

Transition of connectivity granted to NPCIL for KNPP U-3&4 (2x1000 MW) under GNA Regulations

1. 21st Consultation Meeting for Evolving Transmission Scheme in SR was held at POWERGRID Office, Gurgaon on 18.08.2023 wherein transition under the GNA Regulations was deliberated. In this regard, under Agenda point B(1), it was informed that Nuclear Power Corporation of India Limited (NPCIL) has been granted Connectivity under regulation 2009 for 2000 MW for Kudankulam Unit-3&4 (2x1000 MW) and has applied for LTA (application no. 1200003911) for 2000 MW. NPCIL is required to apply for Conversion of connectivity to GNA as per Regulations 37.2 for 2000MW and under Regulation 37.1 for conversion of under process LTA application.

During the meeting it was informed that NPCIL vide email dated 04.05.2023 agreed to migrate to GNA Regulation in respect of 2*1000 MWe Kudankulam Nuclear Power Project -3&4 (KKNPP-3&4-SR) and intimated that duly filled Format Transition along with Format Con Trans App-5 will be provided next working day along with formal covering letter. Subsequently, NPCIL vide email dated 23.08.2023 has submitted requisite FORMATS for conversion of Connectivity/LTA under Connectivity Regulations 2009 to connectivity under GNA Regulation.

2. NPCIL was granted connectivity vide intimation dated 12.11.2021 for Kudankulam Unit-3&4 through the following transmission system :

Transmission System for grant of Connectivity for Unit - 3 & 4 (2x1000 MW)

- Interconnection between KAPP-1&2 and KAPP-3&4 generation switchyards through laying of 400kV overhead transmission line or cable.

3. Further application no. 1200003911, for grant of LTA to NPCIL for KNPP Unit-3&4 (2x1000 MW), was discussed along with connectivity application no. 0052300006 for grant of connectivity for KNPP Unit-5&6 (2x1000 MW) in the 16th CMETS-SR held on 28.02.2023 wherein following was agreed (minutes of meeting attached as **Annexure-I**) :

- a) Grant of LTA to M/s Nuclear Power Corporation of India Ltd. for 2000 MW (KKNPP-3&4) for LTA application no. 1200003911 with start date of LTA as 31.05.2025 for injection of power from Kudankulam – 3 & 4 in Tamil Nadu and Drawl as SR (target)

Transmission System for grant of LTA for Unit - 3 & 4 (2x1000 MW)

- KKNPP 3&4 – Tuticorin-II GIS PS 400kV (quad) D/c line (~120 km) **{Line & bays at Tuticorin-II GIS under ISTS scope and bays at KKNPP under NPCIL scope}**

- KKNPP 3&4 – Samugarangapuram (TN) 400kV (quad) D/c line (~30 km) **{Line & bays at Samugarangapuram (TN) under TANTRANSCO scope and bays at KKNPP 3&4 under NPCIL scope}**
 - Shifting of one circuit of KKNPP 1&2 – Tirunelveli 400kV (quad) D/c line to KKNPP 3&4 to form KKNPP 3&4 – Tirunelveli 400kV (quad) S/c line **{NPCIL scope}**
 - Interconnection between KKNPP 1&2 and KKNPP 3&4 generation switchyards through laying of 400kV overhead transmission line or cable and to be kept open under normal operating conditions **{NPCIL scope}**
 - 2x125 MVA (420kV) bus reactors at KKNPP - 3&4 **{NPCIL scope}**
 - Upgradation of Tuticorin PS - Salem 765kV D/c line (presently charged at 400kV level) at its rated 765kV voltage level with 1x330 MVA switchable Line Reactor on both ends of each circuit **{ISTS scope}**
 - Upgradation of Tuticorin PS to its rated voltage of 765kV level alongwith 3x1500 MVA, 765/400kV ICTs and 2x330 MVA, 765kV bus reactors **{ISTS scope}**
 - Upgradation of Dharmapuri (Salem New) to its rated voltage of 765kV level alongwith 3x1500 MVA, 765/400kV ICTs and 2x330 MVA, 765kV bus reactors **{ISTS scope}**
 - Separate arrangement for auxiliary power supply at 230kV level one from KKNPP 1 & 2 and other from independent source of TANTRANSCO substation **{NPCIL scope}**
- b) Grant of connectivity to M/s Nuclear Power Corporation of India Ltd. for 2000 MW (KKNPP-5&6) for connectivity application no. 0052300006 with start date of connectivity as 31.03.2025.

Transmission System for grant of connectivity to M/s NPCIL for Kudankulam Unit - 5 & 6 (2x1000 MW)

- Interconnection of KKNPP-3&4 and KKNPP-5&6 switchyards with 400kV quad D/c line **{NPCIL scope}**
 - Shifting of KKNPP-3&4 – Tuticorin-II GIS 400kV (quad) D/c line to KKNPP-5&6 to form KKNPP-5&6 – Tuticorin-II GIS 400kV (quad) D/c line and with provision of SLR at terminating bays of KKNPP-5&6 **{NPCIL scope}**
 - 3x125 MVA (420kV) bus reactors at KNPP - 5&6 **{NPCIL scope}**
 - Separate arrangement for auxiliary power supply at 230kV level one from KNPP-5 & 6 and other from independent source of TANTRANSCO substation **{NPCIL scope}**
4. NPCIL has sought conversion of 1000 MW of Connectivity for KNPP Unit-3 under Regulation 37.2 of the GNA Regulations with start date as Dec'26. Further NPCIL has also sought conversion of 1000 MW (out of 2000 MW) of under process LTA application for Unit-4 under Regulation 37.1 of the GNA Regulations with start date as Aug'27. Based on the option of conversion exercised by M/s NPCIL, system studies were carried out for grant of Connectivity under GNA Regulations for KNPP Unit-3&4 (2000 MW) under Regulation 37.1 & 37.2 wherein it was found that the Connectivity may be granted with

ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region, which includes Narendra New – Pune 765 kV D/c line and ISTS Network Expansion scheme “Transmission System for evacuation of power from Kudankulam 3 & 4”. Accordingly, it is proposed that 2000 MW of connectivity may be granted under Regulation 37.2 and Regulation 37.1 of the GNA Regulations as per the following details:

A. Grant of Connectivity under GNA Regulations for Connectivity Application no. NPCIL/Trans/2010/M/98 & NPCIL’s letter NPCIL/Trans/2019/M/33 :

Connectivity Transmission system under GNA for KNPP Unit-3:

I. Dedicated Connectivity Tr. System

- Interconnection between KKNPP 1&2 and KKNPP 3&4 generation switchyards through laying of 400kV overhead transmission line or cable and to be kept open under normal operating conditions **{NPCIL scope}**
- Shifting of one circuit of KKNPP 1&2 – Tirunelveli 400kV (quad) D/c line to KKNPP 3&4 to form KKNPP 3&4 – Tirunelveli 400kV (quad) S/c line **{NPCIL scope}**
- 2x125 MVar (420kV) bus reactors at KKNPP - 3&4 **{NPCIL scope}**
- Separate arrangement for auxiliary power supply at 230kV level one from KKNPP 1 & 2 and other from independent source of TANTRANSCO substation **{NPCIL scope}**

II. Associated Transmission System for GNA:

Under ISTS

- KKNPP 3&4 – Tuticorin-II GIS PS 400kV (quad) D/c line (~120 km) **{Line along with bays at Tuticorin-II GIS under ISTS scope and bays at KKNPP under NPCIL scope}**

Under STU

- KKNPP 3&4 – Samugarangapuram (TN) 400kV (quad) D/c line (~30 km) **{Line along with bays at Samugarangapuram (TN) under TANTRANSCO scope and bays at KKNPP 3&4 under NPCIL scope}**

III. Common Transmission system required for effectiveness of connectivity/GNA (System strengthening without ATS):

- Upgradation of Tuticorin PS - Salem 765kV D/c line (presently charged at 400kV level) at its rated 765kV voltage level with 1x330 MVAR switchable Line Reactor on both ends of each circuit **{ISTS scope}**
- Upgradation of Tuticorin PS to its rated voltage of 765kV level alongwith 3x1500 MVA, 765/400kV ICTs and 2x330 MVAR, 765kV bus reactors **{ISTS scope}**
- Upgradation of Dharmapuri (Salem New) to its rated voltage of 765kV level alongwith 3x1500 MVA, 765/400kV ICTs and 2x330 MVAR, 765kV bus reactors **{ISTS scope}**
- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-II**.

Start date of Connectivity : 31.12.2026 with the availability of common transmission system required for effectiveness of GNA.

B. Grant of Connectivity under GNA Regulations for application no. 1200003911 :

- **Connectivity Transmission system under GNA for KNPP Unit-4:** Connectivity Transmission system under GNA as identified for KNPP Unit-3
- **Start date of Connectivity** : 31.08.2027 with the availability of common transmission system required for effectiveness of GNA .

Further, applicant is required to submit BGs as per following details :

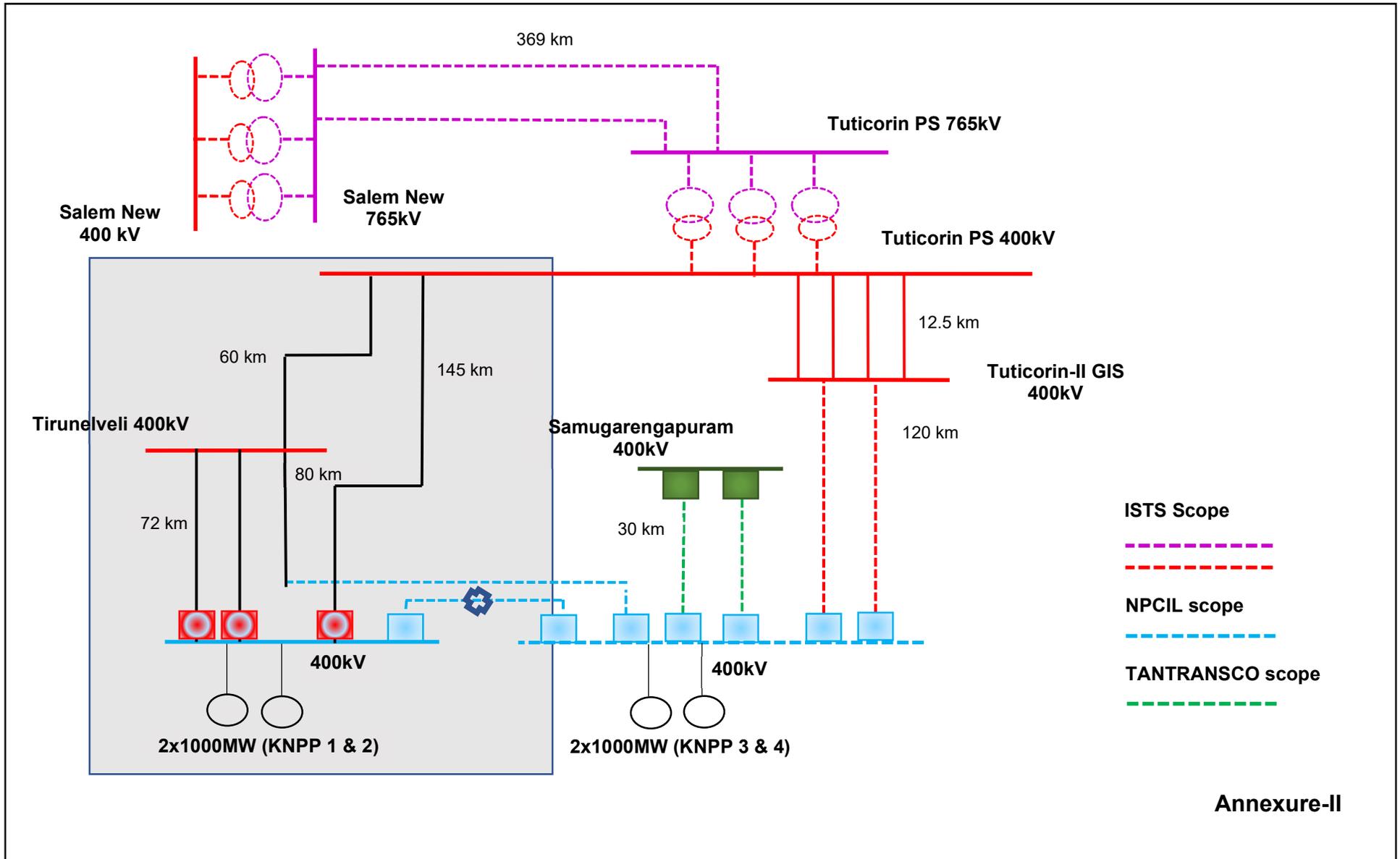
- Connectivity application no. NPCIL/Trans/2010/M/98 (Connectivity Application) & NPCIL/Trans/2019/M/33 (NPCIL's letter) : Conn-BG1 of Rs. 50 lakhs
- LTA application no. (1200003911): Conn-BG1 of Rs. 50 lakhs

In addition to the above, as per Regulation 8.3(b) Conn-BG2 towards cost of ATS (amount to be intimated later) shall be furnished in proportion to the quantum of connectivity under GNA i.e. 1000 MW for each transition.

Members may deliberate.

Annexure-I

Proposed arrangement of Transmission System for evacuation of power Kudankulam – 3 & 4



Annexure-II

ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region

Sl.	Scope of the Transmission Scheme	Capacity /km
1.	Narendra New (GIS) – Pune (GIS) 765kV D/c line with 1x330MVAr switchable line reactor on each ckt at both ends	340 km <ul style="list-style-type: none"> • 765 kV line bays -2 (GIS) (at Narendra New) • 765 kV line bays -2 (GIS) (at Pune) • 765 kV, 330 MVAr SLR – 2 nos (7 X 110 MVAr incl. 1 switchable spare unit) at Pune (GIS) • 765 kV, 330 MVAr SLR – 2 nos (6 X 110 MVAr) at Narendra (New) (GIS)
2.	Upgradation of Narendra (New) (GIS) to its rated voltage of 765 kV level along with 4x1500 MVA transformer and 2x330 MVAr Bus Reactor.	<ul style="list-style-type: none"> • 765/400 kV, 1500 MVA- 4 no. (13 X 500 MVA incl. 1 spare unit) • 765 kV ICT bays- 4 nos. (GIS) • 400 kV ICT bays- 4 nos. (GIS) • 765 kV, 330 MVAr BR – 2 nos. (7 X 110 MVAr incl. 1 switchable spare unit to be used for both bus/line reactors) • 765 kV Bus Reactor bays – 2 nos. (GIS)

**Narendra (New)(GIS) - Kolhapur 765kV D/c line to be kept charged at 400kV level*

*^Out of required 04 nos. of 400kV ICT bays (GIS) for 765/400kV ICTs, 02 nos. of 400 kV ICT bays (GIS) for 765/400kV ICTs are under implementation through TBCB route under the scheme “**Evacuation of Power from RE Sources in Koppal Wind Energy Zone (Karnataka) (2500 MW)**”*