CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 30/MP/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member

Date of Order : 28th September, 2016

In the matter of

Grant of Connectivity as per Regulation 8 (2) and 8 (4) of the Central Electricity Regulatory Commission (Grant of Connectivity, Long-term Access and Medium Term Open Access in inter-State transmission and related matter) Regulations, 2009 and Regulations 4 (2) and 6 (6) of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007

And
In the matter of

National Load Despatch Centre
Power System Operation Corporation Limited,
B-9, Qutab Institutional Area, Katwaria Sarai,
New Delhi- 110016 **….Petitioner**

Vs

1. Central Transmission Utility
   B-9, Qutab Institutional Area, Katwaria Sarai,
   New Delhi- 110016

2. Delhi Transco Limited
   Shakti Sadan, Kotla Marg,
   New Delhi- 110002

3. Haryana Vidut Prasaran Nigam Limited
   Shakti Bhawan, Sector-6, Panchkula Distt.,
   Ambala, Haryana- 134109

4. Rajasthan Rajya Vidyut Prasaran Nigam Limited
   Vidyut Bhawan, Janpath,
   Jaipur- 302005, Rajasthan

5. Uttar Pradesh Power Transmission Corporation Limited
   7th floor, Shakti Bhawan,
   14, Ashok Marg, Lucknow, UP

6. Punjab State Transmission Corporation Limited
PSEB Head Office, The Mall,
Patiala, Punjab

7. H.P. Power Transmission Corporation Limited
Ellersite Building, Himachal Pradesh,
Government Secretariat,
Shimla- 171002

8. Power Transmission Corporation of Uttarakhand Limited
Vidyut Bhawan, Saharanpur Road,
Majra, Near ISBT, Dehradun- 248001

9. Power Development Department,
Jammu and Kashmir, Grid Substation complex,
Janipur, Jammu

10. UT of Chandigarh,
Electricity Operation Circle,
U.T. Secretariat,
Sector-9-D, Chandigarh- 160017

11. Gujarat Energy Transmission Corporation Limited
Sardar Patel Vidyut Bhavan, Race Course,
Vadodara- 390007

12. Madhya Pradesh Power Transmission Corporation Limited
Block no. 2, Shakti Bhawan,
Rampur, Jabalpur- 482008

13. Maharashtra State Electricity Transmission Company Limited
HSBC Bank building, M.G. Road, Fort,
Mumbai- 4000001

14. Chhattisgarh State Power Transmission Company Limited
Raipur , Chhattisgarh

15. Electricity Department
Government of Goa,
3rd floor, Vidut Bhavan,
Tiswadi, Goa- 403001

16. UT Dadra and Nadar Havelli, Electricity Department,
DNH Power Distribution Corporation Limited
Dadra and Nagar Havelli, Silvasa- 396230

17. Daman and Diu, Electricity Department
Plot no. 35, OIDC Complex, near fire station,
Somnath, Nani Daman,
Daman and Diu- 396210

18. Transmission Corporation of Andhra Pradesh Limited
Vidut Soudha, Kharatabad,
Hyderabad- 500082

19. Karnataka Power Transmission Corporation Limited
Corporate office, Kaveri Bhavan,
K.G. Marg, Bangalore-9

20. Tamil Nadu Transmission Corporation
144, Anna Salai
Chennai – 600 002, Tamil Nadu

21. Kerala State Electricity Board
Vaidyuthi Bhavanam, Pattom
Trivandrum-695 004, Kerala

22. UT of Puducherry
Chief Secretariate, Law De Lauriston St, Puducherry

23. Orisha Power Transmission Corporation Limited
Corporate Building, Bhoi Nagar, Bhubaneshwar

24. Bihar State Electricity Board
Vidyut Bhavan,
Bailey Road, Patna – 800 021

25. Damodar Valley Corporation,
VIP Road, Bidhannagar, Kolkata-700054

26. West Bengal State Electricity Distribution Corporation Ltd.
Vidyut Bhawan, Bidhannagar, Block-DJ, Sector-II, Kolkata-700091

27. Jharkhand State Electricity Board
Engineering Building, Dhurwa Road,
Ranchi-4, Jharkhand

28. Power Department
Government of Sikkim,
House No. 1, Power Secretary, Sonam Gyatso Marg,
Gongtok, Sikkim-737101

29. Transmission Planning and Monitoring Zone Department of Power
Govt. of Arunachal Pradesh, Itanagar- 791111

30. Assam Electricity Grid Corporation Limited
Bijulee Bhawan, Guwahati- 781001, Assam

31. Manipur Electricity Department
Electricity Department
Manipur, Keisampat, Imphal

32. Tripura State Electricity Corporation Limited
Banamalipur, Agartala- 799001, Tripura

33. Power and Electricity Department
Government of Mizoram,
Aizawal-796001, Mizoram

34. Department of Power
Government of Nagaland,
Kohima-797001 **…Respondents**

35. Central Electricity Authority
Sewa Bhawan, Sector-1, R.K. Puram
New Delhi- 110066 …**Proforma Respondents**

Following were present:

Shri V.K. Agarwal, NLDC
Shri S.S. Barpanda, NLDC
Ms. Jayantika Singh, NLDC
Shri K.V.S. Baba, NLDC
Shri Ashok Pal, PGCIL
Shri R.C. Chakraborty, MPPTCL
Shri Hitesh Tiwari, MPPTCL
Shri R.C. Kaundal, Advocate, HPPTCL
Shri DP Sharda, HPPTCL
Shri Sachin Rawat, PTCUL
Shri Alok Shankar, Advocate, Essar Power

ORDER

The petitioner, National Load Despatch Centre, has filed the present petition seeking directions to the respondents to ensure safe and secure operation of the grids at all times. In support of its contention, the petitioner has submitted the following:-

(a) The petitioner had filed Petition No. 225/MP/2012 seeking amendments to certain provisions of the Central Electricity Regulatory Commission (Grant of Connectivity, Long-Term Access and Medium-Term Open Access in Inter-State Transmission and related matters) Regulations, 2009 (Connectivity Regulations) in order to address the problems arising out of the tendency of

certain generators to supply power through medium term open access and short term open access instead of seeking long term open access. The petitioner, vide order dated 25.10.2012 in the said Petition was granted liberty to approach the Commission with concrete proposals to make any regulations or for amendment of any regulations which were considered necessary to enable the petitioner to discharge its statutory functions under the Electricity Act, 2003.

(b) In the 17th meeting of the Central Advisory Committee of the Central Electricity Regulatory Commission held on 20.3.2013, the issues relating to connectivity and open access were discussed and it was recognized that existing Connectivity Regulations required some changes. Subsequently, NLDC vide its letters dated 30.4.2013 and 28.11.2013 addressed to the Commission, reiterated the need for amendment of the Connectivity Regulations.

(c) A concept paper on General Network Access (GNA) prepared by the Central Electricity Authority was discussed in the meetings of Standing Committee on Transmission Planning held on 23.12.2013 (NR), 26.12.2013 (SR and WR) and 3.1.2014 (ER and NER). The concept paper on GNA sought to streamline the issues related to planning and sharing of transmission charges and connectivity to the grid.

(d) The Standing Committees on Transmission Planning have been constituted for each regional grid, comprising of representatives of STUs, CTU, CEA and Member Secretary of respective RPCs. The transmission system planning for the inter-State Transmission System (ISTS) is done by the CEA and CTU, in a coordinated manner.

(e) Since the IPPs/Merchant Plants have been/are being granted connectivity, without commensurate transmission system to evacuate full generation, the secure operation of the power system is affected.

(f) As per Regulation 8(2) of the Connectivity Regulations, Nodal Agency is required to process the applications in consultation with other agencies involved in inter-State Transmission System and STU and to carry out the necessary inter-connection study specified in the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 (CEA Connectivity Regulations).

(g) As per Regulation 8(4) of the Connectivity Regulations, the applicants for LTA and all inter-State transmission licensees including CTU are required to comply with the provisions of the CEA Connectivity Regulations.

(h) Regulation 6(6) of the CEA Connectivity Regulations provides for inter-connection studies. As per Regulation 4(2) of the CEA Connectivity Regulations, the new connections shall not cause any adverse effect on the grid. Moreover, the grid shall continue to perform with specified reliability, security and quality as per the CEA (Grid Standards) Regulations 2010 (CEA Grid Standards Regulations). Regulation 3(1)(f) of the CEA Grid Standards Regulations provides that the grid system is capable of withstanding the contingencies without experiencing loss of stability.

2. The petitioner has submitted that the following difficulties have been experienced after grant of connectivity to the generators in accordance with the Connectivity Regulations which come into effect from 1.1.2010:

(a) Some of the generators have taken connectivity but have not availed LTA.

(b) Some of the generators have taken LTA for less quantum compared to their installed capacity.

(c) LTAs granted to some generators are yet to become effective as they are linked to commissioning of certain transmission systems.

3. The petitioner has submitted that in most of the above cases, constraints in evacuation of power from the generating stations are faced in the absence of commensurate transmission system. In this regard, PGCIL vide its letter dated 30.8.2012 addressed to Secretary, Ministry of power, expressed its concern about generators taking connectivity only or LTA for part capacity, and highlighted the issue of mere grant of connectivity without augmentation of the transmission system. The petitioner has further submitted that before notification of Connectivity Regulations, Ministry of Power apprehended difficulties in system operation by grant of connectivity of part capacity. Therefore, on 12.8.2008, meeting of the Coordination Forum, constituted by Government of India under Section 166(1) of the Electricity Act, 2003 was held for smooth and coordinated development of the power system in the country. The petitioner has submitted that the interim connectivity has been granted to the entities pending commissioning of the ultimate transmission scheme. Such temporary connectivity or the final connectivity has been granted through Loop-in-Loop-Out (LILO) of the main arterial line of the existing network. The following constraints have been observed with such an arrangement:

(a) LILO portion is constructed, owned, operated and maintained by the generating station connected to the ISTS. Such a generating company is not

bound by any Performance Standards set forth for transmission licensees mandated by the Commission (i.e. for all ISTS licensees). Though outages of the LILO portion affects the generating station, however a greater consequence is that the main arterial line of the network gets broken, thereby creating a constraint.

(b) Due to LILO, the line length increases. However, in certain cases, addition of commensurate reactive power compensation does not take place, which has an impact on the fault levels as well as voltage regulation.

(c) The transfer capability is also adversely affected in certain instances. The connectivity through LILO becomes quasi-permanent and continues for years together. Generally, LTA becomes effective after commissioning of regular transmission system, including pooling station. Therefore, the generators provided with connectivity through LILO arrangement continue to evacuate through the LILO lines and sell power under short term open access.

4. The petitioner has submitted that sometimes constructions of associated intra-State transmission systems (including sub-stations) get delayed. In order to facilitate evacuation of power, the concerned generators are connected to inter-State transmission system, leading to high loading and insecure operation of the grid. The petitioner has explained the situation with the help of two examples as enumerated below:-

(a) The primary evacuation system for Tiroda generating station in Maharashtra (intra-State, being developed by Adani Power Ltd.) is 2x765 kV Tiroda-Koradi-Akola-Aurangabad lines. However, these lines are yet to be commissioned

and for the past couple of years, power is being evacuated through Tiroda (Adani) - Warora (MSETCL)-Wardha (PGCIL) 400 kV D/C line. Further, 400 kV Warora-Chandrapur D/C (intra-State) has been commissioned recently providing an alternate evacuation path for Tiroda generating station. However, 765 kV transmission lines are yet to be commissioned and as a result, system is insecure as per n-1 criteria.

(b) Evacuation system for Kawai generating station in Rajasthan (intra-State, being developed by Adani Power Ltd.) consists of 400 kV Kawai-Chhabra S/C and 400 kV Kawai-Anta D/C transmission lines. Anta sub-station is to be further connected to Phagi sub-station through 2x765 kV lines. However, in view of delay in commissioning of Anta and Phagi 765 kV sub-stations, Kawai has been connected directly to Bassi sub-station of PGCIL through Kawai-Anta 400 kV, Anta-Phagi (765 kV charged at 400 kV) and Phagi-Bassi 400 kV lines. Therefore, a direct line of more than 300 km from Kawai to Bassi has been commissioned without any line reactor. Though Kawai is also connected to Chhabra through a 400 kV S/C line, the system is insecure as per n-1 security criteria.

Therefore, before grant of any connection to the ISTS network, detailed inter-connection studies proving adequacy of transfer capability must be conducted. In certain cases, LILO could be essential. However, in general, it is an issue of grid security.

5. The generators provided with connectivity through LILO arrangement continue to evacuate the power through the LILO lines even after commissioning of the concerned pooling station and do not construct the dedicated transmission system.

Certain developers are granted connectivity with a stipulation that System Protection Scheme (SPS) has to be installed to take care of contingencies. SPS is also not a part of the planning criteria. The generators are coming forward for obtaining connectivity through LILO and are seeking permission to draw start-up power/injection of power. Such request is discussed in the meetings convened with CEA, CTU, POSOCO and the generator obtains the facility of connectivity/ drawl /injection of power.

6. The petitioner has submitted that at the planning stage, i.e. before granting connectivity, the inter-connections with the grid needs to be studied in a detailed manner, as being undertaken around the world and compliance to standards are pre-requisites for reliability. All concerned should comply with the provisions of Connectivity Regulations and CEA Connectivity Regulations in all time horizons and study reports should be made available by them on the public domain.

7. In the above background, the petitioner has made the following prayers:

(a) STUs may be directed to plan and construct transmission system for intra-State generators and they should refrain from leaning on ISTS for evacuation of power from intra-State generators.

(b) The Central Transmission Utility (CTU), the nodal agency for grant of connectivity to ISTS, may be directed to:

(i) Review all connectivity granted to ensure that the CEA Standards are followed;

(ii) Stop granting connectivity through interim LILO arrangement and the connectivity already granted through interim LILO arrangements may be shifted to final arrangements.

8. After admission, notices were issued to the respondents to file their replies. The petitioner was directed to submit the following information:

(a) List of LILOs granted and dates on which these have been granted.

(b) Operational difficulties being faced by POSOCO at each such location due to injection of power by the generator without complying with the CEA Grid standards Regulations.

(c) Whether the issue regarding operational difficulty was brought before TCC/RPC in respective regions including the remedial measure suggested by POSOCO.

(d) Reasons for allowing injection of power from the generating station which have not complied with CEA Standards and the actions taken against such generating stations.

9. CTU was directed to submit the (a) details of implementation of LILO and start-up injection of power; (b) whether requisite inter-connection studies were made before granting such connectivity and the results were made available to concerned organizations; and (c) one such study of generator, which is connected through LILO.

10. The petitioner, vide its affidavit dated 7.7.2014, has submitted as under:

(a) With regard to grant of connectivity, the petitioner has submitted that the generator sought interim arrangements citing delay in completion of dedicated transmission line and for availing start up power and facilitation of test synchronising, for a small period. CTU's role is at the later stage to provide connectivity to the generators for such facilitation. In certain cases, interim connectivity is granted by CTU through LILO arrangement, clearly mentioning that this is a temporary arrangement and requesting the generators to revert back to original system. Most often, the generators continue with the interim arrangement for years together and in certain cases, they are not making efforts to complete the dedicated transmission system.

(b) In the past few years, the number of interim LILO connectivity has gone up phenomenally and the drawal of start-up power through LILO is accommodated and facilitated by the system operators. However, when a large number of generators in the same area (e.g. Chhattisgarh, Odisha, etc.) start injection of power through insecure connection from multiple units at the same generating station, it gives rise to a grave security threat. At this point, there is no provision for interim connectivity in the Connectivity Regulations.

(c) The culmination of certain weak and insecure connectivity as a whole can cause a disaster. Each of the connectivities has to be secure and tested and the system as a whole also needs to be tested. Interplay between the different weaknesses can accentuate the problem.

(d) The contingencies can be taken care by implementing the System Protection Scheme. However, SPS cannot be substituted for the planning process.

(e) While granting LTA, CTU is required to comply with certain conditions, including commissioning of identified transmission system and connectivity to Pooling Station etc. to ensure that the system is capable of evacuating the required quantum of power. Since these checks are not carried out in the case of LILO arrangements, it is resulting into deficiencies.

(f) Since connectivity has been obtained through LILO arrangement, and some power is getting evacuated, there is no compulsion for the generator to complete the dedicated line. In case, the line does not get completed, there is a perverse incentive as "transmission charge liability" for LTA would start thereafter.

(g) The petitioner has placed on record the list of LILO granted and date of grant of connectivity.

(h) The following operational difficulties are being faced due to LILO connectivity:

(i) In certain cases**,** LILO has been granted by CTU through LILO of arterial line of the existing network and Loop-In-Loop-Out (LILO) portion is constructed, owned, operated and maintained by the entity getting connected to the ISTS, mostly the generating company which is not bound by any Performance Standards set forth for transmission

licensees mandated by the Commission (i.e. for all ISTS licensees). Since outages of the LILO portion do not affect the generating company, a greater consequence is that the main arterial line of the network gets broken, thereby creating a constraint.

(ii) In certain cases, n-1 criteria is not satisfied. For example, till commissioning of Rangpo sub-station, interim connectivity was provided to Chuzachen by LILO of 132 kV Gangtok-Melli transmission line. The system was not n-1 secure and cascade tripping was observed frequently.

(iii) In certain cases, the line length goes up, thereby adding to reactive power management problem.

(iv) Sometimes transfer capability goes down due to generators connected through LILO arrangement. For example, interim connectivity of JITPL to ISTS was through the LILO of 400 kV Angul-Bolangir line. As there is Fixed Series Compensation at Jeypore end of the line, this gave rise to concern on possible sub-synchronous resonance. Synchronisation and testing of unit-1 of JITPL was facilitated by by-passing series compensation at Jeypore, which is vital for power transfer to Southern Region through Gazuwaka HVDC.

(i) Since the interim connectivity provided through LILO is not capable of evacuating full quantum of the generating station, Regulation 6(6) of the CEA Connectivity Regulations was violated.

(j) In the absence of connectivity charges, there is defective development of the transmission system. The connectivity is an intermediate phase to facilitate connectivity to small capacity generators such as renewable energy sources which may be extended for a limited period to those generators, who are in the process of identifying long term beneficiaries.

(k) With regard to operational difficulty being projected before TCC/RPC in respective regions including the remedial measure, the petitioner has submitted that the connectivity issues are discussed in RPC Fora, only to the extent, of making the inherently unreliable system reliable provision of SPS or any conditional operation.

(l) With regard to the reasons for allowing injection of power from the generating station which have not complied with the provisions of the CEA Grid Standards Regulations and the actions taken against such generating stations, the petitioner has submitted that such interim arrangement are being allowed as fait accompli, as the system is being made available for operation, which has been implemented after approval from the Standing committee for Planning and CTU.

11. CTU, vide its affidavit dated 7.7.2014, has submitted as under:

(a) Under the Central Electricity Regulatory Commission (Open Access in Inter-State Transmission) Regulations, 2004 (Open Access Regulations, 2004), there was no separate concept of connectivity for grant of long term open access, and connectivity was provided along with Long Term Open Access. Since the concept of connectivity as a separate product from open access

was introduced only in the Connectivity Regulations, therefore, the transmission system for immediate evacuation as well as transfer of power to the beneficiaries was planned simultaneously. In certain cases, where the generation projects were expected to come up earlier than the planned evacuation system, interim arrangement through LILO of existing line was planned to facilitate connection of generator to the grid till final system in consultation with all stakeholders, namely CEA, regional constituents and RLDC. However, while granting LILO, it was clarified that with the interim arrangement, power can be transferred only through STOA based on the margin available, and LTA would be effective only with the complete evacuation system.

(b) The LILO cases referred in the present petition were planned as per Open Access Regulations, 2004 for grant of long term open access along with interim arrangement wherever required after carrying out necessary studies and was finalized after discussion with CEA/ developer/ constituents/ RLDCs in the meetings of Standing Committee/ RPC.

(c) The concept of connectivity was introduced in the Connectivity Regulations to facilitate testing and commissioning of generation project and it does not entitle for any injection of power into the grid without STOA/MTOA/LTA. The connectivity is granted after the information regarding the quantum, location, type, etc. of the generator is gathered. However, as the power transfer from the generator may be required through short/medium/long term access, the detailed data of the generation project is gathered through CON-4 prior to the physical connection. When the generator applies for LTA/MTOA, detailed

system studies for adequacy of the transmission system are conducted as per planning criteria. In case of STOA application, studies are conducted by POSOCO before grant of Short Term Open Access.

12. The petitioner vide its affidavit dated 25.7.2014 has submitted that CTU continued to grant connectivity through interim LILO arrangement, even after the Connectivity Regulations came into force. As per Regulation 6 (6) of the CEA Connectivity Regulations, the transmission system capability has to be seen even for connectivity and not only for LTA/MTOA. Therefore, transmission system capacity should be assessed by CTU before granting connectivity, to determine whether the transmission system can accommodate such inter-connection, without compromising security and reliability of the grid.

13. Replies to the petition have been filed by the Ideal Energy Projects, SESA Sterlite Ltd., TANTRANSCO, Essar Power MP Limited, Haryana Vidyut Prasaran Nigam Limited, Jayprakash Power Venture Ltd., GMR Kamalanga Energy Limited, KSK Mahanadi Power Company Limited, Lanco Amarkantak Power Limited and Chhattisgarh State Power Transmission Company Ltd which have been discussed briefly as under:

(a) Ideal Energy Projects Limited (IEPL), vide its reply dated 24.6.2014, has submitted that CTU granted connectivity to Ideal Energy Project Limited through 400 kV D/C transmission line from Wardha to Mauda with an establishment of Loop-In-Loop-Out (LILO) near the generating station involving distance of about 14 km. The LILO was established and commissioned in December, 2012. All the legal documentation in regard to the conveyance/flow of power on the transmission line and LILO connectivity

are complete. The connectivity through LILO is maintained by CTU till such time the intra State transmission line, namely Koradi-Wardha 400 kV D/C transmission line of Maharashtra State Electricity Transmission Company (MSETCL) Limited is commissioned. IEPL has further submitted that the construction and commissioning of the intra-State transmission line of MSETCL are getting delayed on account of right of way problem and non-availability of forest clearance, etc. IEPL has submitted that it is an existing user of the inter-State transmission line of CTU, namely Wardha-Mauda transmission line including the LILO connectivity. The LILO connectivity to the generating station duly satisfies the standards notified by the Central Electricity Authority. IEPL is ready and willing to convert the LILO arrangement, already granted to it for a regular transmission arrangement by CTU to enable the above conversion to a permanent transmission arrangement.

(b) SESA Sterlite Ltd. (SSL), vide its reply dated 28.7.2014, has submitted that the detailed survey from LILO tapping points to PGCIL pooling station has been completed and the survey report has been prepared in this regard. The detailed Bill of Quantity has been prepared and floated to the vendors for Techno Commercial offers. Section 164 approval is yet to be obtained from the Government of India, Ministry of Power. SSL has submitted that forest diversion is required for around 14.64 hectares of land and in this regard, application has been filed with PCCF office, Bhubaneswar. Construction work would be started after obtaining the forest diversion clearance. SSL has submitted that construction of dedicated line to 400 KV Jharsuguda sub-station is dependent on the clearance from the MoEF/Forest Department. The

construction of the dedicated line would commence only after obtaining the necessary forest diversion clearance and the connection with Jharsuguda sub-station will be ensured. Adequate measures are being taken to construct bays at Jharsuguda pooling station to expedite the construction process. SSL has sought extension of present interim arrangement up to completion of dedicated lines with Jharsuguda sub-station.

(c) TANTRANSCO, vide its letter dated 26.6.2014, has submitted that joint load flow study, wherever necessary, is being conducted with CEA and PGCIL for the State owned generators and for private generators who have applied for connectivity to STU and Associated Transmission System (ATS) is planned. The ATS should be submitted in the Standing Committee on Power System Planning for Southern Region (SCPSPSR) for approval and clearance. After obtaining clearance and on completion of the ATS, the generator would be permitted to evacuate power.

(d) Essar Power MP Limited (EPMPL), vide its reply dated 18.7.2014, has submitted that the LILO arrangement of one circuit of 400 kV line between the Vidhyanchal and Korba STPS was conceived and agreed between the EPMPL and CTU, which was to continue till the commissioning of 400 kV Mahan TPS to WR pooling station (near Sipat) and the power transfer was affected through short term open access depending on the availability of transmission capacity. EPMPL has further submitted that CTU granted Long Term Access (LTA) for its 1200 MW generating station situated at Mahan, Sidhi District Madhya Pradesh. The LTA was granted with Mahan Power Plant as injection point and beneficiaries in WR region. However, due to non-

completion of Mahan-Sipat line, EPMPL is presently evacuating its power under short term open access through the LILO arrangement of one circuit of 400 kV line between the Vindhaychal and Korba STPS. The transmission licensee, Essar Power Transmission Company Ltd (EPTCL) is executing four transmission lines and sub-stations, out of which, three have achieved COD. EPMPL is stated to have requested PGCIL vide its letter dated 23.6.2014 to connect the Vindhaychal-Korba line with new Vindhaychal pooling station at Khamaria which would improve reliability and to grant long term access to EPMPL.

EPMPL vide another affidavit dated 6.2.2015 has submitted that in the 9th meeting of the constituents of WR held on 30.7.2007, the interim LILO arrangement for RPMPL was agreed to by all stakeholders. The arrangement would continue till the commissioning of 400 kV Mahan TPS to WR Pooling station (near Sipat) and power transfer would be affected through short term open access depending on the availability of transmission capacity. EPMPL has further submitted that since the connectivity on LILO basis is given to the generating stations only after its technical approval and assessment of available space in the existing transmission system, the allegation that on account of LILO mechanism, the existing transmission system becomes vulnerable for breakdowns and other faults in the transmission line, is not tenable. EPMPL has stated that all grid operations have to be coordinated to ensure grid safety and reliability and the same shall be applicable, whether connectivity is granted through a LILO arrangement or through a dedicated line.

(e) Himachal Pradesh Power Transmission Corporation Ltd (HPPTCL), vide reply dated 19.7.2014, has submitted that it has undertaken a number of schemes to lay down intra-State transmission lines as per the approved master plan by the respective authorities. HPPTCL has further submitted that wherever possible, it prefers dedicated transmission line. However, due to typical geographical conditions, severe limitations on the transmission corridor, to minimize disturbance to environment/ecology by avoiding huge fruit trees cutting involved and also to preserve the precious flora and fauna, LILO of ISTS becomes a necessity and cannot be avoided. Therefore, CEA/CTU have planned transmission system for different basins of the State of Himachal Pradesh and planned and opted for LILO of ISTS in certain cases. These plans have been duly approved by the Standing Committee on Power System planning of the Northern Region.

(f) Jayprakash Power Venture Ltd.(JPVL), vide reply dated 25.7.2014, has submitted that its 1320 MW Jaypee Nigrie Super Thermal Power Plant was granted LTA as per the provisions of Open Access Regulations, 2004 for transfer of power with dedicated transmission system, namely Jaypee Nigrie STPP-Satna 400 kV D/C (High capacity) line which traverses through difficult terrain including forest areas and hills. However, the line could not be competed due to delay in grant of forest clearances. Accordingly, JPVL requested for interim arrangement till the availability of dedicated line. The matter was discussed in the 14th LTA and 16th meetings of WR constituents held on 13.5.2011 and 9.5.2012 respectively in which interim arrangement was agreed for JPVL. On 8.4.2013, an agreement was entered into between JPVL and PGCIL. Accordingly, on 16.5.2013 LILO was carried out and power

was extended to Nigrie project on 23.5.2013. JVPL has further submitted that it has implemented Special Protection Scheme (SPS) which was confirmed by WRLDC on 2.5.2014 and 28.6.2014. JVPL has further submitted that it is making efforts to complete the identified dedicated transmission line, i.e. 400 kV D/C Nigrie-Satna transmission line, to match the unit schedule and is ready for commissioning. JVPL vide its letter dated 22.7.2014 had requested WRLDC to grant permission to charge the line and normalize the LILO.

(g) GMR Kamalanga Energy Limited (GKEL), vide its reply dated 30.7.2014, has submitted that on 24.2.2010, PGCIL and GKEL signed the BPTA for supply of 800 MW power from Phase-1 of 1050 MW generating station. As per the BPTA, GKEL has developed 400 kV D/C transmission line from the generating station to Angul pooling station, and PGCIL has to develop LILOs of Jeypore Meramundali and one circuit of Talcher Meramundali 400 kV lines along with the main evacuation scheme. GKEL has submitted that in terms of the BPTA, these LILOs would help in evacuation of power before commissioning of Angul sub-station and provided for better grid connectivity as well as reliability and security of power supply. Therefore, it is evident that in terms of the BPTA, the above LILO connections shall have to be continued until final arrangements for transmission of power from the Project are developed in terms of the BPTA. GKEL has prayed that the present connectivity to the Project through LILOs as envisaged in BPTA be continued till such time PGCIL completes its scope of work in terms of the BPTA. GKEL has placed on record the status of construction of 400 kV D/C transmission line with quad moose ACSR conductor. GKEL has submitted that since all three units of Phase-I of the generating station have been declared COD on

30.4.2013, 12.11.2013 and 25.3.2014, GKEL could not evacuate whole power from the Project due to limitations of ATC. However, till 11.6.2014, ERLDC allowed GKEL to evacuate 450 MW and 350 MW power during off peak and peak hours respectively and 550 MW power against available capacity of 1050 MW thereafter**.** Accordingly, obligations under the PPA signed with Haryana under Case-I bidding process could not be complied with and the power was compelled to be supplied through STOA to Haryana with reduced availability of corridor and sometimes corridor is not available at all. As a result, GKEL paid penalty as per the provisions of the PPA. Besides the PPA commitments, non-availability of transmission corridor is resulting into backing down of generation and associated huge losses.

(h) KSK Mahanadi Power Company Limited (KSKMPL) in its reply dated 13.7.2014 has submitted that it is setting up 3600 MW generating station at Akaltara, in Chhattisgarh and has signed BPTA with PGCIL for the entire capacity. Therefore, keeping in view the safety of transmission system against a possible export of 3348 MW, KSKMPL has tied up 3490 MW in view of an overload export of 142 MW i.e. 4% overload. KSKMPL has further submitted that it constructed the dedicated transmission line to the original location of the Champa sub-station, as PGCIL showed its inability to construct the lines. However, the location of the sub-station itself has been shifted from the original location of the sub-station from the original point (Madanpur/Pamgarh) to a new location (Taga/Saragaon) on account of force majeure events. With the change of location of sub-station, PGCIL proposed LILO on the 400 kV Raigarh-Raipur transmission line which has been built by KSKMPL. KSKMPL has submitted that in case of force majeure, LILO should be permitted for

limited period subject to adequate safety provisions**.** On the issue of financial adjustment of the transmission charges of LTA, there is a perverse incentive-stemming from distorted charges that is creating a situation of generating stations not applying for LTA. In respect to the LILO arrangement, KSKMPL has submitted as under:

(i) LILO line has been built according to the CEA Grid Standards Regulations and O&M task has been entrusted to PGCIL who have taken over the line only after satisfying about the quality of construction and are maintaining LILO line as per transmission licensee standards.

(ii) KSKMPL has addressed the issues due to LILO lines increases by absorbing reactive power whenever asked.

(iii) KSKMPL is assisting the grid in voltage regulation by changing the tapping in GT and assisting in frequency correction by keeping the generator in governor mode.

(iv) KSKMPL's LILO will be put in use temporarily, until the PGCIL substation at Champa is ready.

(i) Lanco Amarkantak Power Limited (LAPL), vide its affidavit dated 15.9.2014, has submitted that unit-I (300 MW) of Lanco Amarkantak Power Limited was synchronised to the grid on 1.5.2009 and the COD was declared on 9.4.2010. Since then, the power from unit-1 has been evacuated through the LILO of 400 kV Korba-Sipat S/C transmission line near Rampur village with Lanco Pathadi switchyard. Unit-II (300 MW) of LAPL was synchronised to the grid on 22.2.2010. In the absence of operationalization of LTA, power generated from

unit-II is being scheduled since 7.5.2011 on short term day ahead basis to its beneficiaries, namely PTC Haryana and Chhattisgarh in the ratio of 65%:35%. Unit-II is shut down since 21.3.2013 due to continuous recovery of receivables from PTC over a long period since 7.5.2011 and due to non-supply of linkage coal. LAPL has submitted that the LTA of unit–II was not oprationalized on its date of commercial operation i.e. 7.5.2011 as PGCIL`s Bilaspur pooling station was not ready. The delay in PGCIL`s Bilaspur pooling station has led to delay in readiness of the LAPL's bays inside the PGCIL`s Bilaspur pooling station. With regard to the elements of the western region system strengthening scheme of PGCIL, there was a delay in completing the intermediate small patch due to delay in receipt of forest clearance from MOEF. After necessary clearance, LILO arrangement was normalized and LAPL Pathadi-Bilaspur 400 kV DC transmission line has been charged and connected to 765/400 kV PGCIL`s Bilaspur sub-station.

(j) Chhattisgarh State Power Transmission Company Ltd. (CSPTCL), vide its affidavit dated 20.8.2014 has submitted that STUs should be directed to plan and construct transmission system for intra-State generators and to refrain from leaning on ISTS for evacuation of power from intra-State generators. CSPTCL has further submitted that for grant of connectivity to ISTS, CTU be directed to review all connectivity granted to ensure that the CEA Grid Standards are followed and to stop granting connectivity through interim LILO arrangement**.** CTU be also directed to shift connectivity already granted through interim LILO arrangement to final arrangements. CSPTCL has submitted that as per Regulation 4.2.2 of Chhattisgarh State Electricity Grid Code, 2011, all the generating stations including captive generating plants

(GCP) having injection and/or drawal requirements of more than 15 MVA shall have connectivity with the grid either at nearest EHV sub-station through dedicated EHV transmission line or at pooled/ switching/ load catering/step up EHV sub-station with dedicated EHV transmission, at their own cost, subject to technical feasibility. According to CSPTCL, connectivity to any intra-State generator is allowed only after examination of technical feasibility in above modes. All the generators (CPPs/IPPs) connected to its transmission system are connected through the 33 kV, 132 kV or 220 kV EHV pooling sub-station of CSPTCL. CSPTCL has submitted that it has granted all the connectivity approvals under the condition that the generator shall not have any right to inject power into the grid unless it obtains a separate permission after complying with all the provisions of applicable Open Access Regulations, 2004 to inject power into the grid. CSPTCL has submitted that whenever any application for inter-State open access is received, 'No Objection Certificate' is issued by SLDC for intra-State system to the applicant after ensuring compliance of all the provisions of intra-State Regulations. CSPTCL has submitted that there are certain cases where CTU has denied open access due to non-availability of margin in inter State/Inter regional corridors even after issue of 'NOC' from SLDC Chhattisgarh based on the margin available in the intra State system. This indicates that any injection of power into the ISTS is permitted only when RLDC/NLDC or CTU grants open access to the applicant even when STU/SLDC has issued 'NOC' for State's grid.

14. The petitioner has filed the rejoinders to the replies of the respondents.

15. During the course of hearing on 23.9.2014, the representative of the petitioner submitted that a number of operational difficulties are being faced by the petitioner due to LILO connectivity as explained in the affidavit dated 7.7.2014. Learned counsel of HPPTCL submitted that before grant of connectivity to the ISTS network, detailed inter-connection studies proving adequacy of transfer capability must be conducted. However, while undertaking such studies, the respective STUs may also be associated as part of the study to have a better co-ordination between the CTU and STUs. Learned counsel for EPMPL submitted that due to non-completion of 400 kV Mahan-Sipat line which is to be constructed by Essar Power Transmission Company Ltd., it is presently evacuating its power under short term open access through the LILO arrangement. The representative of CEA submitted that there is lack of commitment on the part of the generating companies to complete the dedicated transmission lines and even CTU is unable to complete its system in time.

16. PGCIL was directed vide ROP dated 23.9.2014 to submit the information with regard to date of start of injection of power through LILO in respect of 16 generators for which interim arrangements have been allowed, and reasons for non-completion of final arrangement and dispensing with the interim arrangement on LILO. POSOCO was directed to submit the reasons for allowing injection of power from the generating stations which have not complied with CEA standards and the action taken against such generating stations.

17. PGCIL, vide its affidavit dated 19.12.2014, with regard to non-completion of transmission system in time, has submitted that project developers had approached CTU very late to match the availability of associated transmission system with their generating stations. PGCIL has allowed the interim arrangement to facilitate the

generation projects to avail start up power and upon commissioning, to contribute to power availability in the country, based on available margins in the grid. The power is scheduled through short term open access. However, the commencement of LTA has been made subject to the commissioning of the dedicated transmission lines and associated transmission system, as per the long term access agreement signed with these developers.

18. The petitioner, vide its affidavit dated 19.12.2014, has submitted as under:

(a) The decision on interim arrangement is taken at the Standing Committee meetings and is not a decision of RLDCs. CTU is the Nodal Agency for grant of connectivity, long term access and medium term open access to the inter-State transmission system.

(b) The RLDCs have expressed concern on such connectivity through interim LILO arrangement and its adverse impact on power system operation and the electricity grid as a whole. NLDC has given its feedback vide its letter dated 21.10.2013.

(c) The interim connectivity is being granted through Loop-In-Loop-Out (LILO) of the main arterial line of the existing network. In case of final connectivity being granted through LILO, the same could be secure. However, interim connectivity is an issue of concern from grid security point of view and the generators granted connectivity through LILO arrangement continue to evacuate through the LILO lines even after commissioning of the concerned pooling station and delay construction of the dedicated transmission system, which fall within their scope of work.

(d) In case of new connectivity, besides other factors, transmission system capability has to be assessed and the new connection should not cause any adverse effect on the grid.

(e) The primary responsibility of RLDCs as Power System Operators is to ensure secure and reliable operation of the grid. Keeping the grid security in view, RLDCs have not allowed full evacuation or restricted the quantum of power to be evacuated through interim connectivity as per the available transmission margins. POSOCO has cited certain examples in this regard.

(f) In the past few years, the number of LILOs connectivity has gone up. Generally, drawl of start up power through LILO is accommodated and facilitated by the System Operators. However, when large number of generators in the same area (example Chhattisgarh, Odisha, etc.) start injecting power through insecure connection, it gives rise to grave security threat. Therefore, the present petition has been filed to address the difficulties being faced by POSOCO.

Analysis and Decision

19. We have considered the submissions of the petitioner and the respondents and perused documents on record. The petitioner has submitted that generator sought interim arrangements citing delay in completion of dedicated transmission line and availing start up power and facilitation of test synchronising, for a small period. CTU's role is at the later stage to provide Connectivity to the generators for such facilitation. In certain cases, interim connectivity is granted by CTU through LILO arrangement, clearly mentioning that this is a temporary arrangement and requesting the generators to revert back to original system. Most often, the

generators continue with the interim arrangement for years together and in certain cases, they are not making efforts to complete the dedicated transmission system. The petitioner has submitted that in the past certain years, the number of interim LILO connectivity has gone up phenomenally and the drawal of start-up power through LILO is accommodated and facilitated by the system operators. However, when a large number of generators in the same area (e.g. Chhattisgarh, Odisha, etc.) start injection of power through insecure connection from multiple units at the same generating station, it gives rise to a grave security threat. At this point, there is no provision for interim connectivity in the Connectivity Regulations. The petitioner has submitted that the culmination of certain weak and insecure connectivity as a whole can cause a disaster. Each of the connectivity has to be secure and tested and the system as a whole also needs to be tested.

20. CTU has submitted that in certain cases, where the generation projects were expected to come up earlier than the planned evacuation system, interim arrangement through LILO of existing line was planned to facilitate connection of generator to the grid till final systems in consultation with all stakeholders, namely CEA, regional constituents and RLDC are put in place. However, while granting LILO, CTU has clarified that with the interim arrangement, power can be transferred only through STOA based on the margin available, and LTA would be operationalized only with the commissioning of the complete evacuation system. CTU has further submitted that the LILO cases referred to in the present petition were planned as per Open Access Regulations, 2004 for grant of long term open access along with interim arrangement wherever required after carrying out necessary studies and was finalized after discussion with CEA/ developer/ constituents/ RLDCs in the meetings of Standing Committee/RPC.

21. The function of the Central Transmission Utility has been provided in sub-regulation (2) of Section 38 of the Act which is extracted as under:

"(2) The functions of the Central Transmission Utility shall be –

(a) to undertake transmission of electricity through inter-State transmission system;

(b) to discharge all functions of planning and co-ordination relating to inter-State transmission system with –

(i) State Transmission Utilities;
(ii) Central Government;
(iii) State Governments;
(iv) generating companies;
(v) Regional Power Committees;
(vi) Authority;
(vii) licensees;
(viii) any other person notified by the Central Government in this behalf;

(c) to ensure development of an efficient, co-ordinated and economical system of inter-State transmission lines for smooth flow of electricity from generating stations to the load centres;

(d) to provide non-discriminatory open access to its transmission system for use by-

(i) any licensee or generating company on payment of the transmission charges; or (ii) any consumer as and when such open access is provided by the State Commission under sub-section (2) of section 42, on payment of the transmission charges and a surcharge thereon, as may be specified by the Central Commission:

Provided that such surcharge shall be utilised for the purpose of meeting the requirement of current level cross-subsidy:

Provided further that such surcharge and cross subsidies shall be progressively reduced in the manner as may be specified by the Central Commission: Provided also that the manner of payment and utilisation of the surcharge shall be specified by the Central Commission:

Provided also that such surcharge shall not be leviable in case open access is provided to a person who has established a captive generating plant for carrying the electricity to the destination of his own use."

A close reading of the above sub-section reveals that CTU has been vested with the functions of planning and coordination in relation to inter-State transmission system in consultation with State Transmission Utilities, Central Government, State Governments, generating companies, Regional Power Committees, Central

Electricity Authority, licensees and any other person that the Central Government may notify on that behalf for development of efficient, coordinated and economical system of transmission lines for smooth flow of electricity from the generating stations to the load centres. Sub-section (2) of Section 39 of the Act vests similar functions in the State Transmission Utilities for development of efficient, coordinated and economical system of transmission lines for smooth flow of electricity from the generating stations to the load centres within the State. In an integrated grid with meshed network, both CTU and STUs have to work in tandem in order to discharge their statutory function of development of efficient, coordinated and economical transmission system at the inter-State level as well at the intra-State level. Further, both CTU and STUs have been vested with the functions to grant non-discriminatory open access to their transmission systems for use by any licensee or generating company or to any consumer subject to grant of open access by the State Commission. Therefore, development of efficient, coordinated and economical transmission system will also have to take into account the needs of the generating companies, licensees or consumers for open access to the inter-State as well as intra-State transmission systems.

22. This Commission has specified the Central Electricity Regulatory Commission (Grant of Connectivity, Long Term Access, Medium Term Open Access and related matters) Regulations, 2009 (hereinafter "Connectivity Regulations") in order to facilitate connectivity and long term access and medium term open access to the inter-State Transmission Systems. As per the said Regulations, CTU has been designated as the nodal agency for the purpose of grant of connectivity, long term access and medium term open access. Connectivity has been defined in the Connectivity Regulations as under:

"Connectivity" for a generating station, including a captive generating plant, a bulk consumer or an inter-State transmission licensee means the state of getting connected to the inter-State transmission system."

Thus connectivity has been defined as the state of getting connected to the inter-State Transmission system. Regulation 2(1)(b)(i) of the Connectivity Regulations defines the applicants for the purpose of connectivity. The said regulation is extracted as under:

"(b) Applicant means

(i) The following in respect of connectivity:

(a) A generating station with installed capacity of 250 MW and above, including a captive generating plant of exportable capacity of 250 MW and above or;

(b) A Hydro Generating station or generating station using renewable source of energy, of installed capacity between 50 MW and 250 MW.

(c) One of the Hydro Generating stations or generating stations using renewable sources of energy, individually having less than 50 MW installed capacity, but collectively having an aggregate installed capacity of 50MW and above, and acting on behalf of all these generating stations, and seeking connection from CTU at a single connection point at the pooling sub-station under CTU, termed as the lead generator, or;

(d) A bulk consumer.

(e) Any renewable energy generating station of 5 MW capacity and above but less than 50 MW capacity developed by a generating company in its existing generating station of the description referred to in sub-clauses(b)(i)(a) to (c) of this clause and seeking connectivity to the existing connection point with inter-State Transmission System through the electrical system of the generating station;

(f) Any company authorised by the Central Government as Solar Power Park Developer."

Under the Connectivity Regulations, generating stations of different categories and bulk consumers are eligible to apply for connectivity to the inter-State transmission system.

23. The procedure for application for grant of connectivity has been dealt with in Regulation 8 of the Connectivity Regulations which is extracted hereunder:

"8. Grant of Connectivity:

(1) The application for connectivity shall contain details such as, proposed geographical location of the applicant, quantum of power to be interchanged, that is the quantum of power to be injected in the case of a generating station including a captive generating plant and quantum of power to be drawn in the case of a bulk consumer, with the inter-State transmission system and such other details as may be laid down by the Central Transmission Utility in the detailed procedure;

Provided that where after filing of an application, there has been any material change in the location of the applicant or change in the quantum of power to be interchanged with the inter-State transmission system, by more than 100 MW in the case of applicant defined under Regulation 2(1) (b)(i) (a)and 40% of the Installed capacity in the case of applicant defined under Regulation 2(1) (b) (i) (b) and 40% of the aggregate Installed capacity in the case of applicant defined under Regulation 2(1) (b)(i) (c), such an applicant shall make a fresh application, which shall be considered in accordance with these regulations.

Provided further that the application by the applicant defined under Regulation 2(1) (b)(i) (c) shall be considered by CTU only if all the generators, whose aggregate capacity is connected at the single connection point, formalize a written agreement among themselves that the lead generator shall act on behalf of all the generators to undertake all operational and commercial responsibilities for all the collective generators connected at that point in following the provisions of the Indian Electricity Grid Code and all other Regulations of the Commission, such as grid security, scheduling and dispatch, collection and payment/ adjustment of Transmission charges, UI charges, congestion and other charges, etc., and submit a copy of the agreement to the CTU, with the application of connectivity, along with a copy to the respective RLDC in whose control area it is located.

Provided further that the CTU shall suitably incorporate the requirement of formal agreement amongst such generators in the detailed procedure and Connection Agreement signed with such lead generator.

(2) On receipt of the application, the nodal agency shall, in consultation and through coordination with other agencies involved in inter-State transmission system to be used, including State Transmission Utility, if the State network is likely to be used, process the application and carry out the necessary inter-connection study as specified in the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.

(3) While granting connectivity, the nodal agency shall specify the name of the sub-station or pooling station or switchyard where connectivity is to be granted. In case connectivity is to be granted by looping-in and looping-out of an existing or proposed line, the nodal agency shall specify the point of connection and name of the line at which connectivity is to be granted. The nodal agency shall indicate the broad design features of the dedicated transmission line and the timeframe for completion of the dedicated transmission line.

(4) The applicant and all Inter-State Transmission Licensees including the Central Transmission Utility shall comply with the provisions of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007.

(5) The applicant or inter-State transmission licensee, as the case may be, shall sign a connection agreement with the Central Transmission Utility or inter-State transmission licensee owning the sub-station or pooling station or switchyard or the transmission line as identified by the nodal agency where connectivity is being granted:

Provided that in case connectivity of a generating station, including captive generating plant or bulk consumer is granted to the inter-State transmission system of an inter-State transmission licensee other than the Central Transmission Utility, a tripartite agreement as provided in the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 shall be signed between the applicant, the Central Transmission Utility and such inter-State transmission licensee.

(6) The grant of connectivity shall not entitle an applicant to interchange any power with the grid unless it obtains long-term access, medium-term open access or short-term open access."

24. From the above provisions of the Connectivity Regulations, it is clear that the nodal agency i.e. CTU in consultation and through coordination with other agencies involved in inter-State transmission system including State Transmission Utility, if the State network is used, process the application for connectivity and shall carry out the inter-connection study as specified in the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007. Regulation 6(6) of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 (hereinafter "CEA Connectivity Regulations) provides as under:-

"6(6) For inter-connection studies the requester shall make a request for connection in the planning stage on the Appropriate Transmission Utility. In case a requester is seeking inter-connection to a distribution system, such a request will be made to the distribution licensee. The Appropriate Transmission Utility or distribution licensee shall carry out the inter-connection study to determine the point of inter-connection, required interconnection facilities and modifications required on the existing grids, if any, to accommodate the inter-connection. The study may also address the transmission system capability, transient stability, losses, voltage regulation, harmonics, voltage flicker, electromagnetic transients, machine dynamics, ferro resonance, metering requirements, protective relaying, sub-station grounding and fault duties as the cases may be."

Thus, as per the CEA Connectivity Regulations, the study shall address transmission system capability, transient stability, losses, voltage regulation etc. Based on the study, the nodal agency shall grant the connectivity. The Regulations

further provide that while granting connectivity, the nodal agency shall specify the name of the sub-station or pooling station or switchyard where connectivity is to be granted. In case connectivity is to be granted by looping-in and looping-out of an existing or proposed line, the nodal agency shall specify the point of connection and name of the line at which connectivity is granted. The nodal agency shall indicate the broad design features of the dedicated transmission line and the timeframe for completion of the dedicated transmission line. Thus the Connectivity Regulations provide for granting connectivity by looping in and looping out of an existing or a proposed transmission line if after interconnection study, it appears to the nodal agency that loop in and loop out is the best option to develop an efficient, coordinated and economical inter-State transmission system for transmission of power from the generating station to the load centre.

25. It is noticed that loop in loop out arrangement for connectivity may be permanent or temporary in nature. Where LILO has been planned on account of technical reasons including optimum utilisation of the assets, then connectivity on the said LILO is a part of the planning and shall continue as a permanent feature. If the LILO has been planned as a temporary measure i.e. where generation is likely to be commissioned ahead of the commissioning of the dedicated transmission line which is affected by such events as ROW issues and delay in forest clearance, then CTU may grant conditional connectivity to the generators with a clear-cut timeline for commissioning of the dedicated transmission line and removal of the LILO. The Commission vide order dated 16.2.2015 in Petition No. 92/MP/2014 has deliberated the issue of grant of LTA on LILO as under:

> "93. We are of the view that LTA on LILO shall be allowed if the LILO arrangement has been considered at the planning stage. In other cases, LTA may be allowed by CTU on

LILO as a temporary measure due to delay on account of reasons like RoW, forest clearance, etc, till the time originally planned system becomes available, subject to the system studies carried out by CTU establishing that grant of LTA on LILO will not affect system security."

26. It is however noticed that there are cases where generators are continuing with the LILO arrangement in absence of any clear cut timeline for removal of LILO by CTU. The petitioner has submitted that continuation of such temporary connectivity and injection of power through such temporary connectivity is causing difficulties in safe and secure operation of the grid. Considering the concern of the petitioner, CTU was directed vide RoP dated 13.5.2014 to clarify as to whether requisite interconnection studies were made before granting such connectivity and the results were made available to concerned organizations. CTU has confirmed the same and has submitted that the transmission systems were planned along with interim arrangements wherever required, after carrying out necessary system studies and finalized after discussion with CEA/ developer/ constituents/RLDCs in the Standing Committee/RPC meetings. CTU has placed on record the sample study of the interim arrangements of Essar Power Ltd. and Coastal Energen which shows that three out of four units of Tuticorin JV and Coastal Energen can be evacuated with reliability and security of the grid through the interim arrangement.

27. Though the generator can be accommodated for grant of connectivity through LILO for a genuine reason and in exceptional circumstances, it appears that CTU is accommodating all requests in a routine manner. There are as many as 16 such cases which have been reported and some of them have been on interim arrangements since February, 2011. These arrangements are not desirable from grid security point of view. CTU has not indicated any time frame for termination of these interim arrangements and wherever the timeframe has been prescribed, the

same has not been strictly implemented. With change in load generation balance, the conditions which were envisaged at the time of planning of interim arrangement based on system studies may no longer hold good and continuation of the interim arrangement may affect system security, reliability and stability. It is therefore necessary that CTU discusses the issues regarding temporary LILOs in the RPC of the respective region and draw a timeline for replacement of LILO by dedicated transmission lines.

28. In our view, where the construction of dedicated transmission line is within the scope of work of the generation developer, then it will be the responsibility of the generation developer to complete the dedicated transmission line within the stipulated timeframe. The nodal agency shall ensure that the progress of the dedicated transmission line is monitored in the meetings of the RPC of the respective regions and milestones are fixed for completion of the dedicated transmission lines. The generator may be permitted to interchange for the purpose of drawing start-up power or injecting infirm power during testing or full load testing through the connectivity on LILO, subject to the permission by concerned RLDC after taking into account the grid security. There may be cases where the dedicated transmission line is being constructed by the CTU or any other transmission licensee, and on account of delay in completion of the dedicated transmission line matching with the commissioning of the generation project, CTU or the generator has made the temporary LILO arrangement for connectivity till the dedicated transmission line is commissioned. In such cases, injection of infirm power may be permitted on LILO till the dedicated line is commissioned subject to the permission by concerned RLDC after taking into account that such injection of power does not pose any threat to grid security.

29. As regards the firm power, it should not be allowed to be injected on the interim LILO arrangement as a matter of principle. However, CTU has been allowing injection of firm power in certain circumstances where construction of dedicated transmission line is affected by ROW issues or other reasons beyond the control of the generators or the CTU or the transmission licensee executing the transmission line. Generation developers like GMR Kamalanga, KSK Mahandi, Essar Power MP Limited and Sesa Sterlite have submitted that on account of delay in construction of intra-State or inter-State transmission lines and also in the construction of dedicated lines due to RoW issues, they are relying on interim arrangements for evacuation of firm power from the generating stations. NLDC has submitted that though interim arrangements have been allowed by CTU to the generators in order to avoid the bottling up of generation for short period, the generators continue to rely on interim arrangements for evacuation of power for years together which affects secure operation of the power system. We are of the view that where an interim arrangement is permitted for injecting firm power, there will be perverse incentive for the generators/ CTU/ inter-State transmission licensee not to put efforts to resolve the RoW and forest clearance issues and ensure completion of the dedicated transmission line matching with the COD of the generating station. If the generators/ CTU/ inter-State transmission licensee visualise that the dedicated transmission line cannot be commissioned matching with the COD of the generating station, in that case they shall approach the Regional Power Committee of the respective region at least three months before the anticipated COD of the generating station for continuation of the LILO arrangement for injecting firm power for a specific period only. The Regional Power Committee may consider the proposal in its scheduled meeting (if convened within three months of the date of receipt of the request) or

through a Special Meeting convened for the purpose. RPC shall seek details of studies carried out by CTU afresh about the LILO. While considering the proposal, the RPC shall also take into account such factors as the reliability and security of the grid on account of firm power injection through LILO, duration of such firm power injection, the actual progress of the dedicated transmission line and expected date of commissioning of the dedicated transmission line and other relevant factors such as compliance with the regulations of the Commission and CEA. The RPC may permit the injection of firm power for a maximum period of three months. If the dedicated transmission line is still not ready before the expiry of three months due to genuine difficulty beyond the control of the generator/CTU/inter-State transmission licensee, the generator may approach the RPC of the respective region for consideration of its request for further extension. The RPC shall be required to consider the request keeping in view the reliability and security of the grid and may permit further extension limited to maximum three months. If the dedicated transmission line is not commissioned within the period allowed by the RPC, then interchange of firm power shall not be permitted by RLDC concerned on the interim LILO arrangement. The Commission has disallowed Ind-Bharat (Utkal) Power Limited to inject firm power on interim LILO arrangement in order in Petition No. 134/MP/2016 dated 30.8.2016. Ind-Bharat (Utkal) Power Limited is granted liberty to approach ERPC for extension of time of not more than three months if the dedicated transmission line cannot be commissioned for reasons beyond its control.

30. It is noticed that ERPC disallowed continuation of interim LILO of the generating stations of Sterlite and GMR after certain periods for their failure to commission the dedicated transmission lines. We appreciate the approach adopted by ERPC. The Commission vide order dated 7.10.2015 in Petition No. 112/TT/2013

directed PGCIL to finalise time line for replacement of the LILOs of generation developer by dedicated transmission lines within a period of six months from the date of connection of LILO of the petitioner. Relevant portion of the said order is extracted as under:

> "The associated transmission lines were to be constructed by the generation developer matching with the transmission system to be developed by the petitioner and the LILOs constructed by generation developers which were temporary arrangement were to be replaced by the associated transmission system. It is noticed that some of the generation developers have not commissioned the dedicated lines and are continuing to evacuate power through the temporary LILO arrangements. We direct the petitioner (POWERGRID) to discuss the issue in the Standing Committee Meeting on Transmission and finalize the timeline for replacement of the LILOs of generation developer by dedicated transmission lines within a period of six months from the date of connection of LILO of the petitioner."

We are of the view that all cases of temporary/interim LILO need to be reviewed where they are in operation for more than six months. CTU is directed to take up all such cases with the RPC of respective region within a period of one month from the date of issue of this order for review of the temporary LILO arrangements and for decision regarding the timeline for disconnection of the temporary LILO arrangements. Wherever LILOs are in operation, RPC shall ensure that LILOs are disconnected within three months of this order, unless the RPC decides to grant extension keeping all relevant factors in view.

31. A related issue is compensation for reactive power where injection of power is permitted through temporary LILO. In our view, whenever interim LILO arrangement has been made, CTU shall carry out the study for assessment of reactive power requirement and direct the users/generators to provide the reactive power compensation.

32. The petitioner has contended that in order to ensure secure operation of the grid, STUs should be directed to plan and construct transmission systems for intra-

State generators and they should refrain from leaning on ISTS for evacuation of power from such generators. The petitioner has contended that where the construction of intra-State transmission system is delayed and power is being evacuated by connecting generators to inter-State transmission systems, it leads to high loading of ISTS and insecure operation of the grid. In this regard, the petitioner has cited the examples of Kawai and Tiroda generating stations. Ideal Energy Projects Limited has submitted that it has no objection to convert the LILO arrangement to a permanent final transmission arrangement by CTU on account of delay of intra-State lines of MSETCL due to ROW problem and non-availability of forest clearance. We direct CTU to discuss the issues in the RPC of the respective regions to ensure compliance with the provisions of the Grid Code and CEA Grid Connectivity Standards Regulations.

33. Another related issue that arises for our consideration is whether CTU should operationalize LTA on interim LILO or not. On analysis of the interim LILO arrangements, it is noticed that some of the LILO arrangements are being used for injection of firm power through STOA for three years or more. The generators have taken LTA to the target regions from certain dates and even after those dates, LTAs have not been operationalized due to non-commissioning of the dedicated lines. Even though some of the system strengthening lines associated with the LTA have been commissioned. On the other hand, the generators are being allowed to interchange firm power through short term open access on interim LILO arrangements as a result of which the generators are able to avoid payment of transmission charges corresponding to their LTA quantum. In our view, non-operationalisation of LTA on account of non-commissioning of the dedicated transmission line or some of the system strengthening lines while allowing the

generators to inject power under STOA defeats the very purpose of granting LTA to the generators. Therefore, in all such cases, CTU must operationalize the LTA (either partly or fully as the case may be) and raise the bills for transmission charges on the generators with effect from the date of operationalisation of the LTA as indicted in the LTA Agreements. In this connection, Clause 5 of Regulation 8 of the Connectivity Regulations as amended through the Third Amendment effective from 1.5.2015 provides as under:-

> "(5) Where the Approved Withdrawal or Approved Injection in case of a DIC is not materializing either partly or fully for any reason whatsoever, the concerned DCI shall be obliged to pay the transmission charges allocated under these regulations:
>
> Provided that in case the commissioning of a generating station or unit thereof is delayed, the generator shall be liable to pay Withdrawal Charges corresponding to its Long Term Access from the date the Long Term Access granted by CTU becomes effective. The Withdrawal Charges shall be at the average withdrawal rate of the target region:
>
> Provided further that where the operationalisation of LTA is contingent upon commissioning of several transmission lines or elements and only some of the transmission lines or elements have been declared commercial, the generator shall pay the transmission charges for LTA operationalized corresponding to the transmission system commissioned...."

34. The Appellate Tribunal for Electricity has ruled in the case of Appeal No. 6/2015 (GETCO vs. GERC) that delay in commissioning of the dedicated transmission line by the generator will not relieve the generator from paying the transmission charges for the transmission line, which have been built on the basis of the BPTA signed by the generator. Relevant portion of the judgment in Appeal No. 6/2015 (GETCO vs. GERC) is extracted as under:-

> "The Respondent No. 2 (M/s OPGS Power Gujarat Private Limited) has sought for connection through a dedicated transmission line to Varsana sub-station and had entered into BPTA for use of the intra-State Transmission System beyond Varsana sub-station. The issue at present is delay in commissioning of the dedicated transmission line and whether the transmission charges payable for the MW capacity contracted on the intra-State transmission line should not be claimed by extending commencement of the BPTA to 31.12.2014.
> ....

> 11. Respondent No. 2 (M/s. OPGS Power Gujarat Private Limited) has raised the issue of non-payment of transmission charges to the Appellant (Gujarat Electricity Transmission Corporation Limited) as there has been no use of the transmission system by the Respondent No. 2 and further in the absence of any proof of stranded capacity on the transmission system. In the impugned order, the State Commission has not dealt with the above on the grounds that it is not necessary to deal with the same on account of extension of time till 31.12.2014 being allowed. The Respondent No. 2 is bound by the terms and conditions of the BPTA. Under the BPTA Respondent No. 2 reserved capacity of 275 MW on the intra-State Transmission Network. Respondent No. 2 has not terminated the BPTA or surrendered the capacity. The above capacity has been blocked for the Respondent No. 2 by the Appellate and cannot be given to others. In terms of the Open Access Regulations, Respondent No. 2 is liable to pay the transmission charges as determined by the State Commission based as per MW capacity booked irrespective of the actual use of the transmission line. Respondent No. 2 is bound to pay the transmission charges as per the Regulation irrespective of whether it had used the transmission or not."

35. In the light of the provisions of the Sharing Regulations and the judgment of the Appellate Tribunal as quoted in Para 34 above, the generators are liable to pay the transmission charges for the transmission lines covered under the BPTA or LTA Agreement which have been commissioned. CTU is directed to review all such cases and take necessary action for operationalisation of LTA including part LTA and raising the bills for transmission charges on the generators.

36. The petitioner has submitted that RLDCs have been accommodating the generators and allowing injection of infirm power and drawal of start-up power through interim LILO arrangement. However, when a large number of generators in the same area (example: Chhattisgarh and Odisha) start injecting infirm power through insecure connections, it gives rise to grave grid security. In our view, RLDCs have been empowered through the provisions of Regulation 8(7), particularly sixth proviso to the said Regulation, to permit drawal of start-up power or injection of infirm power keeping in view the grid security. If a number of applications are received from the generators with the same timeframe for injection of infirm power or drawal of start up power, then the concerned RLDC should discuss the matter in the respective RPC forum with the participation of the concerned generators, draw a

schedule for drawal of start-up power and injection of infirm power in order to ensure safe, secure and integrated operation of the grid. In any case, RLDC has the power to curtail any exchange of power if it poses threat to grid security.

37. Summary of our decisions:

(a) CTU is responsible for planning and coordination with regard to inter-State transmission system in consultation with all concerned as mentioned in Section 38 (2) of the Act for development of efficient, conducted and economical system of development of transmission system for smooth flow of electricity from the generating station to the load centre. CTU is also responsible for providing non-discriminatory open access to the inter-State Transmission System for use by any licensee or generator or consumer (subject to permission by the State Commission). Therefore, while planning and developing the inter-State Transmission System, CTU is required to take into consideration the applications for connectivity and LTA received in accordance with Connectivity Regulations.

(b) CTU shall plan the inter-State Transmission System after carrying out the system studies in accordance with CEA Connectivity Regulations. If on the results of the study it appears to the CTU that connectivity is required to be granted by looping in and looping out the existing or proposed transmission line, CTU shall include such LILO as part of the coordinated planning and development of the inter-State Transmission System.

(c) Injection of infirm power and/or drawl of start-up power may be allowed in the interim arrangement through LILO by RLDCs in accordance with the relevant

provisions of the Connectivity Regulations and Grid Code, keeping in view the grid security. If more than one generator is injecting infirm power or drawing start-up power within the same timeframe, then the concerned RLDC shall finalize schedule after discussing the same in the Regional Power Committee in order to ensure that such unscheduled inter-changes on account of injection of infirm power/ drawl of start-up power do not endanger grid security.

(d) Injection of firm power shall not be allowed as a matter of principle. In exceptional cases where the dedicated transmission line executed by the generator/ CTU/ inter-State transmission licensee is unlikely to be commissioned matching with the COD of the generating station or a unit thereof, concerned generator/ CTU/ inter-State licensee shall be required to approach the RPC of the respective region three months prior to the anticipated COD of the generating station for continuation of the LILO arrangements for injection of firm power. The RPC in consultation with CTU after considering the proposal in the light of the relevant factors can permit injection of firm power for a period of three months which can be extended for another period of maximum three months. If the dedicated transmission line is not commissioned within the period granted by the RPC, then interchange of firm power shall not be permitted by the RLDC concerned on interim LILO arrangement.

(e) CTU shall take up all the existing cases of connectivity on interim LILO with the RPC of respective regions within a period of one month from the date of issue of this order for review and decision on disconnection of the interim

arrangements through LILO. All such interim arrangements through LILO shall be disconnected within a period of three months of the issue of this order unless the RPC grants extension for continuation of LILO keeping in view of all relevant factors.

(f) As far as practicable, intra-State generating stations should not be granted interim connectivity to ISTS for drawing start-up power or injecting infirm power. Only in exceptional case, interim connectivity to intra-State generating stations may be granted on the basis of explicit recommendations by the concerned STU.

(g) CTU shall review all cases where LTA taken by the generators have not been operationalized on account of non-commissioning of the dedicated transmission line or some of the system strengthening lines, even though the generators have been permitted to inject firm power on short term basis. Based on the review, CTU shall operationalize the part/full LTA in respect of the transmission lines which have been commissioned and raise bills for transmission charges on the generators concerned.

38. The petition is disposed of with the above.

sd/-	**sd/-**	**sd/-**
(A.S. Bakshi)	**(A.K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Chairperson**