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Jaipur – 302021.
5th Nov., 14

Sub: Staff Paper On Transmission Planning, Connectivity, Long
/Medium Term Open Access And Other Related Issues.

Dear sir,

CERC has placed on its web site aforesaid staff paper for comments by 10.11.14. All the annexures to said paper has not been placed on web site. I am giving my views on the subject based on the staff paper only.

2. **Considering RE generation also for transmission planning:-** Staff paper is considering above aspects mainly for the conventional power stations. Issues emerging in respect of RE (solar and wind) have been briefly referred at para 5.10.6, 6.4.3.7, 6.6.22, 6.6.29, 7.0(v) and 7.1.13.5 but requisite system studies and commercial aspects have not been discussed. The gestation period for wind and solar renewable energy generating plants is much less than that to create a transmission system for them. Transmission system creation for them should therefore be based on projected generating capacity as conceived for Green Energy Corridor. Number of states are announcing their policies for creation of large capacity of solar power projects / Mega solar parks. With solar projects operating only for part of the day, the scenario likely to emerge will be quite different. For illustration, Rajasthan Govt. has announced its intent to develop 25000 MW solar power plant in next five years. By that time, Rajasthan's peak demand will be about 20000 MW which will be less than solar generation capacity. If plans, as conceived, materialise then during the day entire load of Rajasthan will be met by solar generation and conventional generation will get exported out of the state. During non-sun shine period, power flows will reverse and conventional generation will meet the load of the state. This aspect of daily reversal of power flow with RE generation is required to be considered in system studies, irrespective, of whether alternative-I (of transmission expansion based on Long Term Access /LTA) or Alternative -II (of transmission expansion based on General Network Access / GNA) is considered. The transmission planning system studies has to be based on projected generation and load and should consider peak thermal, peak hydro and normal load scenario without projected solar and wind RE generation and with projected solar and wind generation

3. **Funding of over capacity creation under GNA:-** Under GNA concept, Transmission system shall be planned based on Anticipated Generation and Load. As expressed at para 5.9.5 and 7.4.2, there is possibility of developing

over capacity in inter-state and intra-state transmission system and liability to pay will fall on other users in case generating station does not come up or full generation does not take place due to the generator not able to find beneficiaries. All nature dependant renewable energy sources power plants (viz hydro, wind, solar PP) have low PLF /CUF and in comparison to Load factor of the grid, transmission system created for them remain underutilised.

Further the anticipated growth of RE generation is affected by Govt. policies / regulatory measures (like withdrawl of accelerated depreciation benefits, competitive bidding initiative for wind power plants, non-enforcement of RPO leading to poor sale of REC , etc). On these account creation of overcapacity for RE projects may not be unusual. For conventional power stations , where creation of transmission capacity has been undertaken after signing of TSA & as per LTA applied, there has been underutilisation of transmission capacity and due to difficulty in realisation of stranded cost of transmission ,this burden has been passed on to beneficiaries. Even conventional power plants are subject to risk of non-functioning beyond their control as has been the case for imported coal due to Indonesian Govt. policy, and cancellation of coal block allocations by supreme court decision. Such decisions of competent authority may also lead to under utilisation of transmission capacity with no likelihood of recovery of stranded cost due to force majeure. Thus risk of underutilisation of capacity exists in both scenario of LTA and GNA. Further, the ratio of investment on the transmission capacity created for RE project vis-à-vis that created for conventional projects is likely to increase with more and more stress on RE generation. The creation of over transmission capacity with GNA concept should not therefore be overstressed. With GNA concept adopted for RE generation , the same should in principle apply to conventional power stations. In respect of funding for likely over capacity a clue can be taken from RE projects. It is well known that a large sum has been collected by state nodal agencies for RE in the form of non refundable registration charges for RE project. This concept of non refundable registration charges should be extended to conventional projects also by way of registration / connectivity charges. In case, anticipated unutilised capacity is 10%, then non refundable registration fee or upfront charges can be 10% of transmission cost of Rs.1.00 crores / MW i.e Rs.10 lakhs / MW payable with application for connectivity. This sum should be passed on as grant to CTU / STU for the creation of requisite transmission system. Thus underutilised capacity will be funded and with grants not subject to interest charges, depreciation and ROE, there will be liability of only O&M expenses on beneficiaries, which will be quite small.

4. With reference to para 5.9.1 it is stated that GNA is not in contravention to provisions of non – discriminatory open access , prescribed vide section 38(2)(d), 39(2)(d) and 40©, as open access is subject to availability of transmission facility or operational constraints vide section 9(2) and 42(2) and GNA is to foresee them in advance and create transmission system.

5. New Generating stations should not have choice for GNA or no GNA ,as implied vide para 5.8.1(iii). New Generating stations likely to be directly connected to CTU transmission system (as envisaged vide para 5.5.3(1)) and also those likely to be connected to STU substation should mandatorily be governed by GNA to avoid situation as discussed vide para 3.13.6. Registration fee ,to be passed on to CTU, may be for power stations connected to CTU's substation and those connected to next STU's substation or within say 50 kms of CTU's substation and rest may be passed on to STU

6. **GNA and Dedicated lines/ shallow connectivity:-** The concept of GNA and dedicated / exclusive transmission lines for a power station should be the similar to that of RE power plants. That is, GNA will apply for the corridor so developed. Beyond . such corridor , transmission lines will be dedicated lines of generating station or licensee or having shallow connectivity. Power stations should preferably be within few kms (say 50 kms) of such corridor). This will enable transnission system planning along potential areas of generation and potential load centres. On this account underutilisation of transmission capacity so created will be much less.

7. **Transmission charges recoverable on exit :-** The existing regulation ,reg.6.6.1(b) provides that a Long-term customer who has not availed access rights for at least 12 (twelve) years – such customer shall pay an amount equal to 66% of the estimated transmission charges (net present value) for the stranded transmission capacity for the period falling short of 12 (twelve) years of access rights. The sample calculations at para 7.1.13.6 indicate that for the investment of Rs.100 crores, 12 years charges(NPV @ 9.5%) will be Rs.120.59 crores and charges , payable on exit on / before CoD, will be 66% of the same , that is, Rs. 79.59 crores. It amounts to recovering 88.5% of depreciable cost of transmission line and substation bay. It can not be conceived that substation bay equipment can not be put to use at that or other substation for new generation projects and loads. If that is considered, this provision amounts to recovering entire depreciable cost of the line as if line can not be used at all for entire useful life. This is inconceivable, Generation capacity in the country (vide fig. 1) has grown at more than 7% p.a. in last three five year plan and load has followed the same growth. With such growth, transmission lines will get utilised in short time by new generating station or load itself. Under such scenario, to charge the generator for 12 years' charges is quite high.

Further, generating stations are project financed and a company failing to establish a power plant can not have funds to effect such payment. And they will resort to seeking relief under force majeure and raising other disputes for adjudication. On account of these and difficulties in determining stranded capacity (vide para 4.6.6, 5.2.3, 5.3.1 and 5.9.15.3) or generator having disappeared (vide para 6.6.10), there has been no / much lower recovery. It is therefore necessary that this is reduced and a part thereof is taken upfront in cash and part secured against BG. It is stated that the additional surcharge as per section 42(4) of the Electricity Act is towards stranded cost of distribution system. Considering the aspect of load growth and alternate use, RERC had considered such stranded cost for a period normally not exceeding one year (vide reg.16(4) of RERC (Terms and Conditions for Open Access) Regulations, 2004. Compared to distribution assets, utilisation of transmission assets may be at lesser pace and 2 years of transmission charges may be adequate. Short period will force CTU /STU to be more vigilant and take timely measures to effect economy. A two years period may be adequate to either have such system utilised by growing load or new generating stations established in the region or CTU /STU altering their plan to establish new transmission system or shifting substation equipment. In addition, up front connection charges may be 6 month's transmission charges as security and 18 month's charges as construction cum operational period bank guarantee.

8. Provisions of the National Electricity policy , tariff policy etc:- With reference to para 6.6.35, it is stated that the provisions of National Electricity policy and tariff policy are guidelines and not binding on commission as per section 79(4) and commission on recorded reasons can deviate. As such, transmission planning, based on GNA, is not prohibited by these policies. Commission may also advise Government for effecting appropriate changes in these policies under section 79(2) and address CEA for similar advise under section 73(a).

9. Tariff implications of unutilised capacity of Competitive bidding:- One of the aspects raised against GNA (vide para 6.6.9) is that the investment in transmission projects now being done through competitively bid projects which once take off cannot not be slowed down, held back and once commissioned, the tariff needs to be given. It is submitted that staff paper is considering existing competitive bidding process as unalterable. Although, such alterations is not within the purview of the Commission but the commission can under sec. 79(2) advise the Govt. to effect changes in competitive bidding guidelines. In case an asset is not required to be created , then its curtailment or paying cost of its abandoning, will be economical then to create it and pay transmission charges. Although competitive bidding is tariff based, one such change can be that capital cost of transmission line, substation and IDC on which bid is based

needs to be obtained with breakup and in case of alterations tariff should be subject to adjustment in proportion to revised capital cost worked out as per the alterations sought. Such an provision, will permit slowing down of the transmission project, energising transmission line at lower voltage (with higher voltage substation bays slowed down or abandoned), alterations in number of circuits of transmission line, transformation capacity of substation and payment for abandoned works.

10. General :- Transmission planning has to consider congestion in the network. Therefore, Load generation balance as well as congestion data needs to be published vide para 6.5.3(a). Access to network data, published by CTU and POSOCO, should be available to any person and not through username and password (vide para 6.5.3(k)) as it may restrict the availability of published data. Unscrupulous access can be prevented by making it priced with on line payment of price.

11. Alternative -1(LTA):- Construction bank guarantee where no augmentation is required is proposed to be equal to 7 year's zonal transmission charges (vide para 7.1.2) . Zonal charges appears to mean PoC charges. The lowest PoC charges are 12.31 paisa/kwh for injection as well as drawl. For normative thermal generation of 6.813 million kwh/Mw/year (at 85 %PLF with 8.5% aux. consumption as per CERC tariff regulations 2014), PoC charges will be Rs 0.839 millions per MW per year for injection as well as drawl (total Rs. 1.677 millions per MW/year). For 7 years, it will be Rs.11.74 millions / MW against the capital cost of Rs.1 crores / MW. In case where augmentation is desired, it is proposed to recover the capital cost. Both cases are equivalent and recoverable amount quite high. This risk should be shared by transmission utility as with delay in construction of power station, some corrective measures (by way of slowing down of on going works or curtailment of new projects) can be taken by them. Recovery of 2 years transmission charges , which will atleast, be equal to 33% of capital cost of transmission system may be adequate as brought out above. The provisions at para 7.2 should consider delay by generating company taking into account the delay in transmission system.

12. The charges / LD payable by a generating company in case of abandoning of the project, is proposed to be NPV of transmission charges for 12 years(vide para 7.3) . As stated above, this is almost the cost of the transmission system to be created and as such it amounts to not utilising the assets for its entire life or immediately effecting its disposal. This is not likely to be case. Due to growth in load demand, new generation coming up in the system, curtailment or reshuffling of substation equipment which may be effected by CTU / STU to future projects, stranded transmission capacity can be utilised and in

consideration to the same, this is quite harsh. As stated, 2 years of transmission charges may be adequate.

13. **Alternative -2 (GNA) :** Provisions of para 7.4.5 is not clear in respect of BG corresponding to GNA. Prima facie, it appears to be the cost of creation of transmission system corresponding to connectivity. This will be very high and will affect the project cost. If it is so, provisions of para 7.4.10.3, will mean recovery of the entire capital cost of transmission system (corresponding to connectivity) as if that transmission system will not be utilised for its entire life. This is not conceivable. BG should be for lower amount. Considering upfront payment, it may be for 18 months of transmission charges as per PoC charges for injection and drawl.

14. views on various questions.

(i) **Question No. 1:** Whether Connectivity should be retained as a separate product : (A) Yes (B) No

Views:-

Connectivity and initial LTA should be equal to injected capacity (installed capacity less auxiliary consumption as per CERC regulations less the captive load for CPP). Connectivity to be permitted against non-refundable registration / connectivity charges @say Rs.0.15 lakhs per MW (towards creating over capacity for GNA) and cash security deposit of sum equal to say 12 month's charges @ POC (injection) + POC (drawee) at normative PLF as per CERC regulations applied to injected capacity and construction cum operational BG for equivalent amount. This coupled with mandatory GNA will avoid misuse of connectivity provisions by IPPs (vide para 4.1.1.1 and 4.1.2.1). Initially drawee may not be known so it can be taken equal to POC (injection). LTA to be finally granted based on identified drawee entity and in totality to be equal to injected capacity, subject to constraint, if any, for drawing point. 50% of cash deposit towards drawee may then be adjusted progressively against usage by drawee based on actual usage.

(ii)**Question No. 2(a):** If Yes, what are in your opinion are the advantages of Connectivity as a separate product ?

Views:-

Theoretically, with GNA concept, Connectivity (by declaring injecting capacity i.e installed capacity less auxiliary consumption), LTA equal to connectivity is implied and LTA can be dispensed with (vide para 5.10.3). However, in practice, the transmission system developed based on GNA may not have adequacy of transmission in all directions. LTA will therefore has to be sought / altered from time to time when beneficiary (under LTOA, MTOA or STO) is identified / altered to enable transmission utility to indicate

constraints, if any. This will enable system augmentation for such constraint. As such, Connectivity and LTA will be required to be separate.

(iii) Question No. 2(b) : If connectivity is retained as a separate product, then what whether is (it) should be free or transmission charges should be borne by generator or drawee entity which is applying for connectivity ?

Views:

Connectivity should not be free but at upfront non refundable and upfront security deposit and BG as suggested above. Non refundable part will be utilised for creating GNA capacity. Security deposit to be adjusted against POC (drawee) charges as per actual usage. Drawee is not initially identified so its transmission charges are initially to be provided by generator to be adjusted as per drawee submits cash security and BG. For the period of delay in commissioning of generating station vis-a-vis envisaged transmission system, charges payable may be based on deemed normative usage (as suggested above). For transmission constraint due to part commissioning of transmission system, normative usage charges for recovery to be corresponding to unrestricted LTA.

(iv) Question No. 2(c): Whether for connectivity, only transmission charges corresponding to connectivity transmission system should be charged or some part of Grid transmission charges (25% as proposed) should also be charged ?

Views:

As stated above transmission charges to be based on PoC charges which can be in two parts: part I - as per actual usage (POC (injection) payable by generating company and PoC (drawl) by drawee and part-II difference, If any, between minimum of normative usage charges for Poc(injection) + Poc(drawl) and actuals as per part -I, payable by generating company on monthly cumulative basis.

(v) Question No. 3: If no, what is in your opinion are the disadvantages of Connectivity as a separate product?

Views:

Disadvantages are Generating companies applying for LTA less than injectable capacity and thereby transmission capacity (built up based on generating capacity) remaining unutilised.

(vi) Question No. 4: Bank Guarantee -What should be amount of sufficient construction bank guarantee to safe guard against the risk of stranded asset in case generating project fails to get commissioned?

(a) Is existing construction bank guarantee amount(Rs 5 lakh per MW) sufficient when transmission cost is about Rs 1 cr per MW.?

(b) Is proposed bank guarantees equivalent to cost of transmission line is sufficient?

(c) Is proposed bank guarantees are very high?

Sub para-wise view:-

Amount of construction cum operation period BG has been discussed at para 6 and 11 and views on question nr. 1.

(a). BG of Rs.5 lakhs per MW is not adequate. Transmission charges for first year will be Rs.19.22 crores per MW per year (as per figures indicated at para 7.1.13 of staff paper) as such BG of 5 lakhs / MW will cover Liquidated damages only for a quarter.

(b) BG equal to cost of transmission will be too high and will place heavy burden on the generating company in respect of providing margin money to secure BG and also for BG charges.

(C) Transmission charges of 24 months will be more appropriate. 25% of it as cash security deposit and 75% in the form of BG.

(vii) Question No. 5: Bank Guarantee- What should be amount of sufficient construction bank guarantee to safe guard against the risk of stranded asset or transfer of liability to other consumer in case generating project wants to exit/ downscale LTA after commissioning (Please give justification for your views)

- (a) NPV equivalent to 12 year transmission charges
- (b) NPV equivalent to 7 year transmission charges
- (c) X Rs per MW of installed capacity –One time charge
- (d) Five years Average Injection and withdrawal charges
- (e) Five years Average injection charges only

Views:

Amount of upfront connectivity charges, security deposit and BG has been discussed above vide para 3,6,11 and views on question (i) and (vi). Sub para wise views are as under:-

(a) And (b) it will be very high as discussed above.

© In view of billing being effected based on PoC charges BG based on PoC charges will be more appropriate. BG to be based on injection at normative PLF and auxiliary consumption.

(d) will be high as it will represent about 84% of capital cost.

(e) will be high as it will represent about 42% of capital cost.

(viii) Question No. 6: Delay in Commissioning :-In case of delay in generating unit(s) /project:

- (a) Date of LTA should be firm and no relaxation should be provided
- (b) If information of delay is provided sufficiently in advance some staggered relief can be granted
- (c) Issue should be decided mutually between generating company and transmission licensee subject to condition that no burden is transferred to other users

Views:

(a) Relaxation to be given if transmission system is not ready. Relief should correspond to transmission system not created.

- (b) In case of information of delay is provided sufficiently in advance, there is feasibility of effecting changes in transmission system and its commissioning. This benefit should be passed on to the generating company. However, this will be difficult to work out and as such LD may be based on delay in commissioning date of power plant as per information supplied and revised schedule of transmission system agreed after mutual discussions.
- (c) Revised scheduled date of commissioning of transmission system should be decided mutually between generating company and transmission licensee and waiver / relaxation in LD for a period as stated at (b) above to be subject to condition that no burden is transferred to other users.

(ix) Question No. 7: Shallow Connection vs Deep Connection:

- (a) what is your view on shallow connection vs deep connection
- (b) Shallow connection should be permitted to only Renewable generation or to both Renewable and conventional generators.
- (c) Under shallow connection system how transmission planning will be done and who shall bear the Grid level transmission charges

Views:-

- (a) Transmission cost, instead of Rs./ kW, can be linked to POC charges as per usage subject to it being not less than PoC charges at normative generation, so as to be in line with National electricity policy and tariff policy.
- (b) Shallow concept to be followed. This will bring parity between RE generation and conventional generation. As per staff paper (vide 6.6.24), shallow connectivity concept has been adopted in majority of foreign countries.
- (c) Dedicated transmission system to be created by CTU or STU who have provided connectivity.

(x) Question No. 8:

- a. Whether you are a injecting entity or drawee entity or both?

Reply: None.

(xi) Question No. 9: GNA

- a. What is your opinion on General Network Access (GNA) proposed by CEA ?
- b. Whether it should be adopted for transmission access and transmission charges ?
- c. What should be bank guarantees and Exit Charges under GNA mechanism?
- d. Whether it would be possible to plan transmission system to give assured access in all directions?

Views:

- a. GNA is appropriate as in other concept also practically there is no compensation for stranded capacity.
- b. For both as suggested above.,

- c. Bank guarantee as suggested above. Exit charges to be two year's POC charges as suggested above.
- d. In some cases, depending on margin available in transmission system, it may be feasible initially (i.e. at the time of commissioning of generating station). But in all cases, it may not be feasible. Congestion so experienced will lead to system augmentation and thereafter (say in 2-3 years' time) access in that direction may become feasible.

(xii) Question No. 10: Transmission Planning:

- a. How Transmission planning in the country needs to be reviewed under present condition to take care of future need of robust transmission system?
- b. Whether there is need for a separate Regulation for transmission planning to make it more participative?
- c. Whether transmission planning should mandatorily make margins available for short term power market?
- d. Whether transmission system planned by CEA /CTU need to be adequately explained from cost benefit point of view?
- e. Is there requirement of making submission of information related to transmission planning legally binding?

Views:

(a) Transmission planning may be based on GNA concept considering (i) proportion of Generation from conventional and RE generation projects as per relevant legislation, RPO specified by state regulatory Commissions and National Electricity policy. (ii) Potential sites of generation to be considered with guiding principle of having specified percentage (say 50%) of energy requirement to be met by (Central / state /Independent) power stations within the state. (iii) Based on this trunk transmission lines and other transmission system to be evolved with due consideration of congestion already experienced. These are to be published for public comments and observations of stakeholders and public to be considered.

(b). CEA under section 73(a) has functions and duties, inter alia, of short-term and perspective plans for development of the electricity system for the optimal utilisation of resources to subserve the interests of the national economy. CEA under section 177(1) can make the regulations for the same. The Central govt. can give directions in respect of such planning under section 75(1) and 3(4)(b). These legislative provisions are adequate. CEA should frame the regulations with provisions for periodic review and Central Govt. can also give directions for modifications, if any, required therein.

(c) No. Transmission system is designed considering standard voltage levels, standardised conductors and standard rating of transformers. This will give built in margin for short term transaction. 'N-1' contingency, considered in transmission system design, will give additional margin for short time transaction when there is no outage.

(d) Cost benefit analysis may be part of planning and should be reported. Where, it is not possible (for example, reactive compensation, metering, communication, etc) , Least cost criterion should be the governing criterion.

(xiii) Question No. 11 : Utilization of Congestion charges

- a. Whether proposal of using congestion charges to reduce the long term ISTS transmission charges acceptable ? Or
- b. Whether Congestion charges are to be utilized for creation of specific transmission assets for relieving the congestion? How should this be treated- as equity, loan or grant?

Views:

- a. No.
- b. Congestion charges should be utilised for reliving the congestion.

(xiv) Question No.12:- Transmission corridor allocation for Power market:

- a. Whether participants of Power exchanges should be allowed to participate in e-bidding for transmission corridor? or
- b. For power market development, certain quantum of corridor may be reserved for power market with all participant of Power Exchange sharing the transmission charges of reserved corridor .

views:

- a.. As all participant of power exchange will not be providing for the capacity creation partly funded by registration fee, so transmission corridor for firm power transfer / LTA may not be subjected to e-bidding.
- b. Transmission system have very high availability. Transmission have in-built margin as stated vide views on question 10©. There is quite spare available capacity (with 'N-1' contingency) , for which MTOA and STOA can be provided. Power market should operate on margins available in transmission system after considering LTA. Only to this extent, there be e-bidding of corridor for medium and short term open access.

Yours faithfully



(Shanti Prasad)

Ex-chairman, RERC