Major assumptions/observations for TTC/ATC for FY 2015-16

1. The monthly TTC/ATC for 2015-16 has been calculated. Major inter-regional lines considered under various months is as given below:

Sl No	Month	Commissioning of Major Transmission Corridor
A	Aug 2015	• Gwalior – Jaipur 765kV S/c line(July'15)
B	Sep 2015	• Gwalior – Jaipur 765kV S/c line (2nd ckt) (Aug'15)
C	Oct 2015	• Dharamjayagarh – Jabalpur 765kV D/c line (Sept'15) (with this line, LTA for Orissa Stage-I IPPs would be operational) • Narendra - Kolhapur 765kV D/c line to be operated at 400kV (Sept'15) • Aurangabad – Sholapur 765kV D/c line (Sept '15)
D	Jan 2016	• Champa – Kurukshetra 800kV HVDC bipole line with terminal capacity 3000MW
E	Mar 2016	• Kudgi Generation (U#1) of 800MW

   The list of new ISTS lines along with expected commissioning schedule in 2015-16, considered in the study is at **Annexure-I**.

2. The load generation balance data for the 2015-16 condition is not readily available in RPC websites; however the same has been worked out after extrapolation of the LGBR data published by CEA for 2014-15 time-frame, considering the load growth as per 18th EPS (revised) published by CEA.

3. Export/import for the regions has been considered based on LTAs and allocations from generating stations expected to be commissioned by that time.

4. Transmission Interchange Limit Calculation function (TLTG) in PSS/E has been used for estimating the maximum allowable power transfer through the flow gates. The function TLTG works by uniformly increasing generation in one area (study system) and decreasing generation in the other area (opposing system). The incremental allowed capacity over and above base case is determined.

5. Powerflow on Mundra-Mohindergarh HVDC bipole has been considered as 2000MW.

6. Before commissioning of Gwalior-Jaipur 765kV S/c line(Aug 2015), One unit of Vindhyachal-IV(1x500 MW) and 2 units of Rihand-III (2x500 MW) generation have been considered connected in Northern region, however the Rihand-III (2x500 MW) and Vindhyachal-IV(1x500 MW) generation have been accounted in NR and WR regions respectively. In this case, the power flow in Vindhyachal HVDC back to back has been considered as 250MW from NR to WR.

7. With the commissioning of Gwalior-Jaipur 765kV S/c line, Rihand-III (2x500MW) and one unit of Vindhyachal-IV (1x500MW) have been considered connectedin WR and also accounted for in WR.In this case, power flow in Vindhyachal Back-to-Back HVDC has been taken as 500MW (WR to NR).

8. With commissioning of Gwalior-Jaipur 765kV 2xS/c lines in Aug'15, the TTC for WR-> NR corridor increases in Sept'15. However, with commissioning of Dharamjaygarh – Jabalpur Pool 765kV D/c line in Sep'15, the LTA of Odisha Phase-1 IPPs would be operationalized from Oct'15 onwards, which results in increase in TTC on ER->NR corridor and in net import capability of NR but reduction in TTC on WR->NR corridor.

9. Maximum permissible loading considered for Sholapur-Raichur 765kV 2xS/c and Gwalior-Agra 765kV 2xS/c lines under N-1 for various time-frames is as follow:

Month	**Commissioning of additional major transmission line**	**Permissible loading limit**
A. Sholapur – Raichur 765kV 2xS/c line		
UptoSept'15	-	2000MW (under base case and N-1 contingency)
Oct'15 onwards	Aurangabad-Sholapur 765kV D/c line &Narendra-Kolhapur 765kV D/c line to be operated at 400kV (Sep'15)	2500MW per ckt under N-1 contingency
B. Gwalior – Agra 765kV 2xS/c line		
UptoJuly'15	-	1250 MW (per ckt under base case)
Aug'15 onwards	Gwalior - Jaipur 765kV S/c (Jul'15)	2500MW per ckt under N-1 contingency

10. The limit of the other interregional 765kV lines has been considered as 2500MW per circuit under N-1 contingency. The loading limits of all the400kV lines are the thermal limits.

11. During calculation of TTC in ER-NR and WR-NR corridor, sometimes the limiting constraint on Farakka – Malda 400kV D/c line (n-1) was observed depending on load generation balance as well as dispatch of Farakka and North Bengal/Sikkim/Bhutan generation project. As informed by POSOCO, constraint at Farakka-Malda is taken care by radial operation of Malda-Dalkhola 220kV line as well as radial operation of Farakka-Malda 400kV line with the opening of Malda-Purnea D/c line one after another whenever the loading of Farakka-Malda D/c line crosses 550MW. Accordingly, in the present study, the constraint due to Farakka – Malda 400kV D/c line (n-1) has not been considered while calculating TTC in the ER-NR and WR-NR corridor.

12. From studies it is observed that WR–>SR TTC gets reduced with the progressive commissioning of units at Kudgi (NTPC) in SR (3x800MW). A reduction of TTC by 200MW with 1st unit, 450MW with 2nd unit and 750MW with the 3rd unit is envisaged. Tentative schedule of Kudgi units as indicated by NTPC is Unit-I: Mar'16, Unit-II: Sep'16, Unit-III: Mar'17. Hence, only 6140MW (6890-750) (WR-SR: 3490MW) would be available for grant of LTA/MTOA for power transfer to SR. The balance quantum of 750MW is proposed to be utilized under STOA based on generation at Kudgi.