in a year
- As per CIGRE Data published by EPRI in 2007, (compiled for 51 different converter stations across the globe), Av Energy Utilization is 55.% (51.3% for upto 10 years old system) with system availability of 94.32% (93.66% for upto 10 years old system) whereas POWERGRID system are more stressed with.

Regulation:28- Normative Annual Transmission Availability Factor

- For example:

  The average energy utilisation in the recent years in the case of

  (i) **Rihand-Dadri** HVDC System was in the range of 61.18% to 87.86 %.

  (ii) Talcher-Kolar HVDC System was in the range of 68.50% to 74.50 %.

- Since 1997-98, yearly availability of Rihand-Dadri system is below 95% for a number of years.

- In case of Talcher-Kolar HVDC system, the availability was certified less than 95% in 3 years out of 6 years in service.

- The probability of POWERGRID losing even normal tariff in remaining service life of the system is quite likely.

- ***It is proposed that normative target availability of HVDC system may be reduced to 90%***

Regulation-17 :Advance Against Depreciation

Issue

- Depreciation rates of 4.67% is lower than the rates specified in the Companies Act'1956
- No Advance Against Depreciation (AAD) has been provided..
- Residual Life of 10% is considered for the assets

Comments

- The companies/some utilities are preparing their Books of Accounts by providing depreciation as per the Companies Act
  - Tariff Policy has suggested the same depreciation rates to be adopted for tariff computation as in accounts
- The basic assumption in arriving at the proposed rate of depreciation (i.e. 70/15=4.67%) i.e. a loan repayment tenure of 15 years which is not available in the market.
- For POWERGRID, present Door to Door loan period is 15 Yrs including 3 Yrs moratorium.
- With removal of AAD and repayment of loan out of depreciation, considering same maturity period, POWERGRID is to aim at 18 Yrs Door to Door loan period.

Regulation-17 : Advance Against Depreciation

- Presently debt market is not tuned to this type of long term loans. This will aggravate further during the financial crisis as being experienced now.

- Hence if the provision related to Advance Against Depreciation is to be taken out then Commission should ensure that there is no cash flow problems in the initial year and thereby the depreciation rate should be in line with the Companies Act 1956.

- **Depreciation should be allowed upto 95% of capital cost in line with the Companies Act.**

OTHERS

Regulation: 9- Initial Spares as a % of Capital Cost

Issue : As per the draft regulation provision of spares provided are:

- Transmission lines : 0.75 %
- Transmission Substation : 2.5%
- Series compensation devices and HVDC Station : 3.5 %

Comments:

- For A/C lines
  - POWERGRID is facing difficulties even with the current limit of 1.5%
  - **initial spares as a percentage of total capital cost of the project be provided @ 2%**
- For HVDC
  - **it is proposed to keep the initial spares for HVDC as 5%**
    - in case of Rihand-Dadri and Talcher-Kolar HVDC, the cost of spares is to the tune of 4.5-5.5%.
  - number of items are much more in comparison to conventional AC system
  - most of the spares are imported and it takes long lead time for procurement
  - there is a likely chance of early obsolescence of advanced software based technology in HVDC control system.
- For FSC and TCSC
  - In case of FSC and TCSC the limit provided (3.5%) would be sufficient.

Regulation : 11 – Renovation and Modernization

Issue

- The R&M policy proposed are not specific to issues in transmission sector

Comments

- In the case of Transmission projects:
  - Cost / quantity of items to be replaced at one point of time are of small value as compared to generation.
  - Transmission systems are having different equipments
    - replacement of these may be required at different point of time instead of changing all of them at a time.
    - preparation of DPR every time may not be practicable.
    - **POWERGRID may be allowed to approach Commission directly with the cost incurred in replacement of the old system under R&M.**
- **The provisions for R&M in the Tariff regulations should take care the issues related to R&M of transmission projects since it can not be generalized together with generation**

Regulation: 16- Interest on Loan Capital

Issue:

- The sharing of the benefits of re-financing of loans between Beneficiaries and the Utility is proposed in the ratio 2: 1.

Comment

- **The sharing of benefit between the Utilities and beneficiaries should be in the equal ratio.**

Regulation-18 : Interest on Working Capital

Issue:

- Deleting the provision of 1 month O&M as a component from the Working Capital will reduce the IWC.
- Receivables considered only for 45 days

Comment

- The one month O&M in working capital is an essential component since it helps to maintain the project for a month, before the bills are raised.

- The beneficiaries have been allowed a period of 60 days from the date of billing for the payment of bills. The late payment surcharge is levied only after 60 days.

- **In line with the provision of working capital, there is a need to reduce the payment period for the beneficiaries to 45 days for the levy of late payment surcharge or increase the no of days to 60 days and also consider the 1 month O&M as a component.**

Regulation-21 : Recovery of fixed charges

Issue

- Fine tuning to the number of days basis for the billing of transmission charges shall lead to fluctuation on month to month basis.

Comments

- The transmission charges are approved as Annual Transmission Charges, recoverable based on annual availability.
- The monthly transmission charges therefore should be recoverable on prorate basis over twelve month.
- The billing on monthly basis on proposed formula of incorporating monthly availability will lead to fluctuation and also lead to delay in billing, since the availability needs to be certified by RPC.
- The regular bills are paid through letter of credit (LC) which are operated on a fixed date and quantum of LC remains fixed and is revised only twice in a year. **Therefore, the existing system may be retained.**

Regulation-34 : Rebate

Issue:

- Rebate of @2% for payment through LC on presentation of all the bills including bills for FERV & Income tax is too high

Comments

- Rebate is on a higher side vis-à-vis the IWC proposed

the rebate should be reduced to 1.25% equivalent to the surcharge rate.

Regulation-35 : Surcharge

Issue

- Surcharges is proposed to be levied after 60 days of presentation of bills

Comments

- Surcharges @ 1.25% should be after 45 days of presentation of bills

The period for surcharge should be same as considered for Working Capital. Otherwise, 60 days receivables may be considered in IWC.

Regulation- 39 : Tax on incentives

Issue

- Exclusion of tax on incentive from the part of tax to be recovered from beneficiaries

Comments

- The commission has excluded tax on incentive from the part of tax to be recovered from beneficiaries.
- The transmission system is a part of core business
  - Any incentive on it is also a part and parcel of the core business.
  - The same was allowed in the existing block.

Income tax on incentive which is a part of core business should be recoverable from beneficiaries.

Regulation: 42 Application Fee and Publication Expense

Issue

- The application fee as proposed in the new block period is very high.

Comments

- As per the recently notified Regulations on payment of fees, the transmission licensee has to pay an application fee of 0.05% of the total transmission charges annually and another 0.05% as license fee

Name of Company	Installed Capacity/ TRSC	Fees payable Per/annum (Rs Crs)	Total Fee in control period (Rs Crs)	Energy Cost (Rs /Kwh)
NTPC	30,000 MW	6.00	30.00	2.00
POWERGRID	Rs 5000 Crs	5.00	25.00	0.20

- Reduction for 500 MW Generator – 50% (From Rs. 20 lakh to Rs. 10 lakh)
- POWERGRID fees increase – Rs. 5 crore from Rs. 2 crore – a raise of 250%

Nevertheless, the application fee should be recoverable from the beneficiaries, as this is an additional burden.

Comments on Appendix : (Appendix – VI : Para -7 (ii))

Issue: Inclusion of ICTs and shutdown for replacement of assets under deemed availability

Comment

- As per **Appendix – VI : Para -7 (ii)** , the transmission elements under outage due to following reasons not attributable to the transmission licensee shall be deemed to be available, :
  - Shut down of transmission elements availed by other agency/agencies for maintenance or construction of their transmission system.
  - Manual tripping of line due to over voltage and manual tripping of switched bus reactor as per the directions of RLDC.
- It is mentioned that a number of times ICTs are also taken out of service at the instruction of RLDC to stop over drawl of power (Power regulation) or overloading of the system.
  - **Therefore, ICTs also needs to be covered under para 7(ii) along with transmission line and switched bus reactors.**
- **Another category of outages needs to be included in Deemed available category of outages :**
  - **S/D to be taken of any transmission elements under O&M for replacement of assets through additional capitalization/R&M as deemed available.**

Comments on Appendix : (Appendix – VI : Para -9)

Issue

- If the outage of any element causes loss of generation at ISGS then the outage period for that element shall be deemed to be twice the actual outage period for the days(s) on which such loss of generation has taken place.

Comments

- HVDC links like Talcher – Kolar (presently in service) and Bishwanath Charali – Agra (presently under construction) meant for evacuation of huge bulk power
  - In the event of outage of any one of the poles, there will be generation backing down on account of
    - Non-availability of alternate path for evacuation
    - Tripping of transmission elements
    - Shutdown required for planned maintenance
- **POWERGRID is getting penalized due to reduction in availability on account of this outage**
  - **imposing further penalty by doubling the outage period for such cases seems unfair**
- **HVDC links should be kept out of this type of conditions.**
  - **Penalty clause should be removed till alternative AC system is available for full evacuation of power**

Issues not mentioned in Regulations

Issue

- Treatment of Failure of Equipments like ICTS , Reactor (both new and old)

Comments

- For the last few years equipments like ICT, reactors are failing because of
  - either grid condition i.e. failure of ICTs due to improper protection system in SEBs or
  - due to inherent problems in the equipment.
- High restoration time for such equipments
  - Once a 315 MVA ICT fails it takes around 9 months to one year to restore it in case the ICT is repairable
- **In view of these the following needs to be taken care of**
  - **Introducing the concept of deliverability of power**
    - **If the demand is met through the existing ICTs then this outage is not to be considered as attributable to POWERGRID.**
    - **The outage period may be considered as attributable to POWERGRID only when there is load flow restriction.**
  - **Spare transformers may be allowed to be kept one in every region**
    - **cost of the same may be capitalized or**
    - **4% of transformer population may be considered as spare (There are 280 transformer units and 375 reactors units).**

Other Issues

Issue:

- Service life of all substation equipment is considered as 25 years

Comments

- service life of any asset should be based on grid operating conditions
  - equipments are subjected to high level of stress
    - extreme variation of parameters
      - premature failure of equipments specially transformers and other substation equipments.
- POWERGRID's transmission system is inter-connected with utilities system
  - Performance of protection system of utilities needs to be improved.
  - POWERGRID's equipments are getting over stressed leading to early deterioration of the equipments
- During 2004-09, for a number of equipments useful service life was defined as 5 years / 15 years in the Tariff Regulation 204-09.
- **In proposed norms all substation equipments considered as 25 years.**
  - **Life of electronic equipments (PLCC Control and equipments) / batteries are having much less service life.**
- **Useful service life for determination of R&M purpose needs a review to reduce this period and re-consideration of life of assets as provided earlier.**

Other Issues

Issue

- Treatment of Service Tax, Other Taxes and Cess

Comments

- The Service Tax Authorities have issued letters to POWERGRID to categorize Power transmission as taxable service under “Business Auxiliary Services”/”Business Support Services”.
- Similar letters received by other State Utilities
  - Service Tax Authority has demanded Service Tax from M.P Power Transmission Company Ltd.
  - State Transmission utilities in Karnataka, Gujarat, Orissa and Tamil Nadu have also received notices from Tax Authority in this regard.
- In case Power Transmission is categorized as “Business Auxiliary Services”, then the service tax would be applicable with retrospective effect i.e from 2003 onwards.
- The action of the Service Tax Authority is at preliminary stage.
- Since tariff notified by CERC is cost plus, any extra liability imposed by any Statutory authority needs to be reimbursed by the beneficiaries.
- **It is, therefore, necessary to incorporate in the Regulation, a separate and exclusive provision regarding reimbursement by the beneficiaries of any taxes (including service tax), duties, cess etc. imposed on transmission by any Statutory authority.**

Summary

- RoE should be commensurate with the current economic conditions
- O & M expenses should be aligned to actual field data and operational parameters.
- Incentive should be kept as per the existing methodology i.e. % on Equity instead of transmission tariff.
- Existing provision regarding additional capitalization should be retained
- Normative availability for HVDC may be fixed around 90%.
- Depreciation rate may be aligned to Companies Act or AAD should be allowed

Thank you