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To
Shri A.S. Bakshi
Hon'ble Member Technical
CERC

Subject: Draft amendments to connectivity, LTA and MTOA regulations and Sharing of ISTS charges regulations dated 28 Oct 2016 – Comments/ suggestions

Dear Bakshi Saheb

I take this opportunity to express my appreciation of the way forward found by the commission to address some of the pressing and long due issues in the subject regulations, and to align them with the ground realities.

Obviously, the focus of the proposed amendments is to resolve the issues faced by the commission in the course of day to day proceedings. However, there are issues, no less important, which may not have surfaced in the legal proceedings or may not have been brought to your kind notice by the implementing agencies appointed by the commission for various reasons.

I am going to highlight a few issues, I am well versed with as independent consultant and based on my exposure to policy and regulation making and from a national perspective for your kind consideration in the proposed amendments or in subsequent amendments, as the commission in its wisdom deems fit.

I wish to emphasize that I am generally supportive of all the proposed amendments and appreciate the ingenuity of your engineering team in crafting the amendments maintaining continuity with change for the better.

Comments on amendments to connectivity, LTA and MTOA regulations

a) Whether the creation new ISTS capacity would be holistic to cater to the aspirations and clearly emerging trends in the market as observed in the explanatory memo? Please appreciate that at present ISTS planning process is loosely regulated in the absence of CERC regulations with no procedure having been notified by CEA or CTU. So, what is happening? Two things are happening simultaneously – Generation end planning is driven by LTA and Connectivity quantum as per CERC regulations. Historically, the drawl/ state end planning of ISTS was done in a composite manner based on a long-term PPA. Now ISTS caters to generators coming with long-term PPA (like NTPC, NHPC, UMPPS etc) and IPPs not having long-term PPA or providing a target region as required by the regulations, but actually the target is to sell where ever there is a customer. Target, as per legal dictionary, is just intent and not a commitment. The requirement to provide target region as a basis for ISTS planning is a misconception, because power flows by laws of physics and not according to commercial contracts. Electrons are not apples, they are fungible. Please remove the requirement of target region from the regulations.

b) Since 2007 or 11th Plan, CEA started overall planning based on market scenario, and the methodology is recorded in the CEA Transmission Plan document. Around 2007, market volume started picking up and many states started sourcing seasonal power from the market. Under the concept of coordinated planning and promoting optimal use of national power resources and the mandate of Section 38 of the Act, CEA and CTU started enhancing the import capacity of states through ISTS based on their rising demand from ISTS, without insisting for long-term PPA for creation of additional import capacity. When additional import capacity is created for a state on its request, no PPA or Connectivity or LTA application is sought, in other words no commitment to service the sunk investment in ISTS is taken. In the parlance of regional standing committee meetings for transmission planning, the creation such new transmission capacity is called 'system strengthening'. As a matter of fact the ISTS capacity addition has the following drivers:

- LTA of ISGS
- 'System strengthening' for enhancing the import capacity of a state/region
- Building IR links for developing a national grid
- Removing congestion and improving performance

I urge the commission to direct CTU, or an independent agency as suggested by Mata Prasad Committee, to ascertain and declare the existing power import capacity provided by ISTS to every state. CTU should declare the same after every round of 'system strengthening'.

c) ISTS planning is not simply LTA driven, as assumed in the Explanatory Memo. It appears that a minimum 7 year LTA is a sort of commitment to service sunk investment in ISTS to a large extent and there is a commercial signal to opt for LTA. I support the reduction in LTA period from 12 to 7 years.

I also support 1-5 year MTOA tenure. Why not consider standard one year MTOA contract from Jan to Dec or April to March up to a total of five years. That will streamline power bidding in the market and optimize the utilization of transmission.

Comments on Sharing of ISTS charges regulations

a) Treatment Unutilized LTA

It is very rightly decided and nicely explained that for a person/generator having **target LTA**, can avail and will pay normal MTOA/ STOA rate until his LTA bucket is consumed fully in MW term. I fully support. By selling or buying power in the market a person having target LTA can fully utilize his LTA quantum in MW terms and pay normal rates. If a person does not want to make a 7 year LTA commitment, he will have to pay higher rates. I agree. However, ISTS planning must be done holistically for all types of transactions; that mandate must come in the Planning Code of IEGC. That planning or system strengthening should always be done to remove congestion, whether the cause of congestion is LTA, MTA or STOA or PX.

Now kindly consider the case of a drawing state/discom. The average DC of ISGS is about 80%. So on average, the holders of point to point LTAs are able to utilize LTA up to 80% or even less during off peak hours/season. But when they go to the market for buying or selling power they have to shell out money for STOA etc. even if such quantum is within the contracted LTA. This is not justified on the principle of equity. The treatment of point to point LTA and Target LTA should be equitable. Up to the contracted MW quantum of LTA, the holder of point to point drawl LTA should be charged only the differential amount on account of availing STOA/PX. Secondly, there should be no levy of point of injection charges for export so long as a discom is a net buyer through ISTS. In other words, **the STOA charges paid by a discom up to contracted LTA (whether point to point or for a target LTA) should be offset against LTA liability.**

b) Treatment of OA consumers:

CERC has a history of taking States to task for denying ISTS-OA to embedded consumers on frivolous grounds. OA consumers are generally embedded in STU system. Many are getting part time open access. They never know when the STU will deny or curtail their open access permission. They are not in a position to take LTA for ISTS. The states discourage open access by diktat and by levy of high cross subsidy, additional subsidy and standby charges as indicated in the table below. It may be pointed out that vision of the legislature and the 2003 Act is to provide open access to ultimate consumers as means of exercising choice and creating competition in supply. In fact ISTS open access is a shallow open access. OA at the consumer level needs to be encouraged to allow them to source cheaper power and facilitate Indian industries to become globally competitive and face the onslaught of Chinese goods in India. Industrial consumers have to be encouraged to develop manufacturing and create jobs. Commission should review the matter and charge normal rate for industrial OA consumers even without LTA.

Industrial Tariff and OA charges- [Rs]									
State	**Uttarakhand**	**MP**	**Gujarat**	**AP**	**DNH**	**Haryana**	**Telangana**	**Karnataka**	**Rajasthan**
Industrial Tariff (Rs/kWh)	**4.13**	**5.10**	**5.99**	**5.68**	**4.07**	**7.69**	**6.15**	**6.25**	**7.30**
OA Charges (Rs/kWh)	**1.07**	**2.12**	**2.68**	**2.64**	**1.12**	**3.91**	**1.90**	**1.62**	**1.88**
PoC	0.22	0.12	0.22	0.27	0.12	0.27	0.17	0.27	0.27
STU charge	0.15	0.06	0.12	0.11	0.00	0.33	0.11	0.08	0.30
Wheeling charge	0.04	0.27	0.14	0.04	0.12	0.71	0.02	0.14	0.11
Cross Subsidy Surcharge	0.47	1.44	1.45	2.07	0.22	1.57	1.44	0.86	0.13
Additional Surcharge			0.49		0.47	0.87			0.80
Other charges	0.05	0.08	0.08	0.08	0.11	0.08	0.08	0.08	0.05
RPO	0.15	0.14	0.19	0.08	0.08	0.08	0.08	0.19	0.22

c) I have carefully gone through progressive amendments in Sharing Regulations. I think, some inconsistency creeped in the beginning. We were caught between the maintaining

the sanctity of the LTA and finding cost allocation factors according to a realistic validated demand on ISTS by PoC method. The generation is adjusted to converge with the demand in the simulation study. The demand decided by the validation committee based on trend analysis is taken as a kind of *a priori* for sharing calculations. That is fine. But after that, as per the Annexure-1, the nodal rate is calculated **not** by dividing the nodal charge with peak demand/injection (earlier average) given by the validation committee, **but by an extraneous figure**, which has nothing to do with the PoC methodology, that is, Approved LTA or Approved LTA+MTOA. I think the Annexure-1 is in conflict with the main regulations and the definition of the Approved injection or drawl.

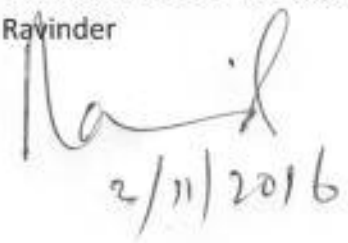
As a result of the above distortion, the rates get distorted. Let us consider a merchant generator of 1320MW, happily selling with STOA by paying @ 135% of normal rate as per the proposed amendments. It's LTA plus MTOA is zero. The cost sharing factors would be calculated based on past trend of injection approved by the validation committee and agreed by the generator. Its share/ transmission charge would be found out by PoC methodology. Now divide this nodal charge with zero (LTA+MTOA) and one would get infinite rate. Multiply the infinite rate with one MW STOA and one gets an infinite STOA bill. This divergence was not there in the original Sharing Regulations issued by the commission.

Further, when the realistic/historically extrapolated quantum of injection/ drawl is synthetically reduced to LTA+MTOA for computing the PoC rate so that bill number-1 is made by multiplying the PoC rate with quantum of contracted LTA+MTA so that **CTU is fully paid for**, it results in those leaning more on STOA paying at a lesser effective rate as compared to the declared POC rate. Greater the ratio of STOA/(LTA+MTOA), greater the benefit. This anomaly needs to be corrected. Yes, the person pays for STOA at a rate nearly equivalent to LTA rate, but gets a refund *pro-rata* to its LTA. Hence, it results in lower effective PoC rate for the one, leaning more on STOA. I have done an approximate theoretical analysis (Attached) and it indicates that distortion occurs particularly when the ratio of STOA-MW/(LTA+MTOA)MW is different for different DICs. I feel the anomaly can be resolved by calculating PoC drawl rate with the maximum drawl approved by the validation committee. Bill no. 1 may be as per LTA+MTA. It will then result in under-recovery, which will be made up by STOA recovery. There will be little surplus or deficit which can be carried forward or settled every quarter. Nowadays, almost the entire STOA amount is refunded *pro-rata* to LTA holders. Even 135% STOA rate may not to be of much help as it would simply result in higher refunds, because in any case the ARR of

CTU is fully paid by bill no.1 (through LTA+MTOA). If validation committee figure is considered, it will result in lower PoC rates and rectify the situation, I think.

Best wishes and since regards

Ravinder



Trans Customers A, B, (Names)

Appvd LTA+MTA of A, B = L_a, L_b (MW)

Appvd STOA S_a, S_b (MW)

Appvd PoC Rate R_a, R_b (Rupees/MW)

Revenue Reqd = $L_aR_a + L_bR_b$

Addl. STOA Income = S_aR_a, S_bR_b

Refund to A = $\frac{L_a}{L_a+L_b}(S_aR_a+S_bR_b)$

Refund to B = $\frac{L_b}{L_a+L_b}(S_aR_a+S_bR_b)$

Net amt paid by A = $L_aR_a + S_aR_a - \frac{L_a}{L_a+L_b}(S_aR_a+S_bR_b)$

Net amt paid by B = $L_bR_b + S_bR_b - \frac{L_b}{L_a+L_a}(S_aR_a+S_bR_b)$

Effective POC Rate of A = $\frac{1}{L_a}\left[L_aR_a + S_aR_a - \frac{L_a}{L_a+L_b}(S_aR_a+S_bR_b)\right]$

Eff POC Rate of B = $\frac{1}{L_b}\left[L_bR_b + S_bR_b - \frac{L_b}{L_a+L_b}(S_aR_a+S_bR_b)\right]$

Eff. POC Rate A = $R_a + \frac{S_a}{L_a}\cdot R_a - \frac{1}{L_a+L_b}(S_aR_a+S_bR_b)$

Eff POC Rate B = $R_b + \frac{S_b}{L_b}\cdot R_b - \frac{1}{L_a+L_b}(S_aR_a+S_bR_b)$

1. Change in rate w.r.t. Applicable R_a and R_b

% Change in Rate of A = $\frac{\text{Eff Rate} - R_a}{R_a} \times 100$ $\frac{R_a - \text{Eff Rate(A)}}{R_a} \times 100$

$= \left(1 - \frac{\text{Eff Rate A)}}{R_a}\right) 100$

$= \left[1 - \frac{1}{R_a}\left(R_a + \frac{S_a}{L_a}\cdot R_a - \frac{1}{L_a+L_b}(S_aR_a+S_bR_b)\right)\right] 100$

$= \left[1 - 1 - \frac{S_a}{L_a} + \frac{S_aR_a+S_bR_b}{R_a(L_a+L_b)}\right] 100$

$= \left[\frac{-S_a}{L_a} + \frac{S_a}{L_a+L_b} + \frac{S_bR_b}{R_a(L_a+L_b)}\right] 100$

Similarly % Change in rate of B $= \left(1 - \frac{\text{New Rate B}}{R_b}\right) 100$

$= 1 - \frac{1}{R_b}\left[R_b + \frac{S_b}{l_b} \cdot R_b - \frac{1}{l_a + l_b}(S_a R_a + S_b R_B)\right] 100$

$= \left[1 - 1 - \frac{S_b}{l_b} + \frac{S_a R_a}{R_b(l_a + l_b)} + \frac{S_b}{l_a + l_b}\right] 100$

$\left[-\frac{S_b}{l_b} + \frac{S_a}{l_a + l_b} \cdot \frac{R_a}{R_b} + \frac{S_b}{R_a + l_b}\right] \times 100$

Assume $R_a = R_b$

% Change in $A = 100\left[-\frac{S_a}{l_a} + \frac{S_a}{l_a + l_b} + \frac{S_b}{l_a + l_b}\right]$

$= 100\left[-\frac{S_a}{l_a} + \frac{S_a + S_b}{l_a + l_b}\right]$

% Change in $B = 100\left[-\frac{S_b}{l_b} + \frac{S_a + S_b}{l_a + l_b}\right]$

Say $l_a = 5000$ MW $S_a = 500$ MW

$l_b = 5000$ MW $S_b = 2500$ MW

% Change in Rate of $A = 100\left[-\frac{500}{5000} + \frac{3000}{10000}\right]$

$A = 100\left[-\frac{1}{10} + \frac{3}{10}\right] = \frac{2}{10} \times 100 = +20\%$ (increase)

% Change in Rate of $B = 100\left[-\frac{2500}{5000} + \frac{3000}{10000}\right] = 100\left[-\frac{5}{10} + \frac{3}{10}\right]$

$= 100\left[-\frac{2}{10}\right] = -20\%$ Reduction.

Say $l_a = 5000$ MW $\quad s_a = 1000$ MW

$l_b = 6000$ MW $\quad s_b = 1200$ MW

• ↑ change in $R_a = \left[-\frac{s_a}{l_a} + \frac{s_a+s_b}{l_a+l_b}\right] \times 100$ (↑ A)

$= \left[-\frac{1000}{5000} + \frac{2200}{11000}\right] \times 100$

$= 0\left[-0.2 + 0.2\right] \times 100 =$ No change

• ↓ change in $R_b = 100\left[-\frac{s_b}{l_b} + \frac{s_a+s_b}{l_a+l_b}\right]$ (↓ B)

$= 100\left[-\frac{1200}{6000} + \frac{2200}{11000}\right] = 100\left[-.2+.2\right]$

$=$ No Change

1. The Ratio of $\frac{STOA}{LTA+MTOA}$ is the predominant factor in reducing the effective rate.

2. In addition the one who uses more STOA avoid STOA charges in off season

3. The gain of STOA user would be reduced if it does not schedule its LTA, which is unlikely.