



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग-II
Power System Planning & Appraisal Division-II

सेवा मे / To,

संलग्न सूची के अनुसार
As per list enclosed

विषय: ट्रांसमिशन पर दक्षिणी क्षेत्र स्थायी समिति (एसआरएससीटी) की पहली बैठक की कार्यसूची।

Subject: Agenda for 1st meeting of Southern Region Standing Committee on Transmission (SRST)

महोदय(Sir)/महोदया(Madam),

ट्रांसमिशन पर दक्षिणी क्षेत्र स्थायी समिति (एसआरएससीटी) की पहली बैठक 07 सितंबर, 2018 को चेन्नई, तमिलनाडु में आयोजित की जायेगी। बैठक की कार्यसूची संलग्न है। कृपया बैठक में सम्मिलित होकर अनुग्रहीत करें।

1st meeting of Southern Region Standing Committee on Transmission (SRST) will be held at on 7th September, 2018 at Chennai, Tamilnadu. Agenda for the meeting is enclosed.

Kindly make it convenient to attend the meeting.

भवदीय/Yours faithfully,

(बी.एस.बैरवा/B.S. Bairwa)

निदेशक/ Director

Address List:

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3. Director (System Operations), POSOCO B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016 Tel. No. 26852843 Fax No. 2626524525, 26536901	4. Managing Director Karnataka State Power Trans. Corp.Ltd., Cauvery Bhawan, Bangalore - 560 009. FAX : 080 -22228367
5. Chairman and Managing Director Transmission Corp. of Andhra Pradesh Ltd., (APTRANSCO) Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh	6. Chairman-cum-Managing Director Transmission Corp. of Telangana Ltd., (TSTRANSCO) Vidyut Soudha, Khairatabad Hyderabad – 500 082.
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**Agenda for 1st meeting of Southern Region Standing Committee on
Transmission (SRSCT)**

Date: 7th September, 2018

Time: 10:00 hrs

Venue: Chennai, Tamilnadu

1.0 Minutes of 42nd meeting of the Standing Committee

- 1.1 The Minutes of 42nd meeting of the Standing Committee on Power System Planning of Southern Region (SCPSPSR) held on 27th April 2018 were issued vide CEA's letter No. 1/1221/2018 dated 15th June 2018. No comments have been received on the minutes.

Follow up issues of previous meetings of SCPSPSR

2.0 Proposal of erection of 125 MVAR Bus Reactor at other end instead of 400 kV GIS Srisaillam Left Bank Hydro Electric Station (SLBHES)

- 2.1 In the 39th Standing committee meeting, installation of the 400kV, 1x125MVAR, Bus reactor at Srisaillam Left Bank Hydro Electric Station(SLBHES) 400kV GIS substation was approved. Representative of TSTRANSCO stated that during the 31st TCC& 32nd SRPC meetings held on 21/22.08.2017, it was informed that erection of Bus reactor was not feasible due to space constraint at SLBHES.
- 2.2 In the 41st SCPSPSR it was decided to study and examine the installation of Bus reactors at other end of the substations connecting SLBHES GIS substation in joint meeting.
- 2.3 In the meeting held in CEA on 06.02.2018, it was observed that the effect of one 400kV, 125MVAR bus reactor planned at Dindi substation is not adequate to bring down the overvoltage within limit at SLBHES bus. However, the voltage is observed to be within limit by installation of additional bus reactors of 125 MVAR (400kV) capacity at Dindi i.e. installation of 400kV, 2x125MVAR bus reactor (including one reactor already planned at Dindi substation). Accordingly, it was decided that a team comprising officers from CEA, CTU and TSTRANSCO would visit SLBHES switchyard to explore the feasibility to accommodate the reactor (125 MVAR).
- 2.4 In response of the above a team comprising of officers of CEA, CTU and TSTRANSCO visited SLBHES on 08.08.2018. After visiting the site and discussion with the project authorities, the team was of view that there is no possibility of locating the 125MVAR, 400kV bus reactor at SLBHES without compromising the safety and security of the plant. Site visit report is enclosed at **Annexure-I**.

Members may deliberate.

3.0 High voltage system studies and proposal for reactive compensation in SR

3.1 In the 42nd Standing committee meeting of Southern Region CTU had presented detailed reactive compensation studies considering the present & future scenario and had proposed 24 reactors at various substations of ISTS and Intra-state system. In the meeting TSTRANSCO stated that they will check the requirement of the reactors in their control area.

3.2 In the meeting, following reactor were proposed at substations of Telangana

Sl. No.	Bus Name	Voltage (in kV)	Existing / UC BUS Reactor (MVAr)	Bus Reactor proposed (MVAr)
1	SURYPET	400	-	125
2	RAIDURG	400	-	2x125
3	KAMALAPURAM	400	-	125
4	NARSAPUR	400	-	125
5	MAHESHWARAM-TS	400	-	125
6	TIPPAPUR	400	-	125
7	MANIKONDA	400	-	125
8	JANAGAON	400	-	125
9	CHOUTTUPPAL	400	-	125
10	YELLAMPALLI	400	-	125

3.3 TSTRANSCO informed that 125MVAR bus reactor each at Tippapur ,Kamalapuram, Manikonda and Yellampalli substation are sufficient to keep the bus voltage under control under off-peak condition for time frame 2021-22 (study enclosed at **Annexure-II**)

Members may deliberate.

4.0 Providing additional feed to 3x500 MVA, 400/220kV substation at Mylasandra (Electronic City) and Establishment of 2x500 MVA, 400/220 kV Sub-station at Dommasandra in Bengaluru

4.1 In the 42nd meeting of SCPSR, KPTCL proposed to construct LILO of one circuit of proposed Dharmapuri- Somanahalli 400kV D/c line (PGCIL line) at 400 kV Mylasandra sub-station. With above proposals, 400kV system at proposed 400/220kV Mylasandra substation would be as under:

- i. 3x500MVA, 400/220kV ICTs
- ii. LILO of single circuit of Dharmapuri-Somanahalli 400kV D/C line (quad Moose ACSR conductor) at Mylasyandra
- iii. LILO of single circuit of Kolar-Somanahalli 400kV S/C line (Twin Moose) at Mylasyandra

4.2 Further, KPTCL had proposed for establishment of 400/220 kV sub-station at Dommasandra (with 400/220kV, 2x500MVA ICTs) in Bengaluru city to relieve

400kV Mylasyandra sub-station by reducing the loading on 220 kV lines and to meet the future load growth in the vicinity with following details:

- i. 2 X 500 MVA, 400/220 kV GIS substation at Domasendra
- ii. LILO of Kolar – Mylasandra 400kV S/C line (with Twin Moose ACSR conductor) at proposed Dommasandra substation.
- iii. Somanahalli - Dommasandra 400kV S/C line (with Twin Moose ACSR conductor)
- iv. LILO of Somanahalli - Malur 220 kV D/C line at EXORA sub-station (With this line arrangement, there will be 220kV D/C connectivity between Dommasandra & EXORA, 220 kV S/C connectivity from Dommasandra, each to Sarjapura and Malur).
- v. 220 kV, 1000sqmm UG cable link between 220 kV VT Park substation and 220kV EXORA sub-station (proposed).

4.3 In the 42nd meeting of SCPSPSR, it was decided that the strengthening of upstream lines to Mylasandra sub-station and the proposal of LILO of Dharmapuri-Somanahalli 400kV D/C line at Mylasandra will be studied in detail along with proposal of establishment of a 400kV substation at Dommasandra after joint study of system carried by CEA, CTU, POSOCO and KPTCL.

4.4 Accordingly, the issue was discussed in a joint study meeting held on 10th/11th May 2018, wherein representative of CTU stated that KPTCL had already planned LILO of Kolar - Somanahalli 400 kV S/C line at Mylasyandra 400/220kV substation. Again making LILO of Kolar – Mylasyandra section at proposed Dommasandra 400/220kV substation would reduce reliability of the system. Minutes of the joint study meeting is enclosed at **Annexure –III**.

4.5 To meet out the rising demand of Bengaluru city along with reliability, following alternatives were discussed:

Alternative 1:

- i) LILO of Kolar – Somanahalli 400kV S/C line at Mylasandara 400/220 kV substation (already agreed)
- ii) LILO of one circuit of Dharampuri – Somanahalli 400kV D/C (with Quad ACSR Conductor) line at Mylasandara 400/220 kV substation
- iii) Mylasandra – Dommasandra 400kV D/C line (twin Moose)

Alternative 2:

- i) LILO of Kolar – Somanahalli 400kV S/C line at Mylasandara 400/220 kV substation (already agreed).

- ii) LILO of one circuit of Dharampuri – Somanhalli 400kV D/C (with Quad moose ACSR conductor) line at proposed 400/220 kV substation at Dommsandra.
- iii) Mylasandra – Dommasandra 400kV S/C line (with twin Moose ACSR conductor)

Alternative 3:

- i) LILO of Kolar – Somanhally 400kV S/C line at Mylasandara 400/220 kV substation (already agreed).
 - ii) LILO of one circuit of Dharampuri – Somanhally 400kV D/C (Quad) line at proposed 400/220 kV substation at Dommsandra.
 - iii) LILO of LILO section of Somanahalli – Dommasandra (formed after LILO of single circuit of Dharampuri – Somanhalli 400kV D/C (Quad) line at Dommasandra) at Mylasandra.
- 4.6 Regarding alternative-1, KPTCL stated that proposed 400/220kV substation at Mylasandra is GIS and space is not available for 06 nos of 400kV line bays. Therefore, Alternative-1 can be ruled out.
- 4.7 Load flow studies were carried out for both Alternative-2 and Alternative-3 (power flow plot enclosed as Exhibit-2). The studies show that both Alternative-2 and Alternative-3 are acceptable, but Alternative-2 is more reliable than Alternative-3.
- 4.8 KPTCL stated that in case of both Alternative-2 and Alternative-3, multi circuit towers are need to be used for construction of lones constructed between Mylasandra and Dommasandra. However, KPTCL requested to consider Alternative-2 over Alternative-3 considering higher reliability.
- 4.9 Accordingly, Alternative-2 was agreed for supplying reliable power to Bengaluru city. The transmission system of Mylasandra and Dommasandra 400kV S/S will be as follows:

Connectivity at Mylasandra 400/220kV substation:

- i) 3x500MVA, 400/220kV ICTs
- ii) LILO of Kolar – Somanhally 400kV S/C line at Mylasandara 400/220 kV substation (already agreed)
- iii) Mylasandra – Dommasandra 400kV S/C line (twin Moose)

400/220kV substation at Dommasandra :

- i) 2x500MVA, 400/220kV ICTs
- ii) LILO of one circuit of Dharampuri – Somanhally 400kV D/C line (with Quad moose ACSR Conductor) at proposed 400/220 kV substation at Dommsandra.
- iii) Mylasandra – Dommasandra 400kV S/C line ((with twin moose ACSR Conductor) on D/C towers

- 4.10 KPTCL stated that they would plan to utilize RoW of Kolar – Somanahalli 400kV S/C line for LILO of Dharampuri – Somanahalli 400kV D/C line (with Quad moose ACSR conductor) at Dommsandra. It was also clarified that modalities may be finalized at the time of implementation.

Members may concur.

5.0 Evacuation of power from RE sources in Southern Region (Proposed Wind Energy Zone by MNRE)

- 5.1 In the 42nd meeting of SCPSR held on 27.04.2018, it was informed that based on various inputs like district wise NIWE potential, SNA developable potential, pooling station wise wind capacity sanctioned by STU, RE applications received in ISTS by CTU and detailed discussion with MNRE & wind IPPs/developers, projected capacity in each Wind Energy Zone (WEZ) were identified and prioritized for implementation in 2021-22-time frame in wind resource rich states. In the meeting held in MNRE, Koppal (2500 MW) in Karnataka, Kurnool (3000 MW) in Andhra Pradesh and Karur (2500 MW) in Tamil Nadu were identified as prioritized Wind Energy zones for which transmission infrastructure needs to be developed/made available under ISTS Intrastate transmission system. Further, it was indicated that Tirunelveli/ Tuticorin district in TN is also a high wind potential complex and 2500 MW of wind energy potentials considered for development of transmission infrastructure under ISTS/Intra-state transmission system.
- 5.2 In the meeting it was decided that comprehensive study would be carried out with Southern Region constituents for accessing the transmission system requirement in the region as a whole.
- 5.3 A joint system study was held in SRPC, Bengaluru on 10&11, May 2018. In the meeting, LGB was finalized considering peak wind scenario and peak and off peak demand scenario (2021-22). Minutes of the joint study meeting is enclosed at Annexure –III. After analyzing study results following Transmission system were agreed:

A. Tirunelveli and Tuticorin Wind Energy Zone (Tamil Nadu):

- i. Addition of 2x500 MVA, 400/230kV ICTs (4th & 5th) at Tuticorin-II GIS sub-station.
- ii. Operation of Tuticorin-II GIS – Dharmapuri (Salem) 765 D/C line (presently operating at 400kV) at its rated voltage. (i.e 765kV) would be reviewed for dispersal of more than 2000MW RE generation

B. Karur / Tiruppur Wind Energy Zone (Tamil Nadu):

- i. Establishment of 5x500 MVA, 400/230 kV Karur Pooling Station (at a location in between Karur Wind zone and Tiruppur wind zone)

- ii. LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS
- iii. 9 Nos. of 230kV line bays for interconnection of wind projects
- iv. 2x125 MVA, 400kV Bus reactors at Karur PS

C. Koppal Wind Energy Zone (Karnataka)

The following transmission system mentioned was agreed for connectivity of RE generators at proposed Munirabad/Koppal PS.

- i. Establishment of 5x500 MVA, 400/220kV pooling station near Munirabad /suitable location in Koppal distt.
- ii. Pooling station (near Munirabad /suitable location in Koppal distt.) - Munirabad 400 kV D/c Line (with Quad Moose ACSR conductor)
- iii. Pooling station (near Munirabad /suitable location in Koppal distt.) - Narendra (New) 400 kV D/c Line (with Quad Moose ACSR conductor)
- iv. 9 Nos of 220kV line bays for interconnection of wind projects
- v. 2x125 MVA,400kV bus reactor at Pooling station (near Munirabad /suitable location in Koppal distt.)
- vi. Adequate space provision for future expansion.

It was also agreed that for transfer of power from the above pooling station would require system strengthening in Western Region. Accordingly, it was suggested that issue of strengthening of WR system need to be discussed/taken up with WR constituents.

D. Kurnool Wind Energy Zone (AP):

Considering on the land availability for pooling station and the applications of RE developers for connectivity with ISTS a pooling station at common location in between Kurnool & Ananthapur distt. has been proposed with following details:

- i. Establishment of 765/400/220kV Pooling station (at suitable location in Kurnool substation Distt) at Kurnool-III (e.g. near Adoni) with 3x1500 MVA, 765/400kV; 6x500 MVA, 400/220kV transformation capacity
- ii. Kurnool-III Pooling station - Kurnool(new) 765 kV D/c Line
- iii. 10 nos of 220kV line bays for interconnection of wind projects
- iv. 1x240 MVA (765kV) & 1x125MVA (400kV) bus reactors at Kurnool-III Pooling station.
- v. Adequate space provision for future expansion.

Members may discuss.

6.0 Intra- state transmission projects proposed for Green Energy Corridor Ph-II in Karnataka

- 6.1 In the 42nd SCSPCR, KPTCL proposed following Intra-State transmission projects

for evacuation of large scale RE generation

SI No	Project Description
1	Establishing 2X500 MVA, 400/220/110kV substation at Yalwar in B.Bagewadi Taluk, Bijapur district.
2	Establishing 2X500 MVA, 400/220kV substation at Lokapur in Bagalkot district.
3	Providing additional 400kV link with proposed 400/220 kV Doni sub-station by LILO of existing Narendra- Davanagere 400 kV D/C line (with twin moose ACSR conductor) at Dhoni sub-station.
4	Establishing 2X100MVA, 220/110 kV substation at Ron in Gadag district.
5	Establishing 2X100MVA, 220/110 kV substation at Savalgi in Bagalkot district.
6	Establishing 2X100MVA, 220/66 kV substation at P.D.Kote in Chitradurga district.
7	Establishment of 2x100 MVA, 220/66 kV sub-station at Hanagal (New), Chitradurga District
8	LILO of 2nd circuit of the existing Mahalingpura - Kudachi 220 kV D/C line at Athani.
9	Conversion of existing Bidnal-Saundatti 220 kV S/C line and Saundatti - Mahalingpura 220kV S/C to 220 kV D/C line
10	Strengthening of Lingapura-Ittagi 220kV S/C line, Ittagi –Neelagunda 220kV S/C, Neelagunda –Guttur 220kV S/C line by replacing line with 220 kV D/C line (Twin Drake conductor).

6.2 In the meeting, it was decided that due to large scale integration of renewable generation in SR, detailed study considering the proposals of renewable rich states of SR and CTU need to be carried out.

6.3 In the joint system study held on 10th and 11th May 2018, the proposed transmission system was studied in detail and deliberations are as follows:

A. Establishment of 2x500 MVA, 400/220 kV sub-station at Yalwar, Bijapur District with following elements:

400 kV System:

- i. Narendra (New) Kudgi-Yalwar 400 kV D/C line (with Quad Moose ACSR Conductor)
- ii. Gulbarga- Yalwar 400 kV D/C line (with Quad Moose ACSR Conductor).

- iii. 2 X 500 MVA, 400/220 kV ICTs at Yalwar.
- iv. 2 X 125 Mvar bus reactors.

220 kV System:

- i. LILO of both circuits of existing B.Bagewadi – Lingasugur 220 kV D/C line at Yalwar.
- ii. LILO of both circuits of Bijapur- Sindagi 220 kV D/C line sub-station at Yalwar.
- iii. B.Bagewadi -Yalwar 220 kV D/C line.

System study shows that power flows from proposed Yalwar sub-station toward Narendra. In case of outage of the proposed Yalwar –Narendra (New) 400kV D/C line, all the power will absorb in state network.

After deliberations, the proposed 400/220 KV substation at Yalwar and associated transmission lines for evacuation of wind generation in Yalwar was agreed except Yalwar - Nagendera (New) 400kV D/C line.

B. Establishment of 2x500 MVA, 400/220 kV sub-station at Lokapur, Bagalkot

400 kV System:

- i. LILO of both circuits of Narendra (New) –Narendra (PGCIL) 400 kV D/C line (with Quad Moose ACSR Conductor) at Lokapur
- ii. 2 X 500 MVA 400/220 kV ICTs.
- iii. 2 X 125 Mvar bus reactors.

220 kV System:

- i. LILO of both circuits of existing Gadag-Bagalkot 220 kV D/C line at Lokapur.
- ii. LILO of both circuits of Mahalingpura-Soundatti 220 kV D/C line at Lokapur.
- iii. Mughalkod.- Lokapur/Bagalkot 220 kV D/c Line.

The study result shows that power flows from Narendra (New) dispersed towards Kolhapur (PG). The congestion /transmission constraint observed in the system beyond Kolhapur (MSETCL) and Kolhapur (MSETCL) – Karad 400kV D/c line gets overloaded. Accordingly, it was decided to review the transmission system for Lokapur Wind Energy zone along with Koppal Wind Energy Zone seeking connectivity at ISTS.

C. Providing additional feed to 400/220 kV Dhoni sub-station by LILO of existing Narendra – Davanagere 400 kV Twin Moose D/C line at Dhoni.

The system study shows that additional feed to 400/220 kV Dhoni sub-station by LILO of existing Narendra – Davanagere 400 kV D/C line (with twin moose ACSR conductor) at Dhoni does not provide any additional benefit and hence, LILO of above line at Dhoni was not agreed.

D. Establishment of 2x100 MVA, 220/110 kV sub-station at Ron (New), Gadag District

220 kV System:

- i. Doni- Ron 220kV D/C line.
- ii. 2 X 100 MVA, 220/110 kV ICTs.

110 kV System:

- i. LILO of both circuits of existing Ron-Gajendragad 110 kV D/C line at Ron (New).
- ii. 110 kV LILO of DC line between Gadag and 110 kV Ron to proposed 220 kV Ron. (Existing SC line via Naregal and proposed ongoing 2nd circuit directly to 110 kV Ron).

E. Establishment of 2x100 MVA, 220/110 kV sub-station at Savalgi, Bagalkot District

220 kV System:

- i. LILO of both circuits of Kudgi-Vajramatti 220 kV D/C line at Savalgi.
- ii. 2x100 MVA, 220/110 kV transformers.

110 kV System:

- i. LILO of existing Todalbagi-Mamadapura 110 kV S/C line at Savalgi.
- ii. LILO of existing Bableshwar-Mamadapura 110 kV S/C line at Savalgi.

F. Establishment of 2x100 MVA, 220/66 kV sub-station at Hanagal (New), Chitradurga District

220 kV Transmission scheme:

- i. Jagalur - Hanagal 220 kV D/C line.
- ii. 2 X 100 MVA, 220/66 kV ICT's.

66 kV System:

- i. LILO of existing Gudikote-Hangal 66 kV S/C line at Hangal (New).
- ii. LILO of both circuits of Hangal -Rampura 66 kV D/C line at Hangal (New).
- iii. Hangal - Konasagara 66 kV S/C line on D/c towers.

G. Establishment of 2x100 MVA, 220/66 kV sub-station at PD Kote (New), Chitradurga District

220 kV System:

- i. LILO of both circuits of Hiriyur-Gowribidanur 220 kV D/C line at P.D.Kote (New).
- ii. 2 X 100 MVA, 220/66 kV ICT's.

66 kV System:

- i. LILO of both circuits of Hariyabbe-P.Kote 66 kV D/C line at P. D Kote (New).
- ii. LILO of Hiriyur-Kalmaranahalli 66 kV S/C line at P. D Kote (New).

H. LILO of 2nd circuit of the existing Mahalingpura - Kudachi 220 kV D/C line at Athani.

I. Conversion of existing Bidnal-Saundatti 220 kV S/C line and Saundatti - Mahalingpura 220kV S/C to 220 kV D/C line

J. Strengthening of Lingapura-Ittagi 220kV S/C line, Ittagi –Neelagunda 220kV S/C, Neelagunda –Guttur 220kV S/C line by replacing line with 220 kV D/C line (Twin Drake conductor).

The transmission system proposals of KPTCL mentioned at D to J found to be in order and agreed.

Members may concur.

Transmission planning proposals by Karnataka

7.0 Establishment of 1x500 MVA, 400/220 kV Substation at Arasapadavu

7.1 KPTCL vide their email dated 23.08.2018 informed that they are planning 1x500 MVA, 400/220 kV at Arasapadavu, Dakshina Kannada district with double LILO arrangement of 400 kV UPCL-Shantigrama D/C Quad Moose line with LILO distance of about 11km.

7.2 Further, it is proposed to extend connectivity to proposed EHT load of M/s MRPL to an extent of 400 MVA (ultimate load). The proposed 400 kV Arasapadavu sub-station is intended to take loads of 220 kV MSEZ and Kavour sub-stations, resulting in reduction of load on 2X315MVA, 400/220kV UPCL transformers and 220 kV UPCL-Kemar line. Also, there will be considerable reduction in system loss.

7.3 KPTCL has been carried out Load flow studies enclosed at Annexure-IV and proposed following transmission scheme:

- i. LILO of both circuits of 400 kV UPCL-Shantigrama D/C line at 400/220kV Arasapadavu sub-station.
- ii. 1 X 500 MVA, 400/220 kV transformers with provision for additional 500 MVA transformer in future.
- iii. LILO of both circuits of MSEZ – Kemar 220kV D/C line at proposed Arasapadavu .

Members may discuss.

Transmission planning proposals by Tamil Nadu

8.0 Establishment of 400/230kV substation at Vadamadurai

8.1 TANTRANSCO has informed that Vadamadurai 400/230kV S/S has been envisaged to avoid overloading of Sembatty-Checkanurani 230kV feeder and also to reduce the overloading of auto transformers at Renganathapuram 230 kV Substation and overloading of ICTs at Checkanurani 400/230 kV Substation. This Substation cater the loads of the existing Sembatty 230 kV SS and the proposed Thummakundu 230 kV SS, Vedasandur SS & Palani 230 kV SS in Madurai Region.

8.2 In view of the above TANTRANSCO proposed following schemes:

- i. Establishment of Vadamadurai 400/230kV SS with 2x500 MVA 400/230 kV ICT
- ii. 2x125 MVAr Bus Reactors

400 kV Connectivity:

- i. LILO of Karaikudi-Pugalur 400 kV D/C line at Vadamadurai
- ii. LILO of Thappagundu – Anaikadavu 400 kV D/C line at Vadamadurai

8.3 The system studies conducted by TANTRANSCO is enclosed at Annexure-V

Members may discuss.

9.0 Establishment of 400/110 kV substation at Vishwanathapuram

9.1 TANTRANSCO has informed that Vishwanathapuram 400/110kV SS has been envisaged for reducing the overloading of auto transformers of the existing Hosur 230 kV SS and the upcoming Uddanapally 230 kV SS and also to reduce the loading of certain 110 kV lines in that area. The proposed 400/110 kV SS will be an alternate source for the associated 110 kV SSs in the Hosur & Krishnagiri area which is an industrial area and further industrial expansion is expected by way of proposed establishment of SEZ in future. Ensuring reliability of source in this area will reduce

power interruption and avoid major revenue loss. TANTRANSCO requested for Provision of additional 1x 500 MVA, 400/230 kV ICT at Thiruvalem 400/230 kV SS.

9.2 In view of the above TANTRANSCO proposed following schemes:

- i. Establishment of Vishwanathapuram 400/110kV S/S with 3x200 MVA 400/110 kV ICT
- ii. 1x125 MVAr Bus reactor
- iii. 1x80 MVAr line reactor at Viswanathapuram the 400kV Vishwanathapuram – Thiruvalem line.

400 kV Connectivity:

- iii. LILO of Thiruvalem-Palavady 400 kV S/C line at Vishwanathapuram (quad moose)
- iv. PGCIL Hosur(Shoolagiri)- Vishwanathapuram 400kV S/C line

9.3 The system studies conducted by TANTRANSCO is enclosed at Annexure-VI
Members may discuss.

10.0 Modification in approved 400/230-110 kV substation at Sholingur

10.1 TANTRANSCO has informed that Sholingur has been already approved in the 37th meeting of the Standing Committee on Power System Planning of Southern Region held on 31st July 2014 in New Delhi, with the following scheme:

2x315 MVA 400/230 kV ICTs and 2x200MVA 400/110 kV ICTs

400 kV Connectivity:

LILO of Sriperumbudur – Tiruvalem 400 kV S/C line at **Sholingur**

10.2 TANTRANSCO has proposed following revision:

ICT

- i) 400/230 kV, 2x500 MVA
- ii) 400/110kV,3x200 MVA
- iii) 2x125 MVAr Bus reactor

400kV connectivity:

LILO of Thiruvalem –Alamathy at **Sholingur**

10.3 The system studies conducted by TANTRANSCO is enclosed at Annexure-VII

Members may discuss.

11.0 Revised Scheme for power evacuation scheme proposed for Udangudi TPP stage -1 2x660 MW

11.1 TANTRANSCO vide their letter dated 22.07.2018 informed that the power evacuation system for the proposed state owned Udangudi power project (Stage -I)- 2X660 MW was approved in the 37th Standing meeting on Power System Planning of Southern Region held on 31.07.2017 with associated transmission schemes as detailed below:

ATS-for the proposed thermal power plant at Udangudi (2x660 MW) .

- i. 400kV D/C line (with Quad Moose ACSR) to the Kayathar 400kV S/S.
- ii. 400kV D/C line to the proposed Samugarengapuram 400/230-110 kV S/S.
- iii. 400kV D/C line (with Quad Moose ACSR)to the proposed Ottapidaram 400/230-110kV S/S.

11.2 Rising trend of capacity addition of solar power over and above the already proposed wind generation in Kayathar-Tirunelveli area necessitated to revisit the associated transmission schemes of Udangudi MW power project. Hence TANTRANSCO carried out load flow study considering following scenario (enclosed at Annexure-VIII).

- a) Network condition for the year 2022-23. (Probable year of commissioning of Udangudi (Stage-I) project.
- b) LTA quantum of wind generation considered in the PGCIL Substations:
 - i) Trichy(Alundur) -80 MW
 - ii) Pugalur - 240+170 =410 MW
 - iii) Tirunelveli Pooling Station (Tuticorin-II)- 800 MW
- c) The solar/wind plants considered in this study are as follows:
 - i) Thennampatty 400/230-110 kV SS: 1200 MW (Solar - 500 MW + Wind -700 MW)
 - ii) Kanarpatty 400/230-110 W SS: 950MW (Solar-350 MW +Wind-600MW)
 - iii) Kayathar 400/230-110 kV SS: 1118 MW (Solar- 50 MW + Wind -1068 MW)
 - iv) Samugarengapuram 400/230-110 kV SS: Wind generation of 1200 MW
 - v) Kamuthi 400/230-110 kV SS: solar generation of 1000 MW
 - vi) Tiruchuzhi 230/110 W SS: solar generation of 500 MW
- d) Generation from SEPC(1x525 MW) & Ind Bharath at Ottapidaram 400 kV SS.
- e) The existing/sanctioned 400 kV connectivity of Kayathar SS in base case:
 - i) 400kV D/C line to Thennampatty 400 kV SS
 - ii) 400kV D/C line to Kanarpatty 400 kV-SS
 - iii) 400kV D/C line to Karaikudi 400 kV SS

- iv) LILO of one circuit of Kayathar – Karaikudi 400kV D/C line at Konthagai
- v) 400kV D/C line to Virudhunagar 765/400 kV SS
- vi) 400kV D/C line from Udangudi switchyard (2x660MW)

11.3 Load flow study has been conducted with the following cases in Full Wind and Full solar condition for the year condition 2022-23.

BASECASE: Udangudi 2x660 MW plant connected to Kayathar 400 kV SS

CASE-1: Udangudi MVV plant connected to Virudhunagar 765/400 kV SS instead of connectivity at Kayathar 400 kV SS

11.4 In base case, due to pooling of thermal as well as renewable Energy generation at Kayathar 400 kV SS, Kayathar-Kanarpatty 400 kV D/C line and Kanarpatty-Tirunelveli(Abhisekapatty) 400 kV lines are found to be overloaded. To mitigate this, in case 1, the Udangudi power plant is connected to Virudhunagar 765/400 V SS instead of Kayathar 400 kV SS. This will reduce the loading of Kayathar-Kanarpatty and Kanarpatty-Abhishekapatty 400 kV D/C lines to permissible limits. However, to assess the adequacy of the transmission system, contingency analysis has been done for the following contingency conditions in case 1:

Outage 1: one circuit of 400 kV Kayathar — Kanarpatty D/C line (with Twin Moose ACSR conductor).

Outage 2: one circuit of 400 kV Kanarpatty —Tirunelveli(Abhisekapa) D/C line (with Quad Moose ACSR conductor).

11.5 From the study results it is observed that even in Case1 also, during outage condition of one circuit of Kayathar — Kanarpatty 400kV D/C line, the other line is found to be loaded to 1000 MW. Similarly, during outage condition of one circuit of Kanarpatty — Abhisekapatty 400kV D/C line, the other line is found to be loaded to 1787 MW.

To avoid these overloadings, the generation pooled at Kayathar needs to be reduced so that the outflow from Kayathar 400 kV SS to Kanarpatty an further to Abhishekapatty SS will get reduced. In this scenario, it is inevitable to reduce the generation from M/S. SEPC and M/S. Ind Bharath in order to contain the said overloading in the event of the above said contingencies during peak wind season and also to facilitate evacuation of RE power in this area without constraints.

Study Observations :

Sl.No.	400 kV Lines	Base case (Flow in MW)	Case1 (Flow in MW)
1	Udangudi to Kayathar D/C line (with Quad Moose ACSR conductor).	2x712	
2	Kayathar - Kanarpatty D/C line (with Twin	2x710	2x584

	Moose ACSR conductor)		
3	Kanarpatty —Abhisekapatty D/C line (with Quad Moose ACSR conductor).	2x1105	2x991
4	Karaikudi-Alundur S/C line (with Twin Moose ACSR conductor).	1x586	1x589
5	Udangudi to Virudhunagar D/C line (with Quad Moose ACSR conductor).		2x531
6	Kayathar —Virudhunagar D/C line (with Quad Moose ACSR conductor).	2x303	--

FAULT LEVEL:

Three phase Fault level of Kayathar 400 kV SS:

Basecase - 50.257 kA (When Udangudi 2x660 MW connected to Kayathar)

Case 1 - 40.412 kA (When Udangudi 2x660 MW is not connected to Kayathar)

11.6 In view of the above, TANTRANSCO requested to change the connectivity of Udangudi Power Project(Stage-I)-2x660 MW from Kayathar 400 kV SS to Virudhunagar 765/400 kV SS.

11.7 The revised ATS for the proposed thermal power plant at Udangudi (2x 660 MW) StageI is given below:

- i) 400kV D/C line(with Quad Moose ACSR conductor).to the Virudhunagar 765/440kV SS.
- ii) 400kV D/C line (with Quad Moose ACSR conductor).to the proposed Samugarengapuram 400/230 -110 kV SS.
- iii) 400kV D/C line (with Quad Moose ACSR conductor).to the proposed Ottapidaram 400/230-110kV SS.

Members may discuss

12.0 Enhancement of 400/230 kV ICT capacity from 3 X 315 MVA to 3 X 500 MVA at the existing Sriperumbudur 400/230-110kV SS

12.1 TANTRANSCO vide their letter dated 23.08.2018 informed that combined Interconnecting transformer capacity at Sriperumbudur 400/230-110 kV SS is 1345 MVA with 400/230 kV, 3x315 MVA ICTs and 400/110 kV, 2x200 MVA ICTs.

12.2 Further, The peak reached in the ICTs at Sriperumbudur 400/230-110 kV SS are as follows.

- 315 MVA, 400/230 kV ICT - 1 - 282 MVA
- 315 MVA, 400/230 kV ICT - 2 - 282 MVA
- 315 MVA, 400/230 kV ICT - 3 - 282 MVA
- 200 MVA, 400/110 kV ICT - 4 - 179 MVA

200 MVA, 400/110 kV ICT - 5 - 179 MVA

- 12.3 The sustained peak value of 3 nos. 315 MVA ICT is 756 MVA which is 80 % of its full load capacity. The ICT – 1 could not be loaded upto its full capacity due to internal technical problem. Hence ICT-1 and ICT 2 & 3 are in service with split bus arrangement. However, the sustained load in each ICTs is 250 MVA and are loaded upto 80% each at present.
- 12.4 TANTRANSCO has been carried out load flow studies and results are enclosed at Annexure IX.
- 12.5 In order to accommodate all the existing & future load demands, it is essential to enhance transformation capacity from 3x315MVA(400/220kV) to 3x500MVA (400/230kV) at Sriperumbudur 400/230-110 kV SS. The space for erection of 400/230 kV, 500 MVA ICT is also available at Sriperumbudur 400/230-110 kV SS.
Member may discuss.

13.0 Provision of 400 kV power evacuation scheme – Contingency arrangement for power evacuation of NCTPS Stage – III (1 X 800 MW)

- 13.1 TANTRANSCO vide their letter dated 23.08.2018 informed that The erection works of North Chennai Stage – III (1 X 800 MW) Super Critical Thermal Power Project (NCTPS) are under progress and will be ready for commissioning by August 2019. For evacuation of power from NCTPS Stage –III, the erection works for the following schemes are under progress :
- i. North Chennai 765/400 kV pooling station.
 - ii. Ariyalur 765/400 kV substation.
 - iii. North Chennai Pooling station - Ariyalur , 765 D/C line
 - iv. NCTPS Stage III - North Chennai 765 kV 765 D/C line .
- 13.2 If the commissioning of Ariyalur 765/400 kV SS and 765 kV DC line from North Chennai 765/400 kV Pooling station to Ariyalur 765/400 kV SS is delayed, it is proposed to evacuate the power from North Chennai Stage – III (1 X 800 MW) Super Critical Thermal Power Station as a contingency measure by making LILO of Manali – Alamathy 400 kV line at North Chennai 765/400 kV Pooling station. This LILO arrangement can be made by utilizing a portion of 765 kV DC line from North Chennai 765 kV pooling station to Ariyalur 765 kV SS.
- 13.3 TANTRANSCO has been carried out load flow studies and results are enclosed at Annexure X.
- 13.4 TANTRANSCO requested for approval of the above contingency arrangement.
Members may discuss.

14.0 Proposal for the establishment of 400 kV Substation at Cuddalore instead of at Neyveli

14.1 Establishment of Neyveli 400/230 kV Substation by upgradation of the Neyveli (TNEB) 230 kV SS was approved in the 41st meeting of the Standing Committee on Power System Planning for Southern Region. The approved connectivity for the establishment of Neyveli 400/230 kV substation is as follows.

400 kV Connectivity

- i) New Neyveli Thermal power station- Neyveli (TNEB) 400 kV D/C Link.
- ii) Manalmedu- Neyveli (TNEB) 400 kV D/C Link.

(b) ICT and Bus reactors:

- i) 2 x 500 MVA, 400/230 kV ICTs
- ii) 2x 125 MVAr bus Reactors

14.2 In the 42nd meeting of Standing Committee on Power System Planning for Southern Region, certain re-arrangement in the existing transmission system was agreed , so as to control high short circuit fault level in Neyveli Generation complex. Due to this rearrangement, the already approved 400kV connectivity for Neyveli 400/230kV SS was modified as below.

“ Modification in Neyveli(TNEB) – NNTPS 400 kV D/C line (agreed in 41st SCPSR) as Neyveli(TNEB) – Neyveli TS-II 400 kV D/C line with high capacity conductors (to be constructed by TANTRANSCO) “

14.3 However, due to constraint in acquiring the land for the establishment of 400kV SS at Neyveli, it is proposed to establish the 400 kV substation at Cuddalore which is nearby the already proposed location at Neyveli.

14.4 Based on the above modification as mentioned in para 14.2, TANTRANSCO has carried out load flow study for the establishment of Cuddalore 400/230-110 kV substation by upgradation of the existing Cuddalore 230 kV substation (results enclosed at Annexure-XI) and the following connectivity is proposed.

400 kV Connectivity

- i) Neyveli TS-II – Cuddalore 400 kV D/C Link.
- ii) Manalmedu- Cuddalore 400 kV D/C Link.

ICT and Bus reactors:

- i) 2 x500 MVA, 400/230 kV ICTs
- ii) 2x200 MVA, 400/110 kV ICTs
- iii) 2x125 MVAr, 400kV bus Reactors

- 14.5 TANTRANSCO requested for establishment of Cuddalore 400/230-110 kV substation by upgradation of the existing Cuddalore 230 /110 kV substation instead of the already approved Neyveli 400/230 kV substation.

Transmission planning proposals by Andhra Pradesh

15.0 Proposal for erection of 220/33 kV Substation at Chinturu (V), Chinturu (M) in East Godavari district

- 15.1 APTRANSCO vide their letter dated 26.06.2018 proposed erection of 220/33 kV Chinturu SS with a connectivity of 220 kV LILO (5 KM approx.) of existing 220 kV KTS - Lower Sileru —II line to proposed 220/33 kV Chinturu SS by considering a load growth of 9.86%.
- 15.2 Presently, area is being fed from existing 132/33kV substation at Yetapaka, (Telangana state control).

Sl. No.	Name of the 33 kV feeder	No. of the 33/11kV SS	Name of 33/11kV SS	% Voltage Regulation	
				Base Year	Horizon Year
1.	Etapaka-Kunavaram	5	Purusothapatnam, Nellipaka, Kunavaram, Sarivela, Chinturu.	15.54	24.86

The voltage regulations of 22kV Etapaka-Kunavaram feeder is beyond-permissible limits both at Base and Horizon years.

- 15.3 To improve the voltage regulation of the above 33kV feeder, the One No: New 33kV from 132/33 kV Yetapaka substation to the nearest cut point of Chinturu substation duly taking the loads of 33/11 kV Chinturu, Sarivela & Kunavaram substations.

Sl. No.	Name of the 33kV feeder	No. of 33/11kV S/S	Name of the 33/11kV S/S	% Voltage Regulation	
				Base Year	Horizon Year
1.	Yetapaka Chinturu (New)	3	Kunavaram, Sarivela, Chinturu.	5.48	8.77

2.	Yetapaka - Kunavaram	2	Purusothapatnam, Nellipaka.	5.06	8.10
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- 15.4 With the above improvements the voltage regulation of all the 33 kV feeders in the scheme area are within permissible limits up to horizon ear as follows.
- 15.5 As per the load flow studies erection of 220/33 kV SS at Chinturu ,technically is not justified. Kunavaram and Nellipaka Mandals are declared as submerged mandals under Polavaram Project and the loads of the said two mandals will be shifted to Chinuturu Mandal due to relocation of villages, when the Polavaram Project is completed.
- 15.6 The Chinturu subdivision is covering an area of 520 KM radius, Ghat roads, Godavari River and 03 Nos. State borders (Orissa, Chattisghar and Telangana) were surrounded to this subdivision. Every year due to flooding of Sabari, Seeleru, Godavari Rivers and other local streams, the area is totally submerged under flood condition. The existing 33kV line is also submerged in flood water certain times. Due to this, Chinturu, Kunavaram, VR. Puram and Nellipaka mandals will be without power supply till receding of flood water and restoration of supply. There are no 33 kV interlinking lines for extending supply to this alternate feeding lines to this area..
- 15.7 The Chinturu Sub-division was newly formed with Chinturu, Kunavaram, VR. Puram and Nellipaka 04 Nos. mandals duly amalgamated from TSNPDCL to APEPDCL in Andhra Pradesh state bifurcation. At present, the 33 kV loads ofüinttxu-are being fed from existing 132/33 kV Substation at Yetapaka, which is under Telangana a€aÄistance of 90 KM from Chinturu village resulting in voltage drop at Chinturu end due to long length of line. During rainy season there are heavy gales and rains which causes frequent break downs on existing 33kV feeder which is situated in reserve forest. Much difficult is being experienced by operation wing of APEPDCL for rectification due to the major length of line passing through forest area.
- 15.8 After Polavaram project completion alternate accommodation for the merged villages in 04 mandals public will be in and around Chinturu and the 33kV feeders from 132/33 kV SS Yetapaka will submerge in the back waters of Polavaram Project. There is no other alternative supply available for 05 No's 33/11kV substations in this situation. To

arrange alternative supply to these submerged 5 Nos. 33/11 kV substations, erection of 220/33 kV sub-station at Chinturu is essentially required.

- 15.9 In view of the circumstances explained above, APTRANSCO has requested approval for erection 220/33 kV Chinturu SS with a connectivity of 220 kV LILO (5 KM approx.) of existing 220 kV KTS - Lower Sileru —II line to proposed 220/33 kV Chinturu SS as this is the only line passes near to Chinturu village i.e. 5 KM approx.

Members may discuss.

16.0 Proposal for Revival of abandoned 220kV D/C line from Lower Sileru-Bommuru in East Godavari District.

- 16.1 APTRANSCO their vide letter informed that Lower Sileru Hydro Electric Scheme (LSPH, USPH & DCPH), is producing power by utilizing the water of Sileru river, which is available almost throughout the year and meeting the energy requirements of Andhra Pradesh State. Total Power being produced from Lower Sileru Power House is 460 MW (4x115 MW). The following feeders are connected with Lower Siler Power House for evacuating power

- i) Lower Sileru -Bommuru 220kV S/C Line
 - ii) Lower Siler- Donkaraya 220 kV S/C Line.
 - iii) 220 kV Lower Sileru — Kothagudem 1&2 Lines under the ownership of APTRANSCO & TSTRANSCO
 - iv) 220 kV Lower Sileru -Barsoor 1&2 Lines under the ownership of APTRANSCO & CSPTCL (Chattisgarh).
- Barsoor I & II feeders between Andhra Pradesh and Chattisgarh are not being used since long time.

- 16.2 Total Power being produced from Upper Sileru Power House is 240 MW (4x60 MW). The following feeders are connected with Upper Sileru Power House.

- i) Upper Sileru - Donkaraya 220kV S/C Line.
- ii) Upper Sileru Pendurthy 220kV S/C Line.
- iii) Upper Sileru -Balimela 220kV S/C Line under the ownership of APTRANSCO and OPTCL (Odisha).
- iv) Upper Sileru - Balimela 220kV feeder is under standby mode.

- 16.3 Total Power being produced from Donkaraya Canal Power House is 25 (1x25 MW) The following feeders are connected with Donkaraya anal Power House,

- i) Donkaraya - Upper Sileru 220kV S/ C Line.

ii) Donkaraya Lower Sileru 220kV S/C Line.

- 16.4 Presently, the Power generated in the LSHES is being evacuated mainly through 220kV Lower Sileru - Bommuru (S/C line), 220kV Lower Sileru Kothagudem I &II and 220kV Upper_Sileru –Pendurthy(S/C) line. The maximum Power evacuation capability of each line is around 180 M W.
- 16.5 Further,220kv Lower Sileru –Kothagudem I&II line maintance is to be attended by APTRANSCO and TSTRANSCO based on the state bounderies. Due to involvement of two agencies and line passing through deep forest, the restoration of the faults in the feeders are taking more time. Also, KTPS being a strong generating source, evacuating power over KTPS is becoming difficult, espaceally during peak hours, Power from KTPS being flown to Bommuru and Pendurthy feeders and making the lines overloaded. 220kV Lower Sileru-Bommuru S/C line is getting overloaded when the generation at Sileru basin exceeds 450 to 500 MW. Dur to which full potential generation (730 MW) has not been utilized. Hence the proposal for replacement of 220kV lower-Bommuru (S/C line) conductor with equivalent HTLS conductor is also under consideration.
- 16.6 There is a proposal for erection of two more new generating units of capacity 2x115 MW at Lowe Sileru. System studies were carried out by APTRANSCO for evacuation of power from Lower Sileru Power house including 2 more units (2x115 MW) and considering export of 142 MW to KTS. The loadings are as follows:

Sl. No.	Feeder			Full Generation AT Lower Sileru Power Complex
1	Lower Sileru	Bommur	S/C line	479 MW
2	Upper Sileru	Pendurthy	S/C line	270 MW
3	Lower Sileru	Donkaraya	S/C line	24 MW
4	Upper Sileru	Donkaraya	S/C line	-46 MW

- 16.7 The loading on 220 kV Lower Sileru – Bommuru and 220 kV Upper Sileru – Pendurthy is very much high if total power is to be evacuated from Lower Sileru Hydro Electric

project. Hence revival of abandoned 220 k DC Line from Lower Sileru to Bommuru is very much required for evacuating total power.

- 16.8 APTRANSCO has been carried out System studies including 220kV DC line from Lower Sileru to Bommuru for the same case and the loadings are as follows:

Sl. No.	Feeder		Full Generation AT Lower Sileru Power Complex
1	Lower Sileru	Bommur	209 MW
2	Upper Sileru	Pendurthy	141 MW
3	Lower Sileru	Donkaraya	-105 MW
4	Upper Sileru	Donkaraya	83 MW
5	Lower Sileru	Rampachodavaram	214 MW
6	Lower Sileru	Bavojipeta	185 MW

From the above, it can be observed that the overloadings got decreased. Hence revival of abandoned lines from Lower Sileru-Bommuru is very much essential.

- 16.9 In view of the above APTRANSCO requested for revival of abandoned 220 k V DC Line from Lower Sileru- Bommuru.

Members may discuss.

- 17.0 Erection of 220 kV features in the 400 kV GVK Power Plant and 220 kV Features at 400 kV Polavaram HEP in East Godavari district to extend power supply to the proposed 220/132/33 kV Ramachandrapuram SS.**

- 17.1 APGENCO is setting up 12 x 80 MW (960 MW) Polavaram Hydro Electric Project in East Godavari district. Accordingly, APTRANSCO has proposed the following dedicated Transmission Scheme for evacuation of 960 MW (12 x 80 MW) power from Polavaram Hydro Electric Project of APGENCO in East Godavari district. The same was approved in the 42nd Standing Committee Meeting held on 27.04.2018 at Ernakulam

- i. 400 kV Quad Moose D/C line (79 KM) from 400 kV KV Kota to proposed Polavaram Hydro Electric Project.
- ii. 2 x 125 MVAR bus Reactor at Polavaram Hydro Electric Project.

17.2 APTRANSCO vide their letter 27.08.2018 informed that they have proposed approved the following dedicated Transmission System for 220 kV downstream evacuation system from 400 k V Polavaram Hydro Electric project by providing 2x 500 MVA ICTs and for providing 2 Nos. 220 kV features with 2 x 500 MVA 400 kV GYK-2 Power Plant to overcome the overloading conditions in and around Ramachandra Puram area.

- i. 220 kV features at 400 kV Polavaram SS with 2 x 500 MVA ICTs.
- ii. Polavaram- Pattiseema 220kV D/C line (Twin Moose ,16 KM approx.)
- iii. LILO of both circuits of Polavaram - Pattiseema 220kV D/C line at Purushothapatnam SS (I KM approx.).
- iv. LILO of the both existing circuits of the Yemagiri - Samalkot 220 kV D/C line at Jegurupadu S/S (1 KM approx.)
- v. 220 kV Features at 400 kV GYK-2 Power Plant with 2 x 500 MVA PTRs.
- vi. Erection of 220/132 kV Ramachandrapuram S/S with 2 x 100 MVA PTRs.
- vii. 220 kV Single Moose DC line (25 KM approx.) from proposed 400/220 kV GYK-2 Power plant to proposed 220/132 kV Ramachandrapuram SS.
- viii. Making one circuit 132 kV LILO (0 .5 KM approx) of existing 132 kV RC Puram- Kakinada at proposed 220/132 kV SS at RC Puram.
- ix. Making 132 kV LILO (1 KM approx.) of existing 132 kV RC Puram - Editha at proposed 220/132 kV SS at RC Puram.
- x. Making 132 kV LILO (6 KM approx.) of existing 132 kV RC Puram - Kothapeta at proposed 220/132 kV SS at RC Puram.
- xi. Erection of 132 kV DC line (18 KM approx.) from 132 kV Gollapalem SS to proposed 220/132 kV SS at RC Puram.

17.3 APTRANSCO has been carried out load flow study and results are enclosed at Annexure –XII

Member may discuss.

18.0 Augmentation of ICT capacity from 2 x 315 MVA to 2 x 315 MVA + 1 x 500 MVA ICTs at Maradam (Garividi) 400/230kV S/S.

18.1 APTRANSCO has proposed for Augmentation of ICT capacity from 2 x 315 MVA to 2 x 315 MV A + 1x 500 MVA ICTs at 400/220 kV Maradam (Garividi) SS to meet the load demand and reliability at the scheme area.

Member may discuss.

Transmission planning proposals in Telangana

19.0 400/220kV Khammam (PGCIL) S/S- Augmentation of Power Transformer capacity from 2x315 MVA+1x500MVA

19.1 TSTRANSCO vide their letter informed that in the 33rd Standing Committee meeting on Power System Planning in Southern Region held on 20th October, 2011, the augmentation of Power Transformer at 400/220kV Khammam (PGCIL) SS with 1 No. additional 500 MVA PTR was approved..

19.2 The present loadings on 400/220kV are less than 50% of existing transformer capacity.

19.3 In view of the above, it requested to re-examine the necessity of augmentation with 1 No. additional 500 MVA PTR at 400/220kV Khammam (PGCIL) SS
Members may discuss.

20.0 Extension of HT supply at 220kV level to Central Power Research Institute, Hyderabad (CPRI)

20.1 Extension of HT supply at 220kV level to CPRI, Hyderabad was approved with LILO of one circuit Ghanapur - Hayathnagar 220kV line to M/s. CPRI for online.

20.2 TANTRANSCO vide their letter dated 23.08.2018 proposed to revise the proposal as 220kV radial DC line from Ghanapur to M/s CPRI with 9KM instead of LILO of one circuit Ghanapur - Hayathnagar 220kV line to M/s. CPRI.

Member may discuss

21.0 Construction of 400/220/132kV Substation at KTPP switchyard

21.1 TSTRANSCO vide their letter dated 23.08.2018 proposed 400/220/132 kV S/S at KTPP switchyard with following connectivity:

- a) 400/220kV 2X500MVA ICTs & 220/132kV 2x160MVA PTRs.
- b) LILO of existing 220kV Pulkurthy - Bhimghanapur line to proposed 400/220/132kV KTPP SS at Ramappa Point with Twin Moose DC line - 25kM .
- c) LILO of existing 220kV Salivagu- Bhimghanapur line to proposed 400/220/ 132kV KTPP S/S at Ramappa Point with Twin Moose DC line - 25kM.
- d) 220kV Single Moose DC line from proposed 400/220/132kV KTPP SS to 220/132kV Manthani SS - 34kM.
- e) 132kV Single Moose DC line from proposed 400/220/132kV KTPP SS to 132/33kV Chelpur SS - 2kM.
- f) Upgradation of existing 220kV Nagaram - Warangalline with HTLS conductor .
- g) 220kV Single Moose DC line from upcoming 400/220kV Jangaon SS to 220/11 kV Devannapet LI 55 - 55kM.

Further following connectivity may be dropped after above proposed connectivity:

- a. 220/ 132kV Venkatapur S/S and 220kV S/C line on D/C tower (with ACSR Single Moose) from 400/220kV Oglapur (Warangal PGCIL) SS to 220/ 132kV Venkatapur SS (42 KM) in Jayashanker Bhupalapally District (which was approved in 42nd Standing Committee meeting on Power System Planning of Southern Region)
- b. 220 kV D/C line (with Single Moose ACSR conductor from 400/220KV Oglapur (Warangal PGCIL) 55 to 220/11kV Devannapet L1 55- 30KM (which was approved in 41st Standing Committee meeting on Power System Planning of Southern Region).

22.0 Ratification for already charged LILO of both circuits 400kV Gajwel-Shankarpalli line 400kV Narasapur S/S

22.1 TSTRANSCO vide their informed that 23.08.2018 that LILO of one circuit 400kV Gajwel-Shankarpalli line 400kV Narasapur S/S was charged on dated 01.03.2017 and LILO of second circuit 400kV Gajwel-Shankarpalli line 400kV Narasapur S/S was charged on dated 01.03.2017.

22.2 However, the 400kV Narsapur S/S was approved in the 35th SCPSPSR. later the connectivity to 400kV Narsapur S/S was changed during the study of proposal for connectivity of Telangana STPP (2x800 MW).

Members may discuss.

23.0 Ratiications of ICT Capacities in earlier approved 400kV Substation

23.1 TSTRANSCO vide their letter dated 23.08.2018 informed that following 400kV Substation were approved with 220kV down Stream connectivities without mentioning ICT capacity

S. No.	Name of the Substation	SC PSP SR	ICT capacity in MVA	Remark
1.	400/220kV Nirmal	38 th	3x315	Charged with SRLDC permission subject to ratification in SCM
2.	400/220/11kV Yellampalli	41 st	4x315	

3.	400/220kV Ramadugu S/S	41 st	2x500	400kV S/S were approved with 220kV down Stream connectivity without mentioning ICT capacity
4.	400/220kV Rayadurg	41 st	2x500	
5.	400/220kVMalkaram	41 st	4x315	Augmentation of Power Transformer at existing 400/220/132kV with 400/220kV 500MVA transformer (4 th ICT) was approved in the 40 th Standing committee. Whereas erection of 315 MVA instead of earlier approved 500MVA is under progress

Member may discuss

Proposals of CTU

24.0 Connectivity Transmission system agreed in earlier Connectivity/LTA meetings of SR

24.1 The following dedicated transmission system was agreed and granted for various IPPs in earlier Connectivity/LTA meetings of Southern Region.

Table-1

Sl.	Applicant	Location	Connectivity granted(MW)	Start Date as per application	Connectivity transmission system
1.	Samalkot power Limited – Gas	East Godavari, Andhra Pradesh	2214	Feb, 2017	Samalkot – Vemagiri-II (PG) 400 kV D/c Quad line along with bays at both ends
2.	Regen Wind Farm (Vagarai) Pvt. Ltd	Dindigul, Tamil Nadu	600	14 th March 2016	Regen PS – Pugalur 230 kV D/c (Twin Moose) line along with bays at both ends
3.	Renew Power Ventures Pvt. Ltd.	Karur, Tamil Nadu,	400	31 st March 2018	Renew Power Ventures Pvt. Ltd–Pugalur 230kV D/c line along with bays at Pugalur & generation switchyard

Upon notification of the Detailed Procedure for Grant of connectivity to projects based on renewable sources to ISTS on 15.05.2018 in the Petition No. 145/MP/2017 by CERC, the IPPs from SI.No. 2-4 are deemed Stage-II grantees.

24.2 Further, the following dedicated transmission system for grant of Stage-II connectivity was agreed in the 24th Connectivity / LTA meeting of SR held on 11.07.2018.

Sl.No	Application No.	Applicant	Location	Date of Application	Quantum of Stage-I Sought / Granted (MW)	Stage-II Connectivity Sought (MW)	Start Date of Stage-II connectivity	Proposed location for Grant of Stage-II Connectivity	Dedicated Tr. System
Connectivity applications near Tirunelveli									
1.	1200001274	Orange Sironj Wind Power Pvt. Ltd.	Tuticorin, Tamil Nadu	25.05.2018	200	200	10.02.2019	Tuticorin-II GIS PS (erstwhile Tirunelveli GIS PS)	Orange Sironj – Tuticorin-II 230kV S/c line along with terminal bays at Tuticorin-II GIS & generation switchyard
2.	1200001366	Green Infra Renewable Energy Limited	Tuticorin, Tamil Nadu	04.06.2018	249.9	249.9	31.07.2018		Green Infra Renewable – Tuticorin-II 230kV S/c line along with terminal bays at Tuticorin-II GIS & generation switchyard
3.	1200001418	Betam Wind Energy Private Limited	Tuticorin, Tamil Nadu	12.06.2018	250.2	50.2	31.07.2019		Betam Wind Energy – Tuticorin-II 230kV S/c line along with terminal bays at Tuticorin-II & generation switchyard
4.	1200001435	Betam Wind Energy Private Limited	Tuticorin, Tamil Nadu	12.06.2018		200	31.07.2019		
Connectivity applications near Palakkad									
5.	1200001447	Mytrah Energy (India) Private Limited	Coimbatore, Tamil Nadu	19.06.2018	300	300	31.03.2020	Palakkad (Existing)	Mytrah Energy – Palakkad 220kV S/c line along with terminal bays at Palakkad & generation switchyard
Connectivity applications near Pugalur									
6.	1200001434	Sprng Renewable Energy Private Limited	Tirupur, Tamil Nadu	15.06.2018	300	300	31.10.2019	Pugalur (Existing)	Sprng Renewable – Pugalur 230kV S/c line along with terminal bays at Pugalur & generation switchyard

24.3 The details of LTA granted in 24th Connectivity / LTA meeting of SR held on 11.07.2018 are given below.

Sl.	Applicant	LTA quantum (MW)	Beneficiaries (MW)	Date of start of LTA
1.	Orange Sironj Wind Power Pvt. Ltd.	200	NR-50 MW + ER-100 MW, SR-50 MW	22.02.2019
2.	Mytrah Energy India Pvt. Ltd.	175	ER-100 MW + NER-50 MW + NR-25 MW	50 MW – 30.09.2018 125 MW – 01.12.2018
3.	Green Infra Renewable Energy Ltd.	249.9	NR-149.9 MW + ER-100 MW	31.10.2018

24.4 The details of Stage-I connectivity granted to various IPPs in the 23rd & 24th Connectivity/LTA meetings of Southern Region are given at Annexure-XIII

Operational Feedback from POSOCO

25.0 Following transmission constraints have been informed by POSOCO for SR

25.1 Transmission Line Constraints

S. No	Corridor	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter?
1	400kV Nellore Pooling Station - Nellore DC line	Whole Year	With Full Generation at SEPL (600 MW), MEPL (300 MW) SGPL (2x660 MW) & SEIL (2x660 MW), the 400kV NPS- Nellore D/C flow is usually more than 1800 MW and it has reached more than 2000 MW in few occasions. With further commissioning of Units at MEPL (stage-2-2x350MW), the problem will aggravate. In the 42 nd SCM the re-arrangement to bypass 400kV Nellore PS – Nellore D/C at Nellore (PG) for making 400kV Nellore PS – Thiruvallam D/C to control line loading has been approved. The same maybe commissioned at the earliest as it would relieve the line-loading problem.	Yes

S. No	Corridor	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter?
2	400kV Gooty-Nelamangala line & 400kV Gooty-Somanahalli line	Whole Year	With increase of SR Import to 8750 MW (ATC) and increase of Drawl by Karnataka & due to non-commissioning of Yelhanka and Tumkur downstream, the flow on 400kV Gooty-Nelamangala & 400kV Gooty-Somanahalli line is high. Loading on these lines have been partially relieved after 400kV Tumkur-Bidadi D/C line.	Yes
3	400kV Udumalpet-Palakkad DC line	Whole year	Kerala drawl is mainly through 400kV Udumalpet-Palakkad D/C line. Present loading on these lines is in the range of 420-500 MW. At present this is the limiting constraint for the Import of Kerala.	Yes
4	400kV Hiriya-Nelamangala DC line	Whole year	With Full generation at Jindal TPS, Bellary TPS, Yeramarus TPS, Less generation at UPCL and high wind generation, the flow on 400kV Hiriya-Nelamangala D/C line is severely high and also with increase in pavagada Solar Generation the situation would aggravate. The 400kV CN Halli – Mysore D/C would relieve the line loading of 400kV Hiriya – Nelamangala D/C. The same maybe commissioned at the earliest as it would relieve the line-loading problem.	Yes
5	220 kV Bangalore Metro Network	Whole Year	Most of the 220 kV network in Bengaluru is radialised during peak season to prevent overloading of lines. The radialisation of lines decreases the reliability of supply & thus resulting in Low Voltage situation.	Yes

S. No	Corridor	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter?
6	Overloading of 220 kV Shoolagiri-Hosur(TN)-Yerrandahalli-Somanahalli SC line	Whole Year	Somanahalli, Yerrandahalli and Hosur are Industrial areas. 220kV Yerrandahalli is split and load is partly fed from Hosur (TN) and partly met from Somanahalli side. Entire load cannot be met from either side (Somanahalli or Hosur) due to high loading on upstream lines. The line flow on this line is also causing high flows on Shoolagiri-Hosur 230 kV S/C line. 2 nd circuit of 230kV Shoolagiri-Hosur line yet to be commissioned.	Yes
7	Constraints in Nagjheri PH evacuation	Whole Year	The 220kV Nagjheri – Ambewadi DC, 220kV Ambewadi – Narendra DC, 220kV Kaiga – Kodalally SC & 220kV Kadra – Kodalally SC lines are severely over-loaded. Re-conducturing of the above lines to HTLS is suggested.	Yes
8	Constraints in Chennai 230kV System	Whole Year	230kV Oragadam – SV Chatram, 230kV Sriperumbduur – Tharamani line, 230kV Kalavindapattu-S.PKoil, 230kV Kalavindapattu-Siruseri, 230kV NCTPS-ETPS line are severely loaded.	Yes
9	Overloaded 220kV Lines in Tamil Nadu	Whole Year	The following lines are heavily loaded in Southern Tamil Nadu 230kV Madurai - Sembatty S/c, 230kV Madurai - Theni S/c , 230kV Pugalur - Mywadi S/c, 230kV Pudanchandai-Pugalur line	Yes

S. No	Corridor	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter?
10	220 kV Hyderabad Metro Network	Whole Year	220kV Shankarpally – Gachibowli D/C & 220kV Malkaram – Shapur Nagar D/C are heavily loaded without N-1 security and 220kV Mamidapalli-Chandrayangutta, 220kV Mamidapalli-HIAL D/C, 220kV Mamidapalli – Sivarampalli, etc getting heavily loaded	Yes

25.2 ICT Constraints

S. No	ICT	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter? Details.
1	400/220kV 2x315MVA ICTs at Gazuwaka SS	Whole Year	N-1 condition not satisfied in few occasions	Yes
2	400/220kV 3x315MVA ICTs at Vemagiri SS	Whole Year	N-1 condition not satisfied in few occasions	Yes
3	400/220 kV 3X500 MVA ICTs at Nelamangala	Whole Year	N-1 condition not satisfied in few occasions	Yes
4	400/220kV 3X500 MVA ICTs at Somanahalli	Whole Year	N-1 condition not satisfied in few occasions	Yes

S. No	ICT	Season/ Antecedent Conditions	Description of the constraints	Has the constraint occurred in earlier quarter? Details.
5	400/220kV 3X500 MVA ICTs at Hoody	Whole Year	N-1 condition not satisfied in few occasions.	Yes
6	400/220kV 2X315 MVA ICTs at Guttur	Whole Year	N-1 condition not satisfied in few occasions	Yes
7	400/220kV 2X315 MVA ICTs at Hiriyyur	Whole Year	N-1 condition not satisfied in few occasions	Yes
8	400/220 kV 2X315 MVA ICTs at UPCL	Whole Year	N-1 condition not satisfied in few occasions	Yes
9	400/230kV 2X315MVA ICTs at Thiruvallam	Whole Year	N-1 condition not satisfied in few occasions	Yes
10	400/220 kV 3X315 MVA ICTs at Shankarpally	During peak summer	N-1 condition not satisfied in few occasions	No

Members may discuss.

SITE VISIT OF CEA, CTU AND TSTRANSCO OFFICERS TO SRISAILAM LEFT BANK HYDRO ELECTRIC STATION (SLBHES) IN CONNECTION WITH LOCATION OF 125MVAR BUS REACTOR IN POWER PLANT ON 8TH AND 9TH AUGUST 2018

Following were present :

CEA	CTU	TSTRANSCO	TSGENCO
Sanjay Srivastava, Chief Engineer	A.R.K. Reddy, DGM	A. Sreenivasa Reddy, SE	D. Srinivasa Rao, SE/O&M
B.S. Bairwa, Director		P. Srinivasu, ADE	K. Venkteswar Reddy, DE/EM
			K.Poornachandar Raju ADE/EMII

The background and terms of reference assign to the team is enumerated hereunder:

In the 39th meeting of Standing Committee on Power System Planning in Southern Region (SCPSPSR), installation of 125MVAR bus reactor at Srisailam Left Bank Hydro Electric Station (SLBHES) was agreed. During 31st TCC and 32nd SRPC meetings held on 21.12.2017 TSTRANSCO informed that erection of bus reactor was not feasible due to space constraints in 400 kV GIS. Thereafter, a meeting was held in CEA on 6.2.2018 wherein it was decided that a team comprising officers from CEA, CTU and TSTRANSCO would visit SLBHES switchyard to explore the feasibility to accommodate the bus reactor.

In response to above, a team comprising of officers of CEA, CTU and TSTRANSCO visited SLBHES, which is a underground HEP having 6x150MW reversible turbines, to assess the feasibility of locating 125MVAr bus reactor. Team also held discussions with the project authorities (TSGENCO) on the issue. The outcome of the visit is summarized hereunder:

1. The team found three possible alternatives with respect to location of bus reactor in the power plant complex.
 - a. Keeping both 400kV switchgear(GIS) and Bus Reactor within the underground transformer cavern of power plant.
 - b. Keeping 400kV switchgear on the GIS floor and taking out inter-connection through 400kV XLPE cables to pothead yard from main access tunnel (MAT) and connection to bus reactor located in the pothead yard area.
 - c. Extending the bus through 400kV XLPE cables to pothead yard and locating both switchgear and reactor in the open pothead yard area.
2. Hitachi make GIS has been installed (SLD enclosed as Annex-1) and there exist a possibility of extending the bus on the service bay side. Prima-facie a space of about 7 – 9 meters could be created by shifting the some of the

existing temporary structures. Similarly, space of about 9 meters is available on the service bay side (sketch enclosed as Annex-2), but this would make the area very congested and constraints may be encountered during major maintenance of transformers or GIS and there would be vulnerability in the event of fire etc. Further, the transportation of three phase unit of 125 MVAR bus reactor (size-8m x 4m, weight-130MT) may not be possible due to space constraints in MAT and turning radius in transformer cavern. The alternative of single phase units would require larger space due to fire walls in between, emulsifier system etc. and it shall not be possible to accommodate all this in available area in transformer cavern. As such the team found this alternative as not been feasible.

3. The second option of locating switchgear inside the cavern and bus reactor in pothead yard and connections between these two through 400kV XLPE cables. As indicated at para-2 above, placing of GIS bay is possible and similarly space is also available at pothead yard to keep bus reactor(Annex-3). However, the existing five outgoing feeders of 1000sq mm single phase 400kV XLPE cable coming out from right side of MAT (about 1Km) has almost occupied all the space of wall and there is hardly any space for routing the bus reactor cabling. As there is no alternate route for these XLPE cables for coming out from MAT, this possibility is also not found to be feasible by the visiting team.
4. The third possibility also require routing of 400kV XLPE cabling (bus) up to the pothead yard. As already indicated, there is no available space for routing XLPE cable in MAT, this possibility is also ruled out. Further extension of bus is not advisable as it may result in bus fault in any eventuality.

After visiting the site and discussions with the project authorities, the team is of view that there is no possibility of locating the 125MVAR Reactor on SLBHES Bus without compromising the safety & security of the plant.

S. Srivastava
9/8/2018
Sanjay Srivastava,
Chief Engineer
CEA

A.S.R.
9/8/18
A. Sreenivasa
Reddy, SE
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A.R.K. Reddy
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K. Poornachandar Raju
K. Poornachandar Raju
ADE/EMII
TSGENCO

May like to see pl.

With 125 MVAR Reactor at 400kV Tippapur, Kamalapuram, Manikonda & Yellampally Sub-stations

		ZONE TOTALS IN MW/MVAR										
		FROM -----AT ZONE BUSES-----				TO			-NET INTERCHANGE-			
X-- ZONE --X	GENE- FROM IND	FROM IND	TO IND	TO	TO BUS	GNE BUS	TO LINE	FROM	TO	TO TIE	TO TIES	
	RATION GENERATN	GENERATN	MOTORS	LOAD	SHUNT	DEVICES	SHUNT	CHARGING	LOSSES	LINES	+ LOADS	
51	6246.0	0.0	0.0	7847.1	0.0	0.0	0.0	0.0	135.8	-1736.9	-1736.9	
TELANGANA	-2822.6	0.0	0.0	2573.2	3779.5	0.0	3376.0	14548.3	1666.5	330.4	330.4	
COLUMN	6246.0	0.0	0.0	7847.1	0.0	0.0	0.0	0.0	135.8	-1736.9	-1736.9	
TOTALS	-2822.6	0.0	0.0	2573.2	3779.5	0.0	3376.0	14548.3	1666.5	330.4	330.4	

		RATING %MVA FOR TRANSFORMERS SET A % I FOR NON-TRANSFORMER BRANCHES																	
		RATING SET A % I FOR NON-TRANSFORMER BRANCHES																	
BUS 514060	SURYPET4	400.00	CKT	MW	MVAR	MVA	%	1.0258PU	-2.98	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514060
								410.32KV			MW	MVAR		5 SOUTH			51	TELANGANA	
TO	504030	VIJAYA TP-IV	400.00	1	45.6	29.3	54.2	10			0.15	1.58		5 SOUTH			50	ANDHRA	
TO	504030	VIJAYA TP-IV	400.00	2	45.6	29.3	54.2	10			0.15	1.58		5 SOUTH			50	ANDHRA	
TO	504111	KV KOTA	400.00	1	-143.6	-25.7	145.9	21			0.34	5.86		5 SOUTH			50	ANDHRA	
TO	504111	KV KOTA	400.00	2	-143.6	-25.7	145.9	21			0.34	5.86		5 SOUTH			50	ANDHRA	
TO	512049	SURYAPET2	220.00	1	106.8	55.4	120.3	38	1.0000LK		0.00	4.37		5 SOUTH			51	TELANGANA	
TO	512049	SURYAPET2	220.00	2	106.8	55.4	120.3	38	1.0000LK		0.00	4.37		5 SOUTH			51	TELANGANA	
TO	514052	MALKARM4	400.00	1	76.4	11.7	77.3	14			0.20	2.17		5 SOUTH			51	TELANGANA	
TO	514052	MALKARM4	400.00	2	76.4	11.7	77.3	14			0.20	2.17		5 SOUTH			51	TELANGANA	
TO	514095	JULURUPADU	400.00	1	-154.7	19.1	155.9	22			0.29	5.09		5 SOUTH			51	TELANGANA	
TO	514095	JULURUPADU	400.00	2	-154.7	19.1	155.9	22			0.29	5.09		5 SOUTH			51	TELANGANA	
TO	514173	UDDANDAPUR	400.00	1	69.5	-89.8	113.6	16			0.09	1.56		5 SOUTH			51	TELANGANA	
TO	514173	UDDANDAPUR	400.00	2	69.5	-89.8	113.6	16			0.09	1.56		5 SOUTH			51	TELANGANA	
BUS 514068	RAIDURG	400.00	CKT	MW	MVAR	MVA	%	1.0290PU	-5.04	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514068
								411.58KV			MW	MVAR		5 SOUTH			51	TELANGANA	
TO	512118	RAIDURG	220.00	1	101.1	-20.7	103.2	21	1.0000LK		0.00	2.01		5 SOUTH			51	TELANGANA	
TO	512118	RAIDURG	220.00	2	101.1	-20.7	103.2	21	1.0000LK		0.00	2.01		5 SOUTH			51	TELANGANA	
TO	514069	RAIDURG DUMY	400.00	1	-101.1	20.7	103.2	15			0.00	0.05		5 SOUTH			51	TELANGANA	
TO	514069	RAIDURG DUMY	400.00	2	-101.1	20.7	103.2	15			0.00	0.05		5 SOUTH			51	TELANGANA	

BUS 514071	KAMALAPURAM	400.00	CKT	MW	MVAR	MVA	%	1.0121PU	-1.31	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514071
								404.84KV			MW	MVAR		5	SOUTH		51	TELANGANA	
TO SHUNT				0.0	115.8	115.8													
TO 512200	KAMALAPURAM	220.00	1	0.0	-2.4	2.4	1	1.0000LK			0.00	0.00		5	SOUTH		51	TELANGANA	
TO 512200	KAMALAPURAM	220.00	2	0.0	-2.4	2.4	1	1.0000LK			0.00	0.00		5	SOUTH		51	TELANGANA	
TO 512200	KAMALAPURAM	220.00	3	0.0	-2.4	2.4	1	1.0000LK			0.00	0.00		5	SOUTH		51	TELANGANA	
TO 514095	JULURUPADU	400.00	1	-0.0	-54.2	54.2	10				0.01	0.14		5	SOUTH		51	TELANGANA	
TO 514095	JULURUPADU	400.00	2	-0.0	-54.2	54.2	10				0.01	0.14		5	SOUTH		51	TELANGANA	
BUS 514100	NARSAPUR	400.00	CKT	MW	MVAR	MVA	%	1.0199PU	-3.01	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514100
								407.95KV			MW	MVAR		5	SOUTH		51	TELANGANA	
TO 512078	NARSAPUR2	220.00	1	143.0	41.3	148.9	47	1.0000LK			0.00	6.77		5	SOUTH		51	TELANGANA	
TO 512078	NARSAPUR2	220.00	2	143.0	41.3	148.9	47	1.0000LK			0.00	6.77		5	SOUTH		51	TELANGANA	
TO 514022	GAJWEL4	400.00	1	-23.3	19.9	30.6	5				0.02	0.23		5	SOUTH		51	TELANGANA	
TO 514022	GAJWEL4	400.00	2	-23.3	19.9	30.6	5				0.02	0.23		5	SOUTH		51	TELANGANA	
TO 514036	TEL_STPP(NTP	400.00	1	-182.2	-19.1	183.2	26				0.53	9.12		5	SOUTH		51	TELANGANA	
TO 514036	TEL_STPP(NTP	400.00	2	-182.2	-19.1	183.2	26				0.53	9.12		5	SOUTH		51	TELANGANA	
TO 514051	MAILARM4	400.00	1	166.7	-41.4	171.7	31				0.29	3.14		5	SOUTH		51	TELANGANA	
TO 514051	MAILARM4	400.00	2	166.7	-41.4	171.7	31				0.29	3.14		5	SOUTH		51	TELANGANA	
TO 514174	TUKKAPUR	400.00	1	-104.3	-0.7	104.3	15				0.07	1.23		5	SOUTH		51	TELANGANA	
TO 514174	TUKKAPUR	400.00	2	-104.3	-0.7	104.3	15				0.07	1.23		5	SOUTH		51	TELANGANA	
BUS 514104	MAHESH-TS	400.00	CKT	MW	MVAR	MVA	%	1.0207PU	-3.82	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514104
								408.28KV			MW	MVAR		5	SOUTH		51	TELANGANA	
TO 512082	MAHESH-TS2	220.00	1	139.5	46.3	147.0	29	1.0000LK			0.00	4.15		5	SOUTH		51	TELANGANA	
TO 512082	MAHESH-TS2	220.00	2	139.5	46.3	147.0	29	1.0000LK			0.00	4.15		5	SOUTH		51	TELANGANA	
TO 514012	HYDERABAD-TS	400.00	1	85.0	83.9	119.4	23				0.07	0.74		5	SOUTH		51	TELANGANA	
TO 514012	HYDERABAD-TS	400.00	2	85.0	83.9	119.4	23				0.07	0.74		5	SOUTH		51	TELANGANA	
TO 514051	MAILARM4	400.00	1	27.2	-31.2	41.4	7				0.01	0.12		5	SOUTH		51	TELANGANA	
TO 514051	MAILARM4	400.00	2	27.2	-31.2	41.4	7				0.01	0.12		5	SOUTH		51	TELANGANA	
TO 514101	MAHESWRM	400.00	1	-95.1	-99.0	137.2	24				0.01	0.05		5	SOUTH		51	TELANGANA	
TO 514101	MAHESWRM	400.00	2	-95.1	-99.0	137.2	24				0.01	0.05		5	SOUTH		51	TELANGANA	
TO 514152	DINDI	400.00	1	20.8	17.4	27.1	5				0.02	0.18		5	SOUTH		51	TELANGANA	
TO 514152	DINDI	400.00	2	20.8	17.4	27.1	5				0.02	0.18		5	SOUTH		51	TELANGANA	
TO 514169	DAMARCHARLA	400.00	1	-235.6	46.9	240.2	35				0.91	15.71		5	SOUTH		51	TELANGANA	
TO 514169	DAMARCHARLA	400.00	2	-235.6	46.9	240.2	35				0.91	15.71		5	SOUTH		51	TELANGANA	
TO 514171	YEDULA	400.00	1	58.2	-64.3	86.7	12				0.04	0.68		5	SOUTH		51	TELANGANA	
TO 514171	YEDULA	400.00	2	58.2	-64.3	86.7	12				0.04	0.68		5	SOUTH		51	TELANGANA	

BUS 514106	TIPPAPUR	400.00	CKT	MW	MVAR	MVA	% 1.0183PU	-1.78	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514106
							407.30KV			MW	MVAR		5 SOUTH			51	TELANGANA	
	TO SHUNT			0.0	117.2	117.2												
	TO 514105	RAMADAGU	400.00	1	-188.1	-4.2	188.2	27		0.06	1.08		5 SOUTH			51	TELANGANA	
	TO 514105	RAMADAGU	400.00	2	-188.1	-4.2	188.2	27		0.06	1.08		5 SOUTH			51	TELANGANA	
	TO 514107	CHANDULAPUR	400.00	1	135.0	-14.7	135.8	20		0.03	0.58		5 SOUTH			51	TELANGANA	
	TO 514107	CHANDULAPUR	400.00	2	135.0	-14.8	135.8	20		0.03	0.58		5 SOUTH			51	TELANGANA	
	TO 514165	JANAGAON	400.00	1	53.1	-39.7	66.3	10		0.02	0.32		5 SOUTH			51	TELANGANA	
	TO 514165	JANAGAON	400.00	2	53.1	-39.7	66.3	10		0.02	0.32		5 SOUTH			51	TELANGANA	
BUS 514131	MANIKONDA	400.00	CKT	MW	MVAR	MVA	% 1.0242PU	-4.56	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514131
							409.69KV			MW	MVAR		5 SOUTH			51	TELANGANA	
	TO SHUNT			0.0	118.5	118.5												
	TO 512100	KETHIREDDYPA220.00	1	70.4	34.5	78.4	25	1.0000LK		0.00	1.86		5 SOUTH			51	TELANGANA	
	TO 512100	KETHIREDDYPA220.00	2	70.4	34.5	78.4	25	1.0000LK		0.00	1.86		5 SOUTH			51	TELANGANA	
	TO 514051	MAILARM4	400.00	1	-129.2	43.9	136.5	20		0.08	1.28		5 SOUTH			51	TELANGANA	
	TO 514051	MAILARM4	400.00	2	-129.2	43.9	136.5	20		0.08	1.28		5 SOUTH			51	TELANGANA	
	TO 514069	RAIDURG DUMY400.00	1	101.2	-83.3	131.1	19			0.12	1.12		5 SOUTH			51	TELANGANA	
	TO 514069	RAIDURG DUMY400.00	2	101.2	-83.3	131.1	19			0.12	1.12		5 SOUTH			51	TELANGANA	
	TO 514173	UDDANDAPUR	400.00	1	-42.4	-54.4	69.0	10		0.02	0.29		5 SOUTH			51	TELANGANA	
	TO 514173	UDDANDAPUR	400.00	2	-42.4	-54.4	69.0	10		0.02	0.29		5 SOUTH			51	TELANGANA	
BUS 514165	JANAGAON	400.00	CKT	MW	MVAR	MVA	% 1.0194PU	-2.11	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514165
							407.74KV			MW	MVAR		5 SOUTH			51	TELANGANA	
	TO 512148	JANGAON	220.00	1	139.5	30.8	142.9	29	1.0000LK	0.00	3.93		5 SOUTH			51	TELANGANA	
	TO 512148	JANGAON	220.00	2	139.5	30.8	142.9	29	1.0000LK	0.00	3.93		5 SOUTH			51	TELANGANA	
	TO 512148	JANGAON	220.00	3	139.5	30.8	142.9	29	1.0000LK	0.00	3.93		5 SOUTH			51	TELANGANA	
	TO 514095	JULURUPADU	400.00	1	-44.0	-61.8	75.9	11		0.04	0.65		5 SOUTH			51	TELANGANA	
	TO 514095	JULURUPADU	400.00	2	-44.0	-61.8	75.9	11		0.04	0.65		5 SOUTH			51	TELANGANA	
	TO 514106	TIPPAPUR	400.00	1	-53.1	-13.3	54.7	8		0.02	0.32		5 SOUTH			51	TELANGANA	
	TO 514106	TIPPAPUR	400.00	2	-53.1	-13.3	54.7	8		0.02	0.32		5 SOUTH			51	TELANGANA	
	TO 514169	DAMARCHARLA	400.00	1	-112.2	28.8	115.8	17		0.28	4.79		5 SOUTH			51	TELANGANA	
	TO 514169	DAMARCHARLA	400.00	2	-112.2	28.8	115.8	17		0.28	4.79		5 SOUTH			51	TELANGANA	
BUS 514170	CHOUTTUPPAL	400.00	CKT	MW	MVAR	MVA	% 1.0077PU	-3.02	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514170
							403.07KV			MW	MVAR		5 SOUTH			51	TELANGANA	
	TO 512153	CHOUTTUPPAL	220.00	1	123.2	6.1	123.4	25	1.0000LK	0.00	3.00		5 SOUTH			51	TELANGANA	
	TO 512153	CHOUTTUPPAL	220.00	2	123.2	6.1	123.4	25	1.0000LK	0.00	3.00		5 SOUTH			51	TELANGANA	
	TO 512153	CHOUTTUPPAL	220.00	3	123.2	6.1	123.4	25	1.0000LK	0.00	3.00		5 SOUTH			51	TELANGANA	
	TO 514169	DAMARCHARLA	400.00	1	-184.8	-9.1	185.0	27		0.49	8.49		5 SOUTH			51	TELANGANA	
	TO 514169	DAMARCHARLA	400.00	2	-184.8	-9.1	185.0	27		0.49	8.49		5 SOUTH			51	TELANGANA	

BUS 514193 YELLAMPALLI 400.00 CKT		MW	MVAR	MVA	%	1.0200PU	-0.07	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514193
						408.00KV			MW	MVAR	5	SOUTH			51	TELANGANA	
TO SHUNT		0.0	117.6	117.6													
TO	512179 YELLAMPALLI 220.00 1	0.0	-12.4	12.4	2	1.0000LK			0.00	0.03	5	SOUTH			51	TELANGANA	
TO	512179 YELLAMPALLI 220.00 2	0.0	-12.4	12.4	2	1.0000LK			0.00	0.03	5	SOUTH			51	TELANGANA	
TO	512179 YELLAMPALLI 220.00 3	0.0	-12.4	12.4	2	1.0000LK			0.00	0.03	5	SOUTH			51	TELANGANA	
TO	514031 SINGARENI 400.00 1	-122.6	57.9	135.6	20				0.05	0.84	5	SOUTH			51	TELANGANA	
TO	514031 SINGARENI 400.00 2	-122.6	57.9	135.6	20				0.05	0.84	5	SOUTH			51	TELANGANA	
TO	514062 NIRMAL 400.00 1	122.6	-98.1	157.0	23				0.19	3.36	5	SOUTH			51	TELANGANA	
TO	514062 NIRMAL 400.00 2	122.6	-98.1	157.0	23				0.19	3.36	5	SOUTH			51	TELANGANA	

PTI INTERACTIVE POWER SYSTEM SIMULATOR--PSS(R)E

MON, JUL 16 2018 16:20

RATING %MVA FOR TRANSFORMERS

SET A % I FOR NON-TRANSFORMER BRANCHES

BUS 514023 MAHABUB4 400.00 CKT		MW	MVAR	MVA	%	1.0218PU	-5.01	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514023
						408.71KV			MW	MVAR	5	SOUTH			51	TELANGANA	
TO SHUNT		0.0	118.0	118.0													
TO	504133 URAVAKONDA 400.00 1	64.3	-96.4	115.9	17				0.08	1.37	5	SOUTH			50	ANDHRA	
TO	512018 VELTOOR 220.00 1	69.4	27.0	74.4	24	1.0000LK			0.00	1.69	5	SOUTH			51	TELANGANA	
TO	512018 VELTOOR 220.00 2	69.4	27.0	74.4	24	1.0000LK			0.00	1.69	5	SOUTH			51	TELANGANA	
TO	512018 VELTOOR 220.00 3	69.4	27.0	74.4	24	1.0000LK			0.00	1.69	5	SOUTH			51	TELANGANA	
TO	512018 VELTOOR 220.00 4	69.4	27.0	74.4	24	1.0000LK			0.00	1.69	5	SOUTH			51	TELANGANA	
TO	514003 NSAGAR 400.00 1	-50.3	-31.7	59.4	11				0.10	1.10	5	SOUTH			51	TELANGANA	
TO	514101 MAHESWRM 400.00 1	-113.6	-15.1	114.6	20				0.22	2.40	5	SOUTH			51	TELANGANA	
TO	514101 MAHESWRM 400.00 2	-113.6	-15.1	114.6	20				0.22	2.40	5	SOUTH			51	TELANGANA	
TO	514171 YEDULA 400.00 1	-85.1	-39.3	93.7	13				0.05	0.87	5	SOUTH			51	TELANGANA	
TO	514171 YEDULA 400.00 2	-85.1	-39.3	93.7	13				0.05	0.87	5	SOUTH			51	TELANGANA	
TO	524003 RAIC 400.00 1	105.7	11.2	106.3	20				0.16	1.80	5	SOUTH			52	KARNATKA	

BUS 514051 MAILARM4 400.00 CKT		MW	MVAR	MVA	%	1.0209PU	-4.08	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514051
						408.34KV			MW	MVAR	5	SOUTH			51	TELANGANA	
TO SHUNT		0.0	117.8	117.8													
TO	512029 SHANKARPALLY220.00 1	105.2	35.9	111.2	35	1.0000LK			0.00	3.77	5	SOUTH			51	TELANGANA	
TO	512029 SHANKARPALLY220.00 2	105.2	35.9	111.2	35	1.0000LK			0.00	3.77	5	SOUTH			51	TELANGANA	
TO	512029 SHANKARPALLY220.00 3	105.2	35.9	111.2	35	1.0000LK			0.00	3.77	5	SOUTH			51	TELANGANA	
TO	512029 SHANKARPALLY220.00 4	167.1	57.1	176.5	35	1.0000LK			0.00	5.98	5	SOUTH			51	TELANGANA	
TO	514061 NIZAMABAD 400.00 1	-177.1	-49.0	183.7	33				0.75	8.05	5	SOUTH			51	TELANGANA	
TO	514061 NIZAMABAD 400.00 2	-177.1	-49.0	183.7	33				0.75	8.05	5	SOUTH			51	TELANGANA	
TO	514100 NARSAPUR 400.00 1	-166.4	6.9	166.5	30				0.29	3.14	5	SOUTH			51	TELANGANA	
TO	514100 NARSAPUR 400.00 2	-166.4	6.9	166.5	30				0.29	3.14	5	SOUTH			51	TELANGANA	

TO 514104	MAHESH-TS	400.00	1	-27.2	-24.5	36.6	7		0.01	0.12	5	SOUTH	51	TELANGANA					
TO 514104	MAHESH-TS	400.00	2	-27.2	-24.5	36.6	7		0.01	0.12	5	SOUTH	51	TELANGANA					
TO 514131	MANIKONDA	400.00	1	129.3	-74.8	149.4	21		0.08	1.28	5	SOUTH	51	TELANGANA					
TO 514131	MANIKONDA	400.00	2	129.3	-74.8	149.4	21		0.08	1.28	5	SOUTH	51	TELANGANA					
BUS 514052	MALKARM4	400.00	CKT																
				MW	MVAR	MVA	%	1.0104PU	-4.00	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514052
								404.15KV			MW	MVAR	5	SOUTH					
TO SHUNT				0.0	115.4	115.4													
TO 512030	MALKARAM	220.00	1	94.1	21.4	96.5	31	1.0000LK	0.00	2.90	5	SOUTH	51	TELANGANA					
TO 512030	MALKARAM	220.00	2	94.1	21.4	96.5	31	1.0000LK	0.00	2.90	5	SOUTH	51	TELANGANA					
TO 512030	MALKARAM	220.00	3	94.1	21.4	96.5	31	1.0000LK	0.00	2.90	5	SOUTH	51	TELANGANA					
TO 512030	MALKARAM	220.00	4	149.4	34.0	153.2	31	1.0000LK	0.00	4.60	5	SOUTH	51	TELANGANA					
TO 514001	RAMGUNDM STP	400.00	1	-233.7	3.4	233.7	44		2.05	22.88	5	SOUTH	51	TELANGANA					
TO 514002	HYDERABAD	400.00	1	-45.5	-29.5	54.2	10		0.02	0.25	5	SOUTH	51	TELANGANA					
TO 514060	SURYPET4	400.00	1	-76.2	-93.8	120.9	22		0.20	2.17	5	SOUTH	51	TELANGANA					
TO 514060	SURYPET4	400.00	2	-76.2	-93.8	120.9	22		0.20	2.17	5	SOUTH	51	TELANGANA					
BUS 514135	ASUPAKA	400.00	CKT																
				MW	MVAR	MVA	%	1.0034PU	-1.27	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514135
								401.36KV			MW	MVAR	5	SOUTH					
TO SHUNT				0.0	72.5	72.5													
TO 504016	VIZAGPOOL	400.00	1	-158.0	4.0	158.0	29		1.23	13.11	5	SOUTH	50	ANDHRA					
TO 512102	ASUPAKA	220.00	1	30.6	4.4	30.9	10	1.0000LK	0.00	0.30	5	SOUTH	51	TELANGANA					
TO 512102	ASUPAKA	220.00	2	30.6	4.4	30.9	10	1.0000LK	0.00	0.30	5	SOUTH	51	TELANGANA					
TO 514004	KHAMMAM	400.00	1	96.8	-85.4	129.1	23		0.27	2.87	5	SOUTH	51	TELANGANA					
BUS 514152	DINDI	400.00	CKT																
				MW	MVAR	MVA	%	1.0166PU	-3.93	X---	LOSSES	---X	X----	AREA	-----X	X----	ZONE	-----X	514152
								406.63KV			MW	MVAR	5	SOUTH					
TO 512131	DINDI	220.00	1	168.5	29.8	171.1	34	1.0000LK	0.00	5.67	5	SOUTH	51	TELANGANA					
TO 512131	DINDI	220.00	2	168.5	29.8	171.1	34	1.0000LK	0.00	5.67	5	SOUTH	51	TELANGANA					
TO 512131	DINDI	220.00	3	168.5	29.8	171.1	34	1.0000LK	0.00	5.67	5	SOUTH	51	TELANGANA					
TO 514011	SSLBPH4	400.00	1	37.5	-37.0	52.6	10		0.02	0.22	5	SOUTH	51	TELANGANA					
TO 514011	SSLBPH4	400.00	2	37.5	-37.0	52.6	10		0.02	0.22	5	SOUTH	51	TELANGANA					
TO 514104	MAHESH-TS	400.00	1	-20.8	-53.7	57.6	11		0.02	0.18	5	SOUTH	51	TELANGANA					
TO 514104	MAHESH-TS	400.00	2	-20.8	-53.7	57.6	11		0.02	0.18	5	SOUTH	51	TELANGANA					
TO 514169	DAMARCHARLA	400.00	1	-269.4	46.0	273.3	39		1.02	17.66	5	SOUTH	51	TELANGANA					
TO 514169	DAMARCHARLA	400.00	2	-269.4	46.0	273.3	39		1.02	17.66	5	SOUTH	51	TELANGANA					

I/1465/2018

File No.CEA-PS-12-14(12)/1/2018-PSPA-II Division



भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
केन्द्रीय विद्युत प्राधिकरण
Central Electricity Authority
विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग-II
Power System Planning & Appraisal Division-II

सेवा मे / To,

संलग्न सूची के अनुसार
 As per list enclosed

विषय: दक्षिणी क्षेत्र के संयुक्त तंत्र अध्ययन हेतु एसआरपीसी, बेंगलुरु में 10 वीं और 11 मई 2018 को आयोजित की गयी बैठक का कार्यवृत्त ।

Subject: - Minutes of joint system study Meeting of Southern Region held on 10th & 11th May 2018 at SRPC, Bengaluru

महोदय(Sir)/महोदया(Madam),

दक्षिणी क्षेत्र के संयुक्त तंत्र अध्ययन हेतु एसआरपीसी, बेंगलुरु में 10 वीं और 11 मई 2018 को बैठक आयोजित की गई थी । इस बैठक के कार्यवृत्त की प्रति आपकी सूचना एवं आवश्यक कार्यवाही हेतु संलग्न है ।

The Joint system study meeting of Southern Region was held on 10th & 11th May 2018 at SRPC, Bengaluru. A copy of minutes of the meeting is enclosed for your information and necessary action.

भवदीय/Yours faithfully,

बी.एस. बैरवा
 12.5.2018

(बी.एस. बैरवा/ B.S. Bairwa)

निदेशक/ Director

List of addressee:

<p>1. The Member Secretary, Southern Regional Power Committee, 29, Race Course Cross Road, Bangalore 560 009. FAX : 080-22259343</p>	<p>2. COO, CTU Power Grid Corp. of India Ltd. “Saudamini”, Plot No.2, Sector-29, Gurgaon 122 001, Haryana. FAX: 95124-2571932</p>
<p>3. CEO, POSOCO, B-9, Qutub Institutional Area, Katwaria Sarai, New Delhi-110016</p>	<p>4. GM, SRLDC, 29, Race Course Cross Road, Bangalore 560 009 FAX – 080-22268725</p>
<p>5. The Director (Transmission), Karnataka State Power Trans. Corp.Ltd., Cauvery Bhawan, Bangalore - 560 009. FAX: 080 -2228367</p>	<p>6. The Director (Transmission) TANTRANSCO, 144, Anna Salai, Chennai - 600002. FAX: 044-28516362</p>
<p>7. The Director (Transmission), Transmission Corp. of Andhra Pradesh Ltd., (APTRANSCO) Vidyut Soudha, Hyderabad – 500 082. FAX : 040-66665137</p>	<p>8. The Director (Trans & System op.), Kerala State Electricity Board Ltd, Vidyuthi Bhawanam, Pattom, P.B. No. 1028, Thiruvananthapuram - 695 004. FAX: 0471-2444738</p>
<p>9. The Director (Grid Transmission and Management), Transmission Corp. of Telangana Ltd., (TSTRANSCO) Vidyut Soudha, Khairatabad Hyderabad – 500 082. FAX: 040-23321751</p>	

Minutes of joint study meeting of Southern Region held on 10th & 11th May 2018 at SRPC, Bengaluru

In the 42nd meeting of the Standing Committee on Power System Planning of Southern Region (SCPSPSR), held on 27th April, 2018 in Ernakulam (Kerala), it was decided that a joint system study will be carried out by CEA, CTU and STUs for Southern Region(SR). Accordingly, the joint system study meeting was held at SRPC, Bengaluru. The Member Secretary, SRPC welcomes the participants from CEA, CTU and STUs of SR. Director, CEA thanked Member Secretary, SRPC, for extending all support for the meeting. He also stated that as per the decision of SCPSPSR, the transmission system evolved in this joint study meeting will be put up for discussion in next meeting of SCPSPSR.

List of participants is enclosed at Annexure-I.

In the meeting following issues were discussed:

1.0 Evacuation of power from RE sources in Southern Region (Proposed Wind Energy Zone by MNRE)

- 1.1 In the 42nd meeting of SCPSPSR held on 27.04.2018, it was informed that based on various inputs like district wise NIWE potential, SNA developable potential, pooling station wise wind capacity sanctioned by STU, RE applications received in ISTS by CTU and detailed discussion with MNRE & wind IPPs/developers, projected capacity in each Wind Energy Zone (WEZ) were identified and prioritized for implementation in 2021-22 time frame in wind resource rich states. In the meeting held in MNRE, Koppal (2500 MW) in Karnataka, Kurnool (3000 MW) in Andhra Pradesh and Karur (2500 MW) in Tamil Nadu were identified as prioritized Wind Energy zones for which transmission infrastructure needs to be developed/made available under ISTS Intrastate transmission system. Further, it was indicated that Tirunelveli/ Tuticorin district in TN is also a high wind potential complex and 2500 MW of wind energy potentials considered for development of transmission infrastructure under ISTS/Intra-state transmission system.
- 1.2 Director, CEA stated that in the SCM, it was decided that comprehensive study would be carried out with Southern Region constituents for accessing the transmission system requirement in the region as a whole. He stated that to carry out comprehensive study, intra state RE generation and transmission projects proposed by STUs need to be considered.
- 1.3 CTU stated that large nos. of applications have been received by them for connectivity with ISTS in these Wind Energy Zones. Details of which are tabulated below.

S. No.	Wind Energy Zone	Quantum(MW) for which connectivity application received	Infrastructure to be developed for RE Quantum (MW) (as per MNRE meeting)
1	Tirunelveli & Tuticorin (TN)	8000	2500
2	Karur / Tiruppur (TN)	4000	2500
3	Koppal (Karnataka)	3000	2500
4	Kurnool & Ananthpur (AP)	6000	3000

- 1.4 For successful evacuation of RE power from proposed Wind Energy Zones and to review the transmission system proposed by STUs & CTUs under Green Energy Corridors, it was agreed that detailed system study would be carried out for 2021-22 time frame for the peak wind scenario (Monsoon season). Incidentally, this scenario coincides with low load demand period/season (off peak period) for Southern Region.
- 1.5 Based on historical pattern, representative of SRLDC suggested that 80% of the EPS peak load for SR states may be considered for study & analysis for the off peak scenario, which was agreed.
- 1.6 It was suggested that dispatches from RE wind power plants (existing & future) may be taken as 80% of the installed capacity and same was agreed. However it was decided that based on the Load generation balance (LGB) prepared by the STUs, RE dispatches of the states shall be reviewed depending on the surplus scenario of states.
- 1.7 Based on the information provided by STUs, existing installed capacity of RE generation (wind/solar) and planned augmentation / addition by time frame of 2021-22 is summarised below:

Sl No	STU	Installed Capacity (Existing + Addition by 2021-22)									
		RE		Thermal		Hydro		Gas		Small Gen. + CoGen	
		Existing	Addition by 2021-22	Existing	Addition by 2021-22	Existing	Addition by 2021-22	Existing	Addition by 2021-22	Existing	Addition by 2021-22
1	Karnataka	W : 4656; S : 4885	W : 2800; S : 700	7680	360	3195	0	0	0	2983	0
2	Andhra Pradesh	W : 3947; S : 2147	W : 2500; S : 2000	6050	1600	1798	0	2576	0	433	0
3	Tamil Nadu	W : 8152; S : 2048	W : 2000; S : 2000	5620	7080	2308	500	528	0	1761	0

- 1.8 Further, the generation and dispatch provided by Tamil Nadu, Karnataka & Andhra Pradesh for Load Generation Balance (LGB) is tabulated as below. Detailed Load Generation balance report is also enclosed at Annexure-II.

Sl No	STU	Generation Dispatch						Load + Losses
		RE	Hydro	Thermal	Gas	LTA/LTOA	CGS Allocation	
1	Karnataka	W : 4473; S : 2234	431	2180	0	0	2535	11417
2	Andhra Pradesh	W : 4513; S : 1659	424	2349	175	0	1448	9474
3	Tamil Nadu	W : 5076; S : 2024	825	4471	0	0	3942	16685
4	Telangana*	9266					2334	11600
5	Kerala*	2515					1695	4210

* Since the representatives of Telangana & Kerala were not present in the meeting, LGB had been set in consultation with CEA, CTU & POSOCO.

- 1.9 Considering RE Generation Capacity addition and Load Generations Scenarios projected by state of SR, it was decided that dispatch of generation from Thermal (coal & gas) /hydro plants are to be reduce to the technical minimum level during off peak period to accommodate must run generation. The dispatch of the some of the coal based generations reduce to 50-60% of their installed capacity or generation has to be closed/back down and some ISGS allocations were surrendered by states to achieve load generation balance.
- 1.10 After, finalizing the LGB, studies were carried out for peak wind scenario and peak demand scenario (2021-22) with reduced RE dispatch and Study results and analysis in respect to Wind Energy Zones is summarized as under:

A. Tirunelveli and Tuticorin Wind Energy Zone (Tamil Nadu):

- i) For successful evacuation of wind generation from Tirunelveli and Tuticorin complexes, a 400/230kV, 2X500 MVA GIS Substation Tuticorin – II (erstwhile Tirunelveli Pooling station) along with its interconnection with Tuticorin Pooling station through 2 nos. of 400kV D/c lines (with Quad Moose Conductor) is under advance stage of commissioning as part of “Green Energy Corridor”. Further, augmentation of 1X500 MVA, 400/230kV ICT at Tuticorin – II GIS has been agreed in 42nd meeting of SCPSPSR.
- ii) CTU informed that SECI / MNRE has indicated high wind potential of the order of 2500MW in Tirunelveli and Tuticorin Wind Energy Zone. CTU has also received applications for about 8000MW for connectivity to ISTS in these areas.
- iii) Generation from CEPL with (IC-2x660MW and LTA-558 MW), Tuticorin JV (2X500MW), Kudankulam NPP (2X1000MW) are pooled at 765/400 kV Tuticorin Pooling Station (PS) and RE generation at Tuticorin & Tirunelveli

- areas are being planned to be pooled through Tuticorin-II at 765/400 kV Tuticorin Pooling Station (PS). Further it will be dispersed through Tuticorin Pool – Madurai 400kV D/C line (with Quad) & Tuticorin PS – Dharmapuri 765kV D/c line (initially to be charged at 400kV).
- iv) Kudankulam Nuclear Power Plant (KKNPP) is connected to Tuticorin PS and existing Tirunelveli substation through 3 nos. of 400kV D/C lines (with Quad moose conductor). Generally, Kudankulam – Tuticorin PS 400kV D/C line (with Quad moose ACSR conductor) is lightly loaded and large quantum of power flow towards Tirunelveli from Kudankulam nuclear power plant through Kudankulam – Tirunelveli 400kV D/c (Quad) line. Under worst scenario like outage of Tirunelveli bus or outage of Kudankulam – Tirunelveli 400kV D/c lines, Kudankulam -Tuticorin Pool D/c line is expected to be loaded up to 2000 MW (total generation of Kudankulam APP). This has been considered as a pre-condition and accordingly, requirement of additional transmission system for evacuation of RE generation from Tirunelveli area has been studied.
 - v) As per the LGB provided by Tamilnadu, scheduling of power from CEPL (2x660MW) & Tuticorin JV TPS (TN – 5x210 MW) Thermal power station would be reduced to either the lowest technically feasible level or zero under high RE generation.
 - vi) Study has been carried out considering dispatch from Intra state renewables generation (both wind and solar) 50% as provided by TANTRANSCO/TANGEDCO to achieve Long generation balance for the studied scenario. Further thermal generations (state/IPP) have been backed down to the technically possible level (as data provided by states).
 - vii) Dispatch of RES generation, Coastal Energy, Tuticorin JV and Tuticorin TPS have been considered subject to successful evacuation of 2000MW power from RE generation pooled at Tirunelveli Pool even under outage of Kudankulam – Tirunelveli 400kV D/c (Quad) line.
 - viii) The existing / under construction transmission system has been considered to evaluate requirement of additional transmission system for evacuation of wind generation in Tirunelveli area including 558 MW LTA of CEPL and Tuticorin JV (2x500MW).
 - ix) The study results (enclosed at Exhibit-1) indicate that the existing Tuticorin – II is adequate for evacuation of 2000 MW of wind generation.
 - x) Further, for successful evacuation of 2000MW wind generation, (pooled at 230kV level of 400/230kV Tuticorin-II GIS sub-station) transformation capacity of 5x500 MVA, 400/230kV is required under N-1 contingency criteria. Since, transformation capacity of 2x500 MVA, 400/230 kV is under erection and 1x500 MVA has been approved in 42nd meeting of SCPSR; additional

transformation capacity of 2x500MVA, 400/230kV ICTs would be required at Tuticorin-II GIS sub-station.

- xi) For dispersal of more than 2000MW of RE generation from Tuticorin-II GIS sub-station, Tuticorin-II GIS – Dharmapuri (Salem) 765 D/C line (presently operating at 400kV) needs to be operated at its rated voltage. (i.e 765kV)
- xii) After detailed deliberation, requirement of followings transmission system was agreed for transfer of 2000 MW power from wind energy in Tirunelveli /Tuticorin area:
 - a) Addition of 2x500 MVA, 400/230kV ICTs (4th & 5th) at Tuticorin-II GIS sub-station.
 - b) Operation of Tuticorin-II GIS – Dharmapuri (Salem) 765 D/C line (presently operating at 400kV) at its rated voltage. (i.e 765kV) would be reviewed for dispersal of more than 2000MW RE generation

B. Karur / Tiruppur Wind Energy Zone (Tamil Nadu):

- i) Representative of CTU informed that MNRE/SECI has identified wind potential of 2500MW in Karur / Tiruppur wind zones of Tamil Nadu, with and applications for connectivity for about 4000MW with ISTS has been received .
- ii) To address the connectivity with ISTS for generators from Karur and Tiruppur wind zones, a new substation (ISTS) was proposed at common location with following details:
 - a) Establishment of 5x500 MVA, 400/230 kV Karur Pooling Station (at a location in between Karur Wind zone and Tiruppur wind zone)
 - b) LILO of both circuits of Pugalur – Pugalur (HVDC) 400 kV D/c line (with Quad Moose ACSR Conductor) at Karur PS
 - c) 9 Nos. of 230kV line bays for interconnection of wind projects
 - d) 2x125 MVA, 400kV Bus reactors at Karur PS
- iii) System Studies were carried out for successful evacuation of 2000MW of RE generation (80% of the expected capacity of 2500MW) from Karur PS. Dispatch of 2000MW was considered on Raigarh – Pugalur HVDC and Pugalur – Trichur (VSC based HVDC) to meet out demand in Kerala. The study results (enclosed at Exhibit-1), shows that proposed transmission system is adequate for transfer of power/generation from Karur and Tiruppur wind zones.
- iv) Accordingly, the above transmission system proposed at S.No. B(ii) for transfer of power from Karur and Tiruppur wind zones was agreed. It was also agreed that adequate space provision in substation would be kept for future expansion.

C. Koppal Wind Energy Zone (Karnataka):

- i) Representative of CTU informed that MNRE/SECI had estimated wind energy potential of 2500MW in Koppal wind zone of Karnataka and applications for connectivity with ISTS have been received for 3000MW.
- ii) To address the connectivity with ISTS from RE developers from Koppal wind zone, a 400/220kV ISTS substation has been proposed in Koppal area with following details:
 - a) Establishment of 5x500 MVA, 400/220kV pooling station near Munirabad /suitable location in Koppal distt.
 - b) Pooling station (near Munirabad /suitable location in Koppal distt.) - Munirabad 400 kV D/c Line (with Quad Moose ACSR conductor)
 - c) Pooling station (near Munirabad /suitable location in Koppal distt.) - Narendra (New) 400 kV D/c Line (with Quad Moose ACSR conductor)
 - d) 9 Nos of 220kV line bays for interconnection of wind projects
 - e) 2x125 MVA, 400kV bus reactor at Pooling station (near Munirabad /suitable location in Koppal distt.)
 - f) Adequate space provision for future expansion.
- iii) System Studies were carried out for successful evacuation of 2000MW of RE (i.e. 80% of the expected capacity:2500MW) from pooling station in Munirabad (Study results are enclosed at Exhibit-1).
- iv) The study result shows that power from Narendra (New) is dispersed towards Kolhapur PG and congestion /transmission constraint is in the system observed in the system beyond Kolhapur (MSETCL), and Kolhapur (MSETCL) – Karad 400kv D/c line gets overloaded.
- v) After deliberations, the above proposed transmission system mentioned at c(ii) was agreed for connectivity of RE generators at proposed Munirabad/Koppal PS. It was also agreed that for transfer of power from the above pooling station would require system strengthening in Western Region. Accordingly, it was suggested that issue of strengthening of WR system need to be taken up with WR constituents.

D. Kurnool Wind Energy Zone (AP):

- i) Representative of CTU informed that in a meeting at MNRE, it was decided that Kurnool distt. (with about 3000 MW) would be the priority Wind Energy Zones (WEZ) with AP due to availability of lot of waste land and High Wind Power density (WPD) (as per assessment connectivity of NIWE potential). CTU had received applications for connectivity with ISTS for about 6000 MW.

- ii) Considering on the land availability for pooling station and the applications of RE developers for connectivity with ISTS a pooling station at common location in between Kurnool & Ananthapur distt. has been proposed with following details:
- a) Establishment of 765/400/220kV Pooling station (at suitable location in Kurnool substation Distt) at Kurnool-III (e.g. near Adoni) with 3x1500 MVA, 765/400kV; 6x500 MVA, 400/220kV transformation capacity
 - b) Kurnool-III Pooling station - Kurnool(new) 765 kV D/c Line
 - c) 10 nos of 220kV line bays for interconnection of wind projects
 - d) 1x240 MVAr (765kV) & 1x125MVAr (400kV) bus reactors at Kurnool-III Pooling station.
 - e) Adequate space provision for future expansion.
- iii) Studies were carried out for successful evacuation of 2400MW of RE generation i.e. (80% of the expected capacity, 3000 MW) from Kurnool-III Pooling station (near Adoni PS/suitable location in Kurnool distt.) (study results, enclosed at Exhibit-1).
- iv) The study result shows that above transmission system is adequate for transfer of power from RE generation. Accordingly, the above transmission system [mentioned at Sl. No. D(ii)] was agreed for evacuation of 3000 MW RE generation from Kurnool and Ananthapur wind zones.

2.0 Intra- state transmission projects proposed for Green Energy Corridor Ph-II in Karnataka

Representative of KPTCL proposed for strengthening of Intrastate transmission system for evacuation of RE generation. The proposed transmission system was studied in detail and deliberations are as follows:

2.1 Establishment of 2x500 MVA, 400/220 kV sub-station at Yalwar, Bijapur District with following elements:

400 kV System:

- a. Narendra (New) Kudgi-Yalwar 400 kV D/C line (with Quad Moose ACSR Conductor)
- b. Gulbarga- Yalwar 400 kV D/C line (with Quad Moose ACSR Conductor).
- c. 2 X 500 MVA, 400/220 kV ICTs at Yalwar.
- d. 2 X 125 Mvar bus reactors.

220 kV System:

- a. LILO of both circuits of existing B.Bagewadi – Lingasugur 220 kV D/C line at Yalwar.
- b. LILO of both circuits of Bijapur- Sindagi 220 kV D/C line sub-station at Yalwar.

c. B.Bagewadi -Yalwar 220 kV D/C line.

2.1.1 System study shows that power flows from proposed Yalwar sub-station toward Narendra. In case of outage of the proposed Yalwar –Narendra (New) 400kV D/C line, all the power will absorb in state network.

2.1.2 After deliberations, the proposed 400/220 KV substation at Yalwar and associated transmission lines for evacuation of wind generation in Yalwar was agreed except Yalwar - Nagendera (New) 400kV D/C line.

2.2 Establishment of 2x500 MVA, 400/220 kV sub-station at Lokapur, Bagalkot

400 kV System:

- a. LILO of both circuits of Narendra (New) –Narendra (PGCIL) 400 kV D/C line (with Quad Moose ACSR Conductor) at Lokapur
- b. 2 X 500 MVA 400/220 kV ICTs.
- c. 2 X 125 Mvar bus reactors.

220 kV System:

- a. LILO of both circuits of existing Gadag-Bagalkot 220 kV D/C line at Lokapur.
- b. LILO of both circuits of Mahalingpura-Soundatti 220 kV D/C line at Lokapur.
- c. Mughalkod.- Lokapur/Bagalkot 220 kV D/c Line.

2.2.1 The study result shows that power flows from Narendra (New) dispersed towards Kolhapur (PG). The congestion /transmission constraint observed in the system beyond Kolhapur (MSETCL) and Kolhapur (MSETCL) – Karad 400kV D/c line gets overloaded. Accordingly, it was decided to review the transmission system for Lokapur Wind Energy zone along with Koppal Wind Energy Zone seeking connectivity at ISTS.

2.3 Providing additional feed to 400/220 kV Dhoni sub-station by LILO of existing Narendra – Davanagere 400 kV Twin Moose D/C line at Dhoni.

2.3.1 The system study shows that additional feed to 400/220 kV Dhoni sub-station by LILO of existing Narendra – Davanagere 400 kV D/C line (with twin moose ACSR conductor) at Dhoni does not provide any additional benefit and hence, LILO of above line at Dhoni was not agreed.

2.4 Establishment of 2x100 MVA, 220/110 kV sub-station at Ron (New), Gadag District

220 kV System:

- a. Doni- Ron 220kV D/C line.
- b. 2 X 100 MVA, 220/110 kV ICTs.

110 kV System:

- a. LILO of both circuits of existing Ron-Gajendragad 110 kV D/C line at Ron (New).
- b. 110 kV LILO of DC line between Gadag and 110 kV Ron to proposed 220 kV Ron. (Existing SC line via Naregal and proposed ongoing 2nd circuit directly to 110 kV Ron).

2.5 Establishment of 2x100 MVA, 220/110 kV sub-station at Savalgi, Bagalkot District

220 kV System:

- a. LILO of both circuits of Kudgi-Vajramatti 220 kV D/C line at Savalgi.
- b. 2x100 MVA, 220/110 kV transformers.

110 kV System:

- a. LILO of existing Todalbagi-Mamadapura 110 kV S/C line at Savalgi.
- b. LILO of existing Bableshwar-Mamadapura 110 kV S/C line at Savalgi.

2.6 Establishment of 2x100 MVA, 220/66 kV sub-station at Hanagal (New), Chitradurga District

220 kV Transmission scheme:

- a. Jagalur - Hanagal 220 kV D/C line.
- b. 2 X 100 MVA, 220/66 kV ICT's.

66 kV System:

- a. LILO of existing Gudikote-Hangal 66 kV S/C line at Hangal (New).
- b. LILO of both circuits of Hangal -Rampura 66 kV D/C line at Hangal (New).
- c. Hangal - Konasagara 66 kV S/C line on D/c towers.

2.7 Establishment of 2x100 MVA, 220/66 kV sub-station at PD Kote (New), Chitradurga District

220 kV System:

- a. LILO of both circuits of Hiriyur-Gowribidanur 220 kV D/C line at P.D.Kote (New).
- b. 2 X 100 MVA, 220/66 kV ICT's.

66 kV System:

- a. LILO of both circuits of Hariyabbe-P.Kote 66 kV D/C line at P. D Kote (New).
 - b. LILO of Hiriyur-Kalmaranahalli 66 kV S/C line at P. D Kote (New).
- 2.8 **LILO of 2nd circuit of the existing Mahalingpura - Kudachi 220 kV D/C line at Athani.**
- 2.9 **Conversion of existing Bidnal-Saundatti 220 kV S/C line and Saundatti - Mahalingpura 220kV S/C to 220 kV D/C line**
- 2.10 **Strengthening of Lingapura-Ittagi 220kV S/C line, Ittagi –Neelagunda 220kV S/C, Neelagunda –Guttur 220kV S/C line by replacing line with 220 kV D/C line (Twin Drake conductor).**
- 2.11 The transmission system proposals of KPTCL mentioned at 2.4 to 2.10 found to be in order and agreed.

3.0 High Flow on 400kV KKNPP – Tirunelveli D/C line after commissioning of of 400kV KKNPP – Tuticorin PS D/C line

- 3.1 Representative of POSOCO stated that power flow on 400kV lines connected to KKNPP is quite uneven. KKNPP – Tuticorin PS 400kV D/C lightly loaded whereas most of power from KKNPP is dispersed through KKNPP – Tirunelveli 400kV D/c line.
- 3.2 It was observed from system studies that although line loadings are uneven, there is no issue regarding power evacuation from KKNPP even under contingency conditions, as per planning criteria.
- 3.3 Accordingly, it was agreed that uneven loading of lines connected to Unit 1 & 2 would be studied while planning evacuation system for Unit 3 & 4.

4.0 Providing additional feed to 3x500 MVA, 400/220kV substation at Mylasandra (Electronic City) and Establishment of 2x500 MVA, 400/220 kV Sub-station at Dommasandra in Bengaluru

- 4.1 Director, CEA stated that in the 27th meeting of SCPSPSR, establishment of 400/220 kV sub-station (3 x 500 MVA) at Mylasandra (Electronic City) in Bangalore was approved with LILO of Somanahalli-Kolar 400 kV S/C line (Twin Moose ACSR conductor) at Mylasandra. In the 41st SCPSPSR, KPTCL had requested for reconductoring of Somanahalli-Kolar 400kV D/C line LILO at Mylasandra (Electronic city) with Quad Moose ACSR conductor (replacing existing Twin Moose ACSR conductor) for providing additional feed to Mylasandra. In view of difficulty in getting long shut down of Somanahalli-Kolar 400kV line, it was decided that CEA,

CTU, POSOCO and KPTCL may carry out System Studies jointly and explore various alternate options.

4.2 In the 42nd meeting of SCPSPSR, KPTCL proposed to construct LILO of one circuit of proposed Dharmapuri- Somanahalli 400kV D/c line (PGCIL line) at 400 kV Mylasandra sub-station. With above proposals 400kV system at proposed 400/220kV Mylasandra substation would be as under:

- i) 3x500MVA, 400/220kV ICTs
- ii) LILO of single circuit of Dharmapuri-Somanahalli 400kV D/C line (quad Moose ACSR conductor) at Mylasyandra
- iii) LILO of single circuit of Kolar-Somanahalli 400kV S/C line (Twin Moose) at Mylasyandra

4.3 In the 42nd meeting of SCPSPSR, KPTCL had proposed for establishment of 400/220 kV sub-station at Dommasandra (400/220kV, 2x500MVA ICTs) in Bengaluru city to relieve loading 400kV Mylasandra sub-station, to reduce the loading of 220 kV lines and to meet the future load growth in the vicinity with following details:

- i) 2 X 500 MVA, 400/220 kV GIS substation at Domasendra
- ii) LILO of Kolar – Mylasandra 400kV S/C line (with Twin Moose ACSR conductor) at proposed Dommasandra substation.
- iii) Somanahalli - Dommasandra 400kV S/C line (with Twin Moose ACSR conductor)
- iv) LILO of Somanahalli - Malur 220 kV D/C line between proposed 220kV EXORA and Malur sub-station (With this line arrangement, there will be 220kV DC connectivity between Dommasandra & EXORA, 220 kV SC connectivity from Dommasandra, each to Sarjapura and Malur).
- v) 220 kV, 1000sqmm UG cable link between 220 kV VT Park substation and 220kV EXORA sub-station (proposed).

4.4 Representative of CTU stated that KPTCL had already planned LILO of Kolar - Somanahalli 400 kV S/C line at Mylasyandra 400/220kV substation. Again making LILO of Kolar – Mylasyandra section at proposed Dommasandra 400/220kV substation would reduce reliability of the system.

4.5 To meet out the rising demand of Bengaluru city along with reliability, following alternatives were discussed:

Alternative 1:

- i) LILO of Kolar – Somanahalli 400kV S/C line at Mylasandara 400/220 kV substation (already agreed)

- ii) LILO of one circuit of Dharampuri – Somanhalli 400kV D/C (with Quad ACSR Conductor) line at Mylasandara 400/220 kV substation
- iii) Mylasandra – Dommasandra 400kV D/C line (twin Moose)

Alternative 2:

- i) LILO of Kolar – Somanhally 400kV S/C line at Mylasandara 400/220 kV substation (already agreed).
- ii) LILO of one circuit of Dharampuri – Somanhalli 400kV D/C (with Quad moose ACSR conductor) line at proposed 400/220 kV substation at Dommsandra.
- iii) Mylasandra – Dommasandra 400kV S/C line (with twin Moose ACSR conductor)

Alternative 3:

- i) LILO of Kolar – Somanhally 400kV S/C line at Mylasandara 400/220 kV substation (already agreed).
- ii) LILO of one circuit of Dharampuri – Somanhally 400kV D/C (Quad) line at proposed 400/220 kV substation at Dommsandra.
- iii) LILO of LILO section of Somanahalli – Dommasandra (formed after LILO of single circuit of Dharampuri – Somanhalli 400kV D/C (Quad) line at Dommasandra) at Mylasandra.

4.6 Regarding alternative-1, KPTCL stated that proposed 400/220kV substation at Mylasandra is GIS and space is not available for 06 nos of 400kV line bays. Therefore, Alternative-1 can be ruled out.

4.7 Load flow studies were carried out for both Alternative-2 and Alternative-3 (power flow plot enclosed as Exhibit-2). The studies show that both Alternative-2 and Alternative-3 are acceptable, but Alternative-2 is more reliable than Alternative-3.

4.8 KPTCL stated that in case of both Alternative-2 and Alternative-3, multi circuit towers are need to be used for construction of lones constructed between Mylasandra and Dommasandra. However, KPTCL requested to consider Alternative-2 over Alternative-3 considering higher reliability.

4.9 Accordingly, Alternative-2 was agreed for supplying reliable power to Bengaluru city. The transmission system of Mylasandra and Dommasandra 400kV S/S will be as follows:

Connectivity at Mylasandra 400/220kV substation:

- i) 3x500MVA, 400/220kV ICTs
- ii) LILO of Kolar – Somanhally 400kV S/C line at Mylasandara 400/220 kV substation (already agreed)
- iii) Mylasandra – Dommasandra 400kV S/C line (twin Moose)

400/220kV substation at Dommasandra :

- i) 2x500MVA, 400/220kV ICTs
 - ii) LILO of one circuit of Dharampuri – Somanhally 400kV D/C line (with Quad moose ACSR Conductor) at proposed 400/220 kV substation at Dommsandra.
 - iii) Mylasandra – Dommasandra 400kV S/C line ((with twin moose ACSR Conductor) on D/C towers
- 4.10 KPTCL stated that they would plan to utilize RoW of Kolar – Somanahalli 400kV S/C line for LILO of Dharampuri – Somanhalli 400kV D/C line (with Quad moose ACSR conductor) at Dommsandra.
- 4.11 It was also clarified that modalities may be finalized at the time of implementation.

Annexure-I

List of participants in Joint System Study Meeting held on 10th & 11th May, 2018 at SRPC, Bengaluru

Sl. No.	Name	Designation
	Central Electricity Authority	
1	B.S. Bairwa	Director (PSPA-II)
2	Kanchan Chauhan	Assistant Director
	SRPC	
1.	S R Bhatt	Member Secretary
2.	R. M. Rangarajan	SE
3.	Anil Thomas	Executive Engineer
	POWERGRID	
1.	Mukesh Khanna	GM (CTU-Plg.), PGCIL
2.	Kashish Bhambani	CM(SG) PGCIL
3.	Ajay Dahiya	Dy. Mgr(CTU-Plg)
4.	Narendra Sathrik	Sr. Engr(CTU-Plg) ,POWERGRID
	POSOCO/SRLDC	
1.	Abraham Varghese	DGM
2.	Madhukar G	Manager
3.	L. Sharath Chand	Sr. Engr
	APTRANSCO	
1.	T. V. Nageshwar Rao	DE/System Studies
2.	K Ramesh	ADE/PS
	TANTRANSCO/TANGEDCO	
1.	C Veeramani	CE/reg
2.	D. Ravichandran	SE, System studies
3.	T. Sumathi	EE, System studies
4.	V.Jayanthi	AEE, System Studies
5.	R. Kathiravan	AEE/CERC
6.	J. Kalaisetri	AE/System Studies

Sl. No.	Name	Designation
	KPTCL	
1.	D Chethan	EE,PSS/KPTCK
2.	Divya Prabha H	AEE/PSS/KPTCL

LOAD GENERATION BALANCE OF Tamilnadu for - 2021-22 Off Peak CONDITION					
Power Plant	Installed Capacity (MW)	Total (MW)	Units Considered	Despatch off peak	Mini. Technical potential for running thermal power plant
Existing					
<u>Hydro</u>					
Kundah	3 X 60 + 2 X 50 + 5 X 20 + 5 X 35 +1x30	585	3 X 60 + 2 X 50 + 1 X 35	100	
Pykara	3 X 6.65 + 1 X 11 + 2 X 14+2	60.95	3 X 6.65 + 1 X 11 + 2 X 14	30	
Pykara ultimate (PUSHEP)	3X50	150	3X50	30	
Moyar	3 X 12	36	3X12	18	
Kadamparai	4 X 100	400	4 X 100	0	
Aliyar	1 X 60	60	1 X 60	30	
Periyar	4 X 35	140	4 X 35	100	
Mettur Dam	4 X 12.5	50	4 X 12.5	25	
Bhawani Barrage - II & III	2 x 15 + 2 x 15	60	2 x 15 + 2 x 15	30	
Kodayar	1 X 60 + 1 X 40	100	1 X 60 + 1 X 40	50	
Mettur Tunnel	4x50	200	4x50	150	
Suruliyar	1x35	35	H	20	
Servalar	1x20	20	H	14	
Sarkarpathy	1x30	30	H	20	
Sholayar	2x35+25	95	H	63	
Papansam	4x8	32	H	22	
Bhavani kattalai barage I,II, III	2x15+2x15+2x15	90	H	63	
Lower mettur barage I,II ,III&IV	2x15+2x15+2x15+2X15	120	H	60	
Micro Hydro		45	H	0	
Subtotal Existing Hydro		2308.95		825	
<u>Thermal (Coal+Lignite)</u>					
Ennore (decommissioned)	2 X 60 + 3 X 110	450	2 X 110	0	
Tuticorin	5 X 210	1050	4 X 210	0	577.5
Mettur	4 X 210	840	4 X 210	0	462
Mettur TPS St-III	1 x 600	600	1 x 600	330	330
Neyveli -I NLC	6x50 + 3X100	600	6x50 + 3X100	0	330
Neyveli Zero (STCMS)	1 X 250	250	1 X 250	0	137.5
North Chennai	3x210 + 2 x 600	1830	3x210 + 2 x 600	1006	1006.5
Subtotal Existing Thermal		5620		1336	
<u>Thermal (Gas)</u>					
PP Nallur	3 X 100	300	3 X 100	0	
Basin Bridge	4 X 30	120	3 X 30 + 1 X 15	0	
Kovil Kalapal	1x70+1x37.8	107.8	1x70+1x37.8	0	
Subtotal Existing Gas		527.8		0	
<u>Small Thermal</u>					
Valathar Stg-I	1x60+1x35	95	T	0	
Valathur Stg-II	1x60+1x32	92	T	0	
Kuttalam Gas	1x64+1x37	101	T	0	
GMR Power (Diesel)	4x49	196	T	0	
Samalpatti	7x15.1	105.6	T	0	
Madurai (Diesel)	106	106	T	0	
Aban Power (Gas)	74.41+38.81	113.2	T	0	
Arkey Energy (Gas)	1x38+2x6.8+1x.20	52.8	T	0	
Subtotal Existing Mini Hydro +Small Thermal		861.6	861.6	0	
RE					
Tamil Nadu Wind		8152		4076	
TN Solar		2048		1024	

Other Renewables		900		0	
Total RE		11100		5100	
Total Existing		20418		7261	
Additions upto 2021-22					
<u>Hydro</u>					
Kundah PSS	4 x 125	500	4 x 125	0	
Mettur PSS	500				
Vellimalai PSS	200				
Kollimalai PSS	520				
Subtotal - Hydro		500		0	
<u>Thermal</u>					
Ennore Expn TPS	1 x 660	660	1 x 660	363	363
Replacement of existing Ennore TPS	1 x 660	660	1 x 660	0	363
North Chennai St-III (2015-16)	1 x 800	800	1 x 800	440	440
Ennore (SEZ) TPS at Kaltupalli	2 x 660	1320	2 x 660	726	726
Udangudi TPS (TNEB)	2 x 660	1320	2 x 660	726	726
Udangudi TPS St-II					to be deleted
UPPUR	2 x 800	1600	2X800	880	880
OPGC	2x360	720	2x360	0	
Subtotal - Thermal		7080		3135	
Tamil Nadu Wind		2000		1000	
TN Solar		2000		1000	
Other Renewables		0		0	
Total RE		4000		2000	
Total Additions		11580		5135	
Total Hydro		2809		825	
Total Thermal		12700		4471	
Total gas		1389.4		0	
Total RE		15100		7100	
TOTAL upto 2018-19		31998		12396	

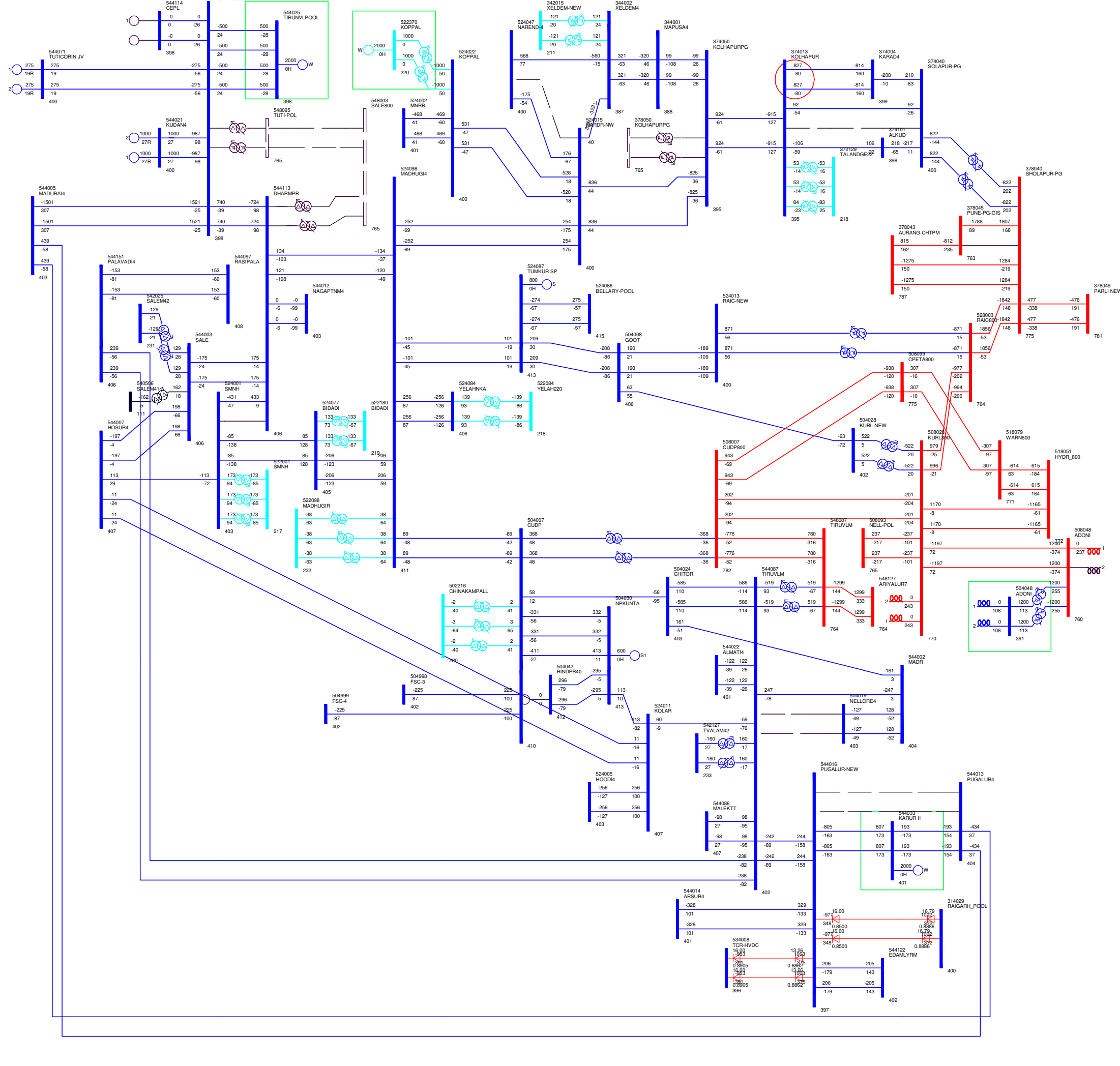
LOAD GENERATION BALANCE OF Andhra Pradesh for - 2021-22 Off Peak CONDITION					
Power Plant	Installed Capacity (MW)	Total (MW)	Units Considered	Peak Despatch (MW)	Mini. Technical potential of
Existing					
Machkund		84		44	
<u>IB Dam</u>		59		22	
Donkarai	1x 25	25	1x25	25	
Upper Sileru	4 X 60	240	4 X 60	133	
Lower Sileru	4 X 115	460	4 X 115	200	
Nagarjunasagar RT PH	3x30	90	3x30	0	
Srisailem RBPH	7 X 110	770	7 X 110	0	
Nagarjunasagar Tail Pond	2 x 25	50		0	
Pennaahobhila	2x10	20			
Subtotal Existing Hydro		1798		424	
Thermal (Coal)					
Vijayawada	6 X 210 + 1x 500	1760	6 X 210+1 x 500	1144	1144
Muddanur	5 X 210	1050	4 X 210	685	682.5
Krishnapattanam Stage - I	2 x 800	1600	2 x 800	520	1040
Hinduja	2 x 520	1040	2 x 520	0	676
RTTP IV Stage	1 x600	600		0	390
Subtotal Existing Thermal		6050		2349	
Thermal (Gas)					
Vijeswaram	2 X 33 + 1 X 34 + 1 X 112.5 + 1X59.5	272	2 X 33 + 1 X 36 + 1 X 172	175	
GVK extension	1X145+1X75	220		0	
Spectrum (Gas) Kakinada	1x46.8 + 2X46.1 +1x68.8	208	3 X 50 + 1 X 58	0	
Kondapli	2x112+1x128	350		0	
Isolated Gas Well	27.04	27.04			
Konaseema		445			
Reliance Energy Limited	1X140+1x80	220			
Gautami	2x145+1x174	464			
Vemagiri Power Generation	1x233+1x137	370			
Subtotal Existing Gas		2576.04		175	
<u>Mini Hydro</u>		0			
RE					
Renewables (Wind)	R	3947	0	2762.9	
Renewables (Solar)	R	2147	0	858.8	
Renewables (Co-Gen)	R	433	0	0	
Total RE		6527		3621.7	
Total Existing		16951		6569.7	
Additions upto 2021-22					
Hydro					
Subtotal - Hydro		0		0	
Thermal					
Krishnapattanam TPP (JVP) Stage II (1x800 MW)	1x800	800		0	
Vijayawada TPS Stage V (1x800 MW)	1x800	800		0	
Subtotal - Thermal		1600		0	
RE					
Renewables (Wind)	R	2500	0	1750	
Renewables (Solar)	R	2000	0	800	
Total RE		4500		2550	
Total Additions		6100		2550	
Total Hydro		1798		424	
Total Thermal		7650		2349	
Total Gas		2576.04		175	
Total RE		11027		6171.7	
TOTAL upto 2021-22		23051.04		9119.7	

LOAD GENERATION BALANCE OF Karnataka for - 2021-22 Off Peak CONDITION					
Power Plant	Installed Capacity (MW)	Total (MW)	Units Considered	Despatch MW	
				Peak	OffPeak
Existing					
<u>Hydro</u>					
Sharavathi	10 X 103.5	1035	10 X 103.5	507.15	207
Varahi	4 X 115	460	4 X 115	161	69
Kalinadi (Nagjheri)	6x150	900	1x135+5x150	525	0
Kodasalli	3 X 40	120	3 X 40	40	0
Kadra	3 X 50	150	3 X 50	50	0
Sharavati Tail Race	4 X 60	240	4 X 60	126	36
Almati Dam	1x15+5x55	290	1x15+5x55	0	33
Subtotal Existing Hydro		3195		1409.15	345
<u>Thermal</u>					
Raichur	7 X 210 + 1 x 250	1720	3 X 210 + 1 x 250	1376	620
Bellary	2 x 500 + 1x700	1700	2 x 500 + 0 X 700	1360	650
Yeramars TPS	2 x 800	1600	1 x 800	1280	520
UPCL	2 x 600	1200	1x 600	960	390
Torangalu (Jindal)	2 x 130 + 4 x 300	1460	2 x 130 + 4 x 300	0	0
Subtotal Existing thermal		7680		4976	2180
<u>Gas</u>					
Subtotal Existing Gas		0			
<u>Small Hydro</u>					
Liganmakki	2x27.5	55	H	0	0
Jog	4x21.6+4x13.2	139.2	H	0	0
supa	2x50	100	H	0	0
Bhadra	1x7+2X12.1+1x2+6	39	H	0	0
Sivansamudram	6x3+4x6	42	H	0	0
Shimsa + Minirabad	2x8.6+(1x10+3x9)	45	H	0	0
TBDam Share(20%)		14	H	0	0
Ghataprabha	2x16	32	H	0	0
Mani Dam PH	2x4.5	9	H	0	0
Mini Hydro		4.5	H	0	0
Mallapur	2x4.5	9	H	0	0
Mini Hydro	702.66	859.56	H	515.736	85.956
<u>Small Thermal (Diesel)</u>					
Yelahanka Diesel	6x21.32	0	T	0	0
Tata Electric Diesel	5x16.26	0	T	0	0
Rayalseema Alkalies		0	T	0	0
ITPL Diesel		0	T	0	0
Existing mini Hydro and thermal (not represented)		1348.26	1191.36	515.736	85.956
Renewables(Wind)		4655.66	R	1396.698	2793.396
Renewables(Solar)		4884.56	R	3419.192	1953.824

RE (Cogeneration)		1635		817.5	0
Total RE		11175.22		5633.39	4747.22
Total Existing		23398.5		12534.3	7358.18
Additions upto 2021-22					
<u>Hydro</u>					
Gundia HEP Ph-I & II	2 X 200				
Shivasamudram ROR	345				
Gangavali St-II	400				
Kali St-III	300				
Aghanashini HEP	600				
Mahadayi HEP	320				
Subtotal - Hydro		0			
<u>Thermal</u>					
Edlapur					
Mangalore TPS					
Chattisgam Pit Head (Th)					
Bidadi Gas					
YEramarus					
YELAHANKA GAS	360	360		324	0
Subtotal - Thermal		360		324	
<u>RE</u>					
Renewables(Wind)		2800	R	840	1680
Renewables(Solar)		700	R	490	280
RE(Cogeneration)		0			0
Total RE		3500		1330	1960
Total Additions		3860		1654	1960
Total Hydro		4543.26		1409.15	430.956
Total Thermal		8040		5300	2180
Total Gas		0		0	0
Total RE		14675.2		6963.39	6707.22
TOTAL upto 2018-19		27258.5		13672.5	9318.18

Power evacuation study for proposed Wind Energy Zone in SR

Exhibit : 1 (outage of Kudankulam - Tirunelvel 400kV D/c line + proposed RE generation in SR)



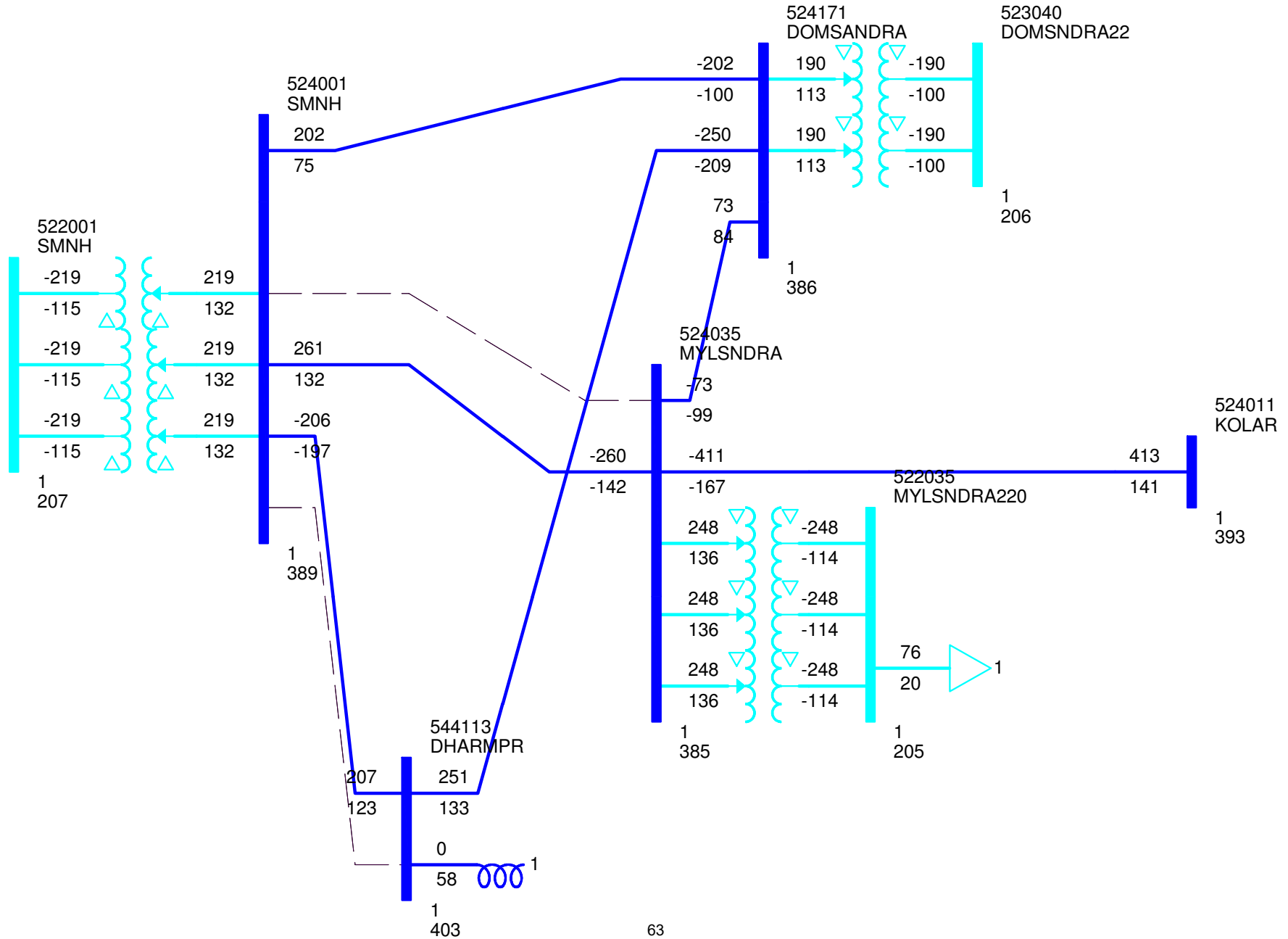
Power flow plot for proposed Domсандра 400/220 kV S/s

Agenda for 1st meeting of RST (01.09.2018)

Annex-III/24

Exhibit -2

Alternative -2

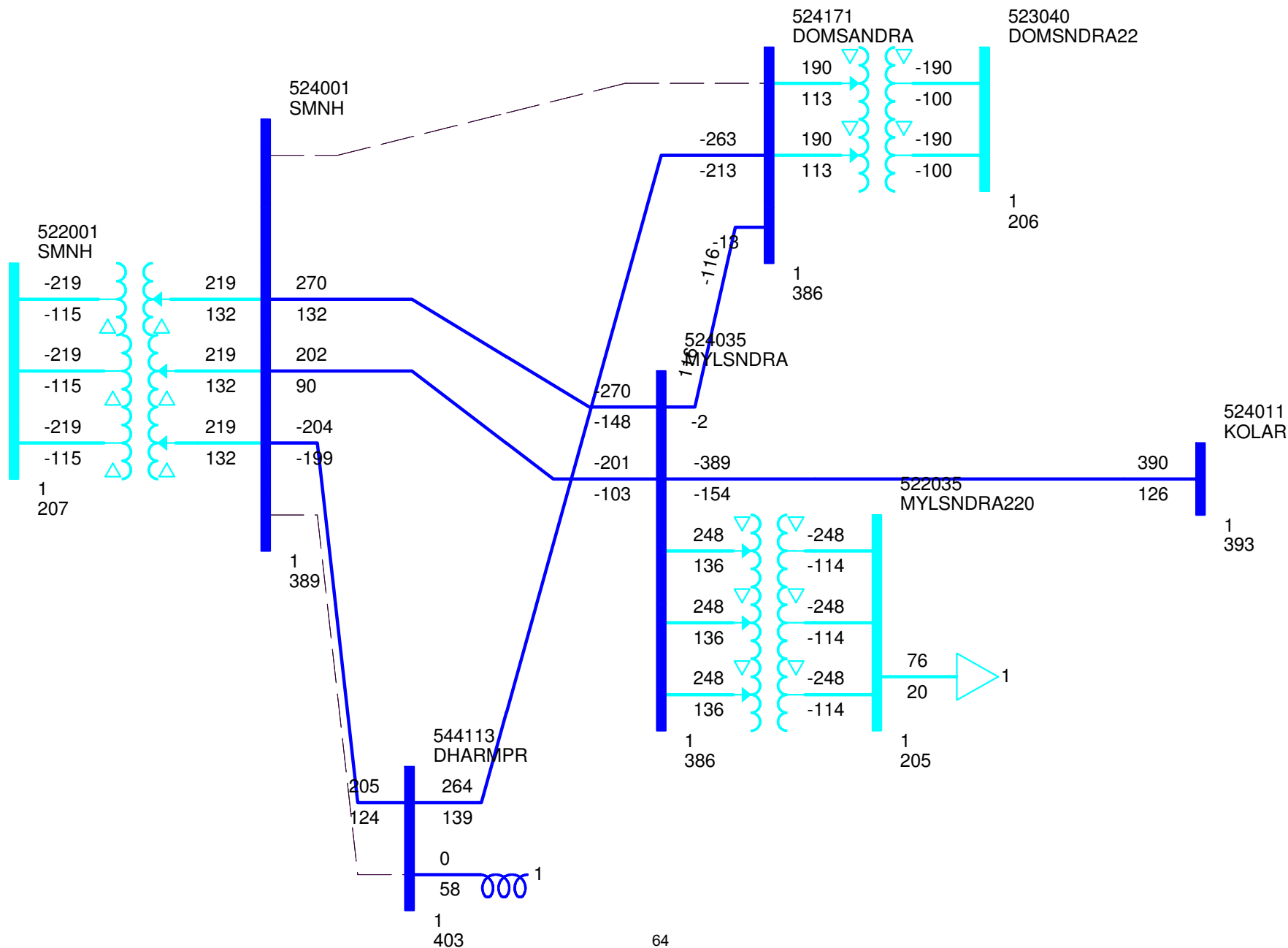


Power flow plot for proposed Domasandra 400/220 kV S/s

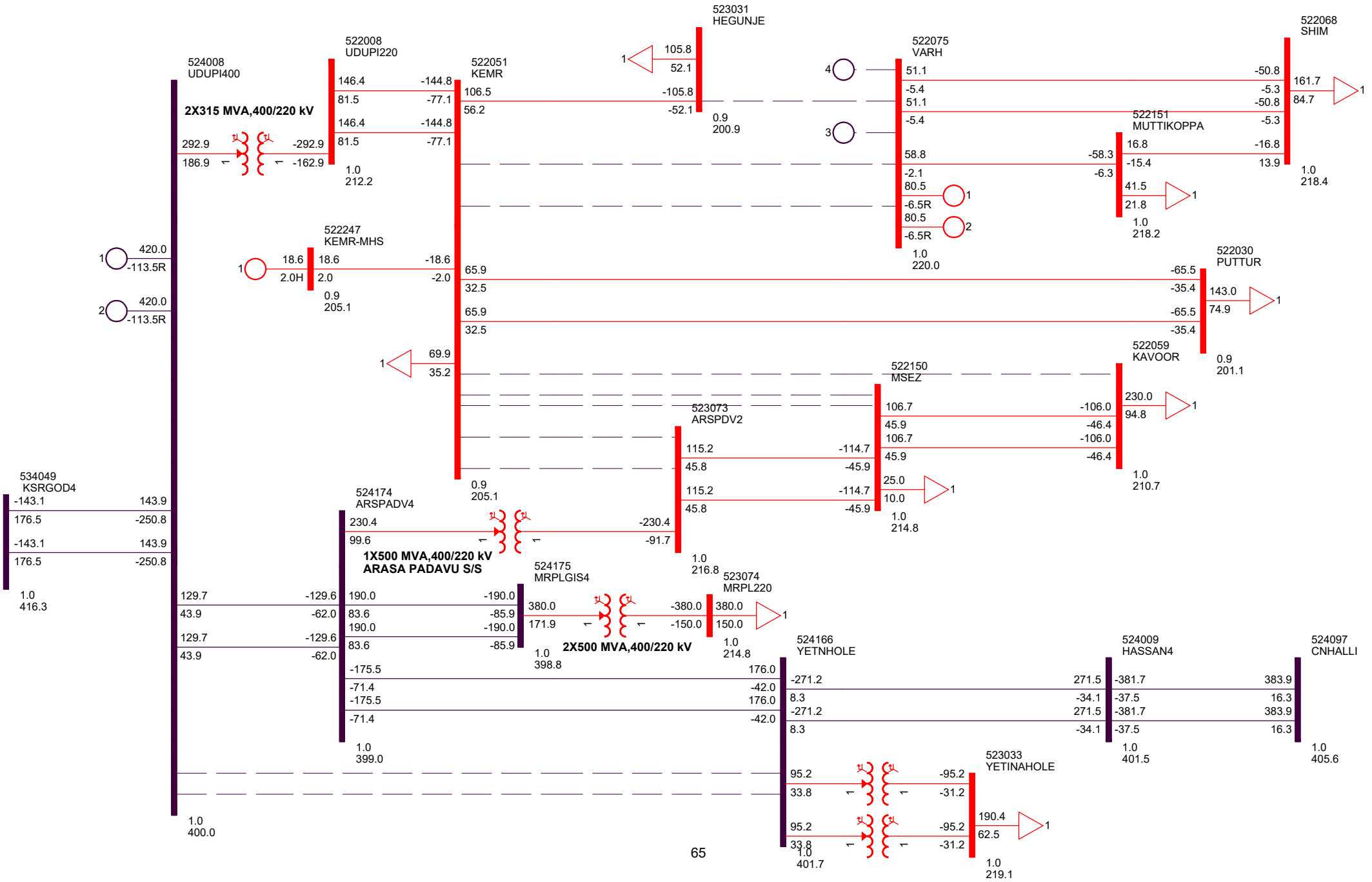
Annex-III/25

Exhibit -2

Alternative -3

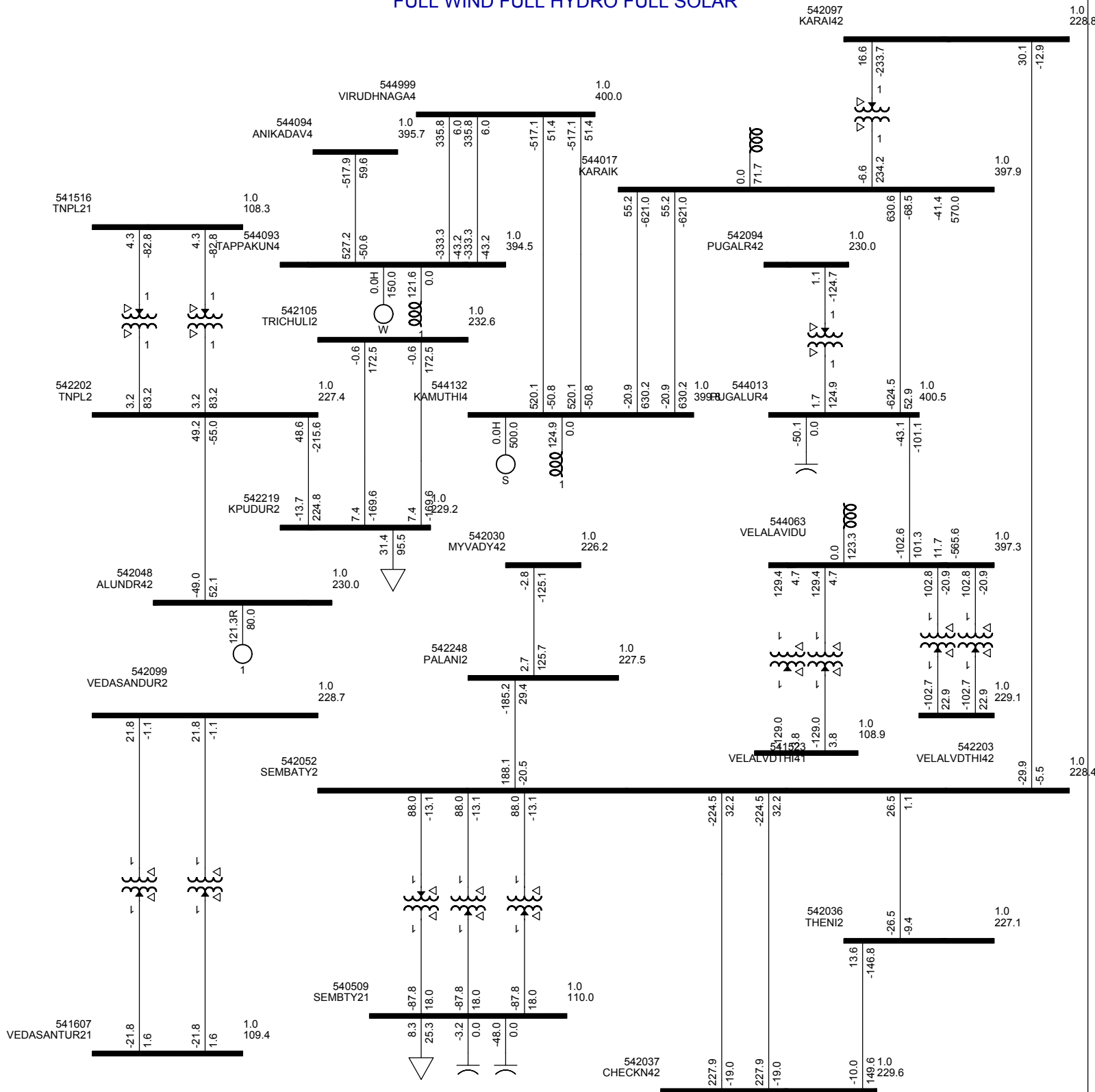


LOAD FLOW STUDY: ESTABLISHING 1X500 MVA, 400/220 kV SUB-STATION AT ARASA PADAVU, PAKSHINA KANNADA DISTRICT (2018)
Case-2: WITH 400/220 kV ARASAPADAVU S/S AT SYSTEM PEAK LOAD CONDITION.



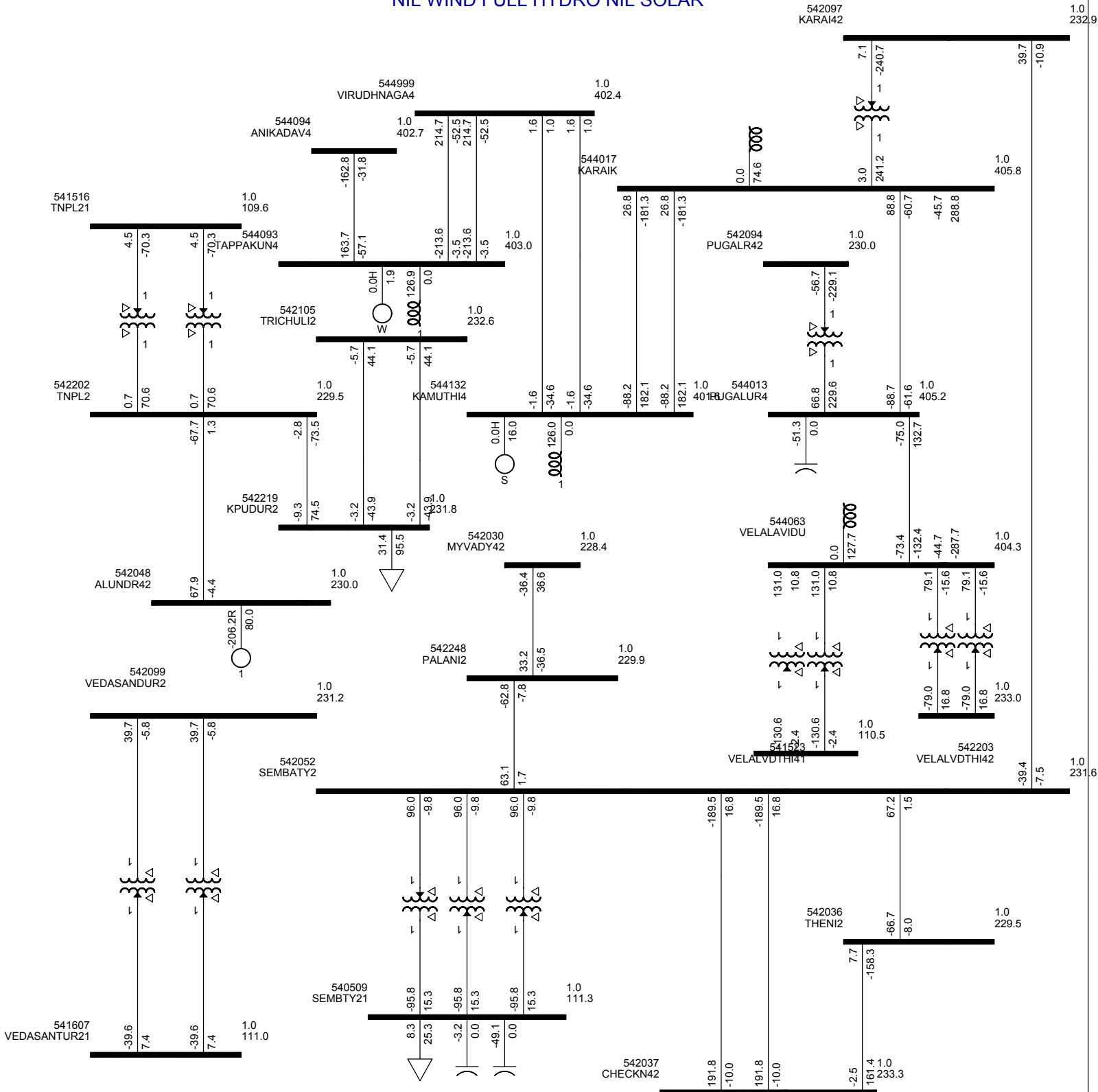
BASE CASE : WITHOUT THE PROPOSED VADAMADURAI 400 KV SUBSTATION

FULL WIND FULL HYDRO FULL SOLAR



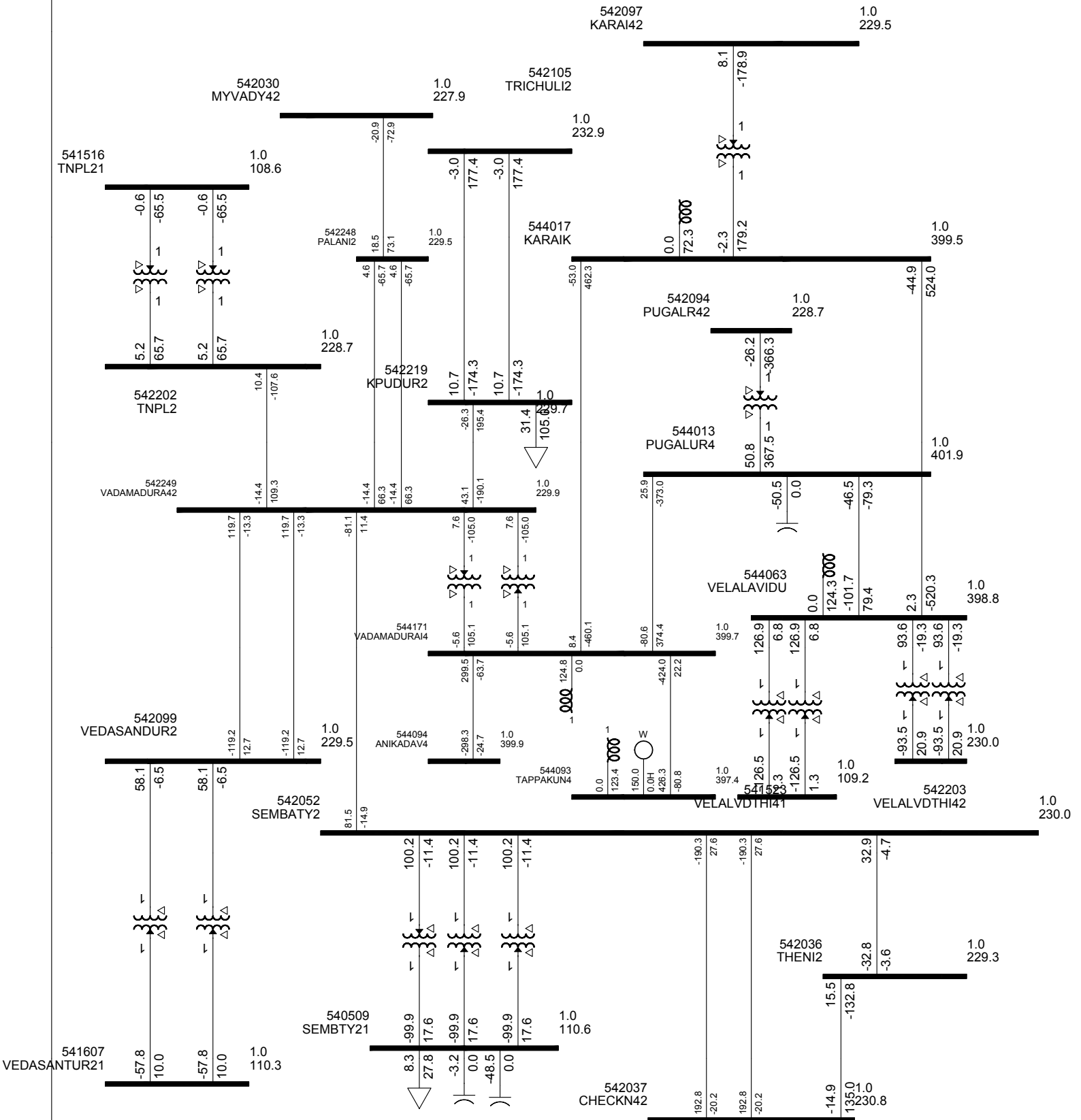
BASE CASE : WITHOUT THE PROPOSED VADAMADURAI 400 KV SUBSTATION

NIL WIND FULL HYDRO NIL SOLAR



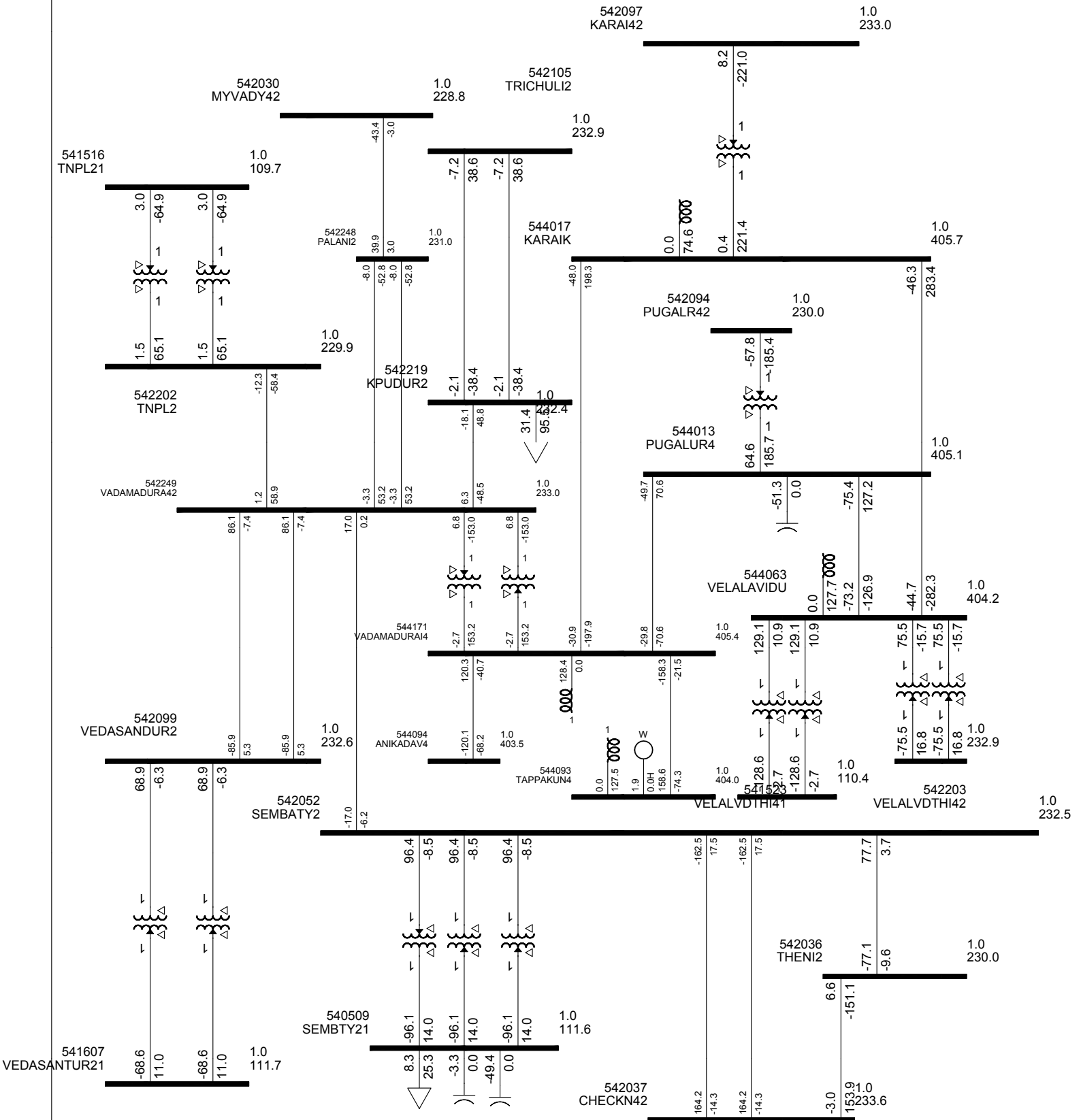
CASE1 : WITH THE PROPOSED VADAMADURAI 400 KV SUBSTATION

FULL WIND FULL HYDRO FULL SOLAR



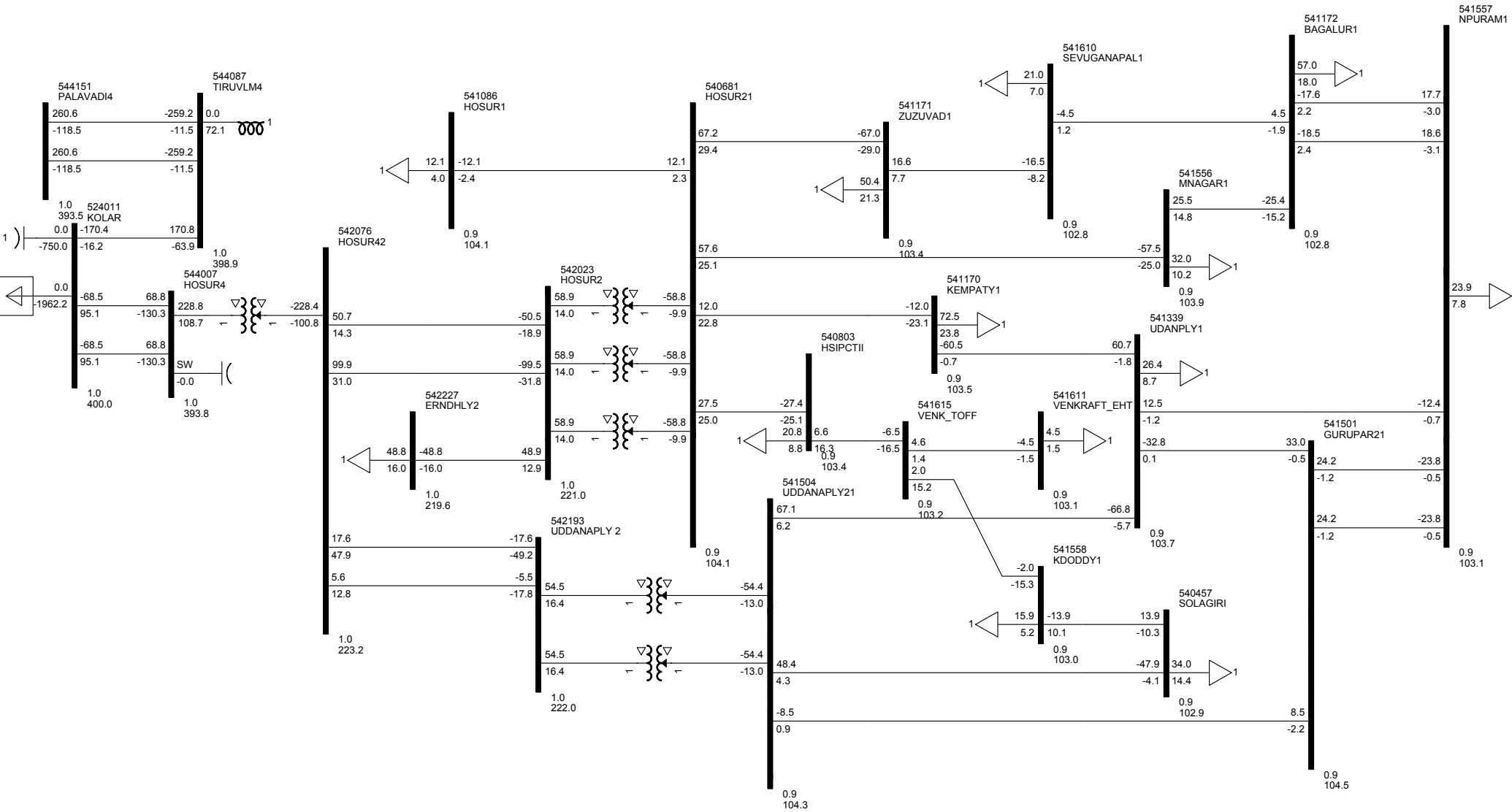
CASE 1 : WITH THE PROPOSED VADAMADURAI 400 KV SUBSTATION

NIL WIND FULL HYDRO NIL SOLAR



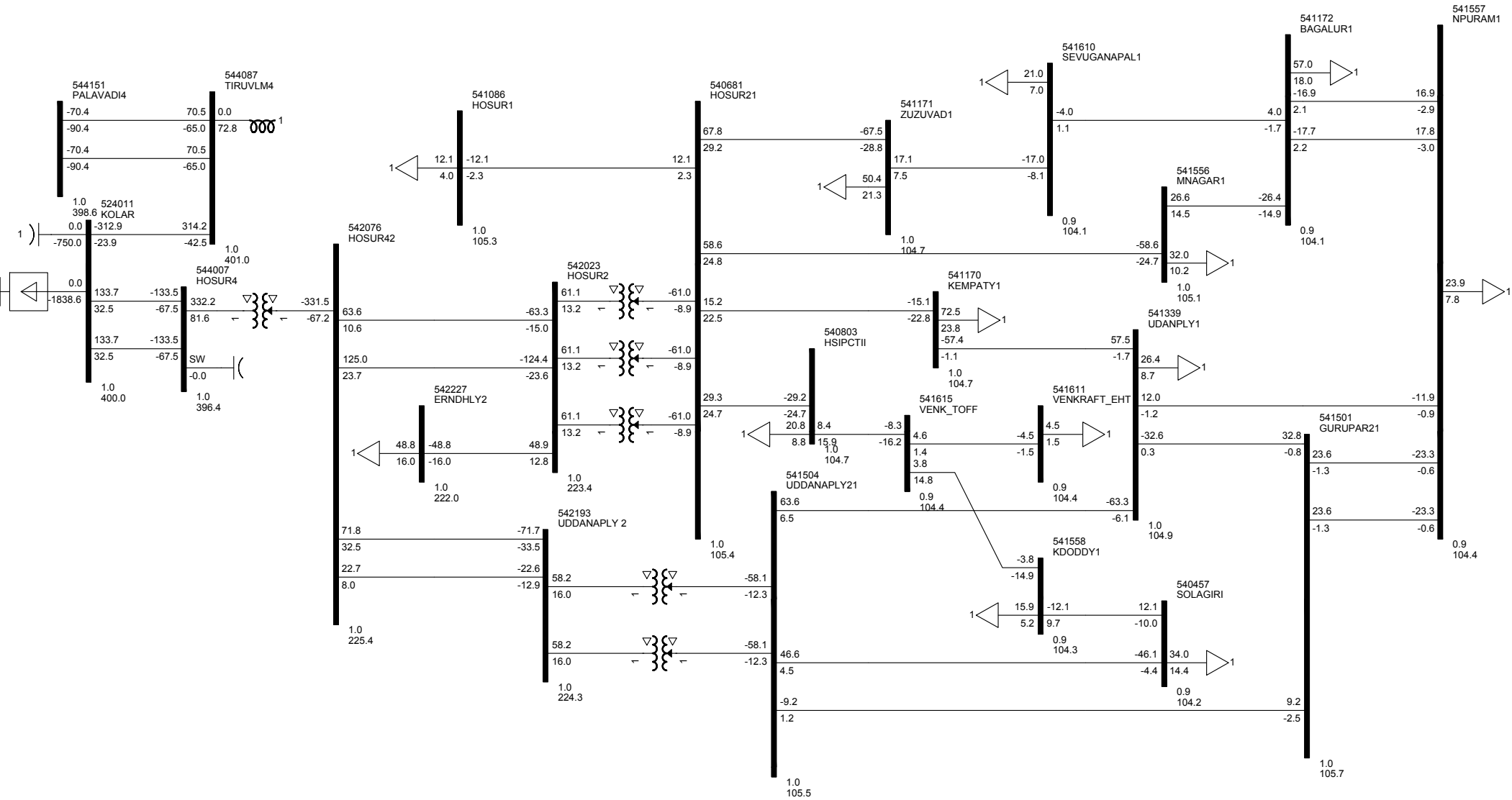
ESTABLISHMENT OF VISHWANATHAPURAM 400 / 110 kV SS

BASE CASE :FULL WIND FULL HYDRO FULL SOLAR



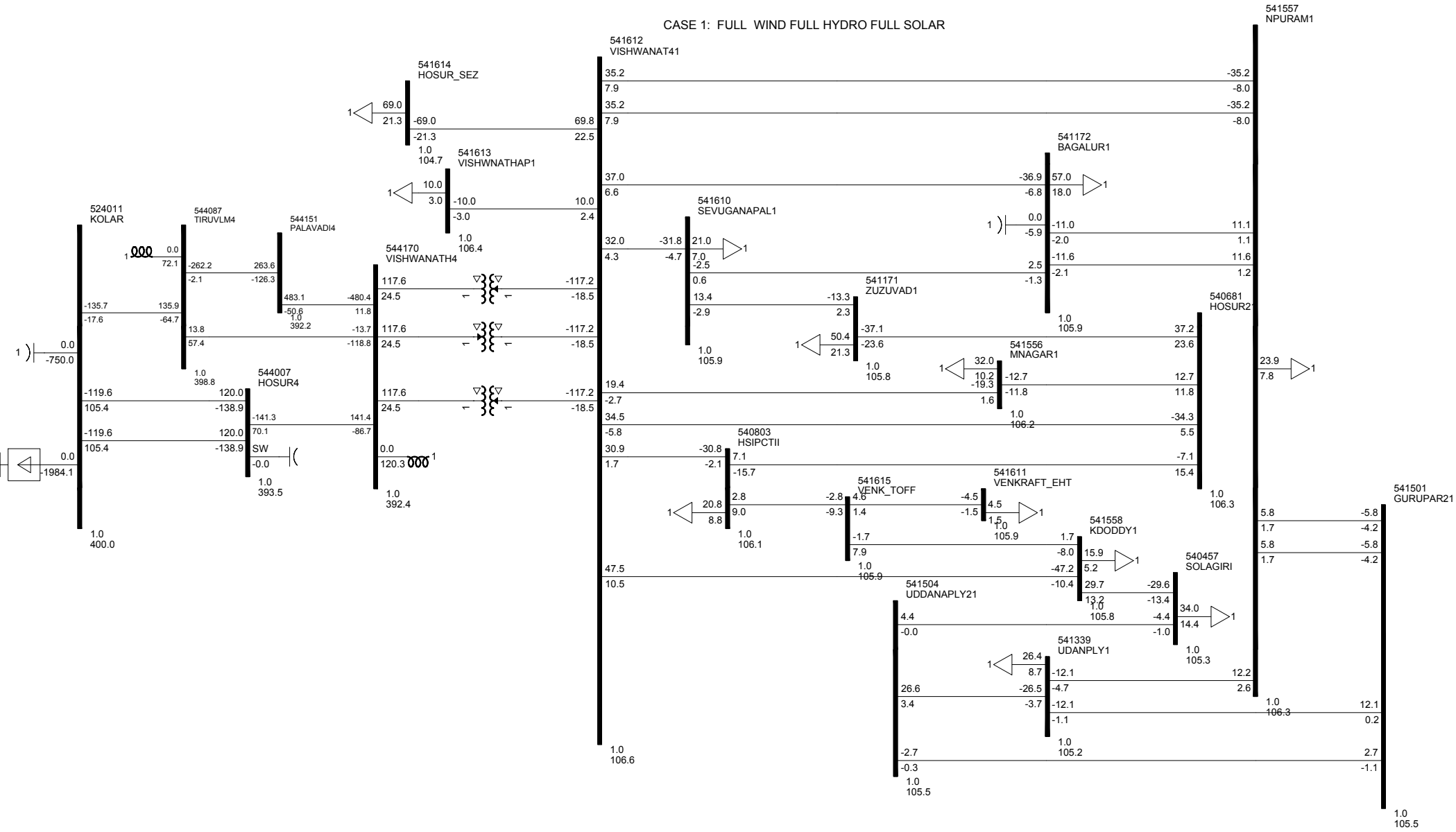
ESTABLISHMENT OF VISHWANATHAPURAM 400 / 110 kV SS

BASE CASE :NIL WIND FULL HYDRO NIL SOLAR



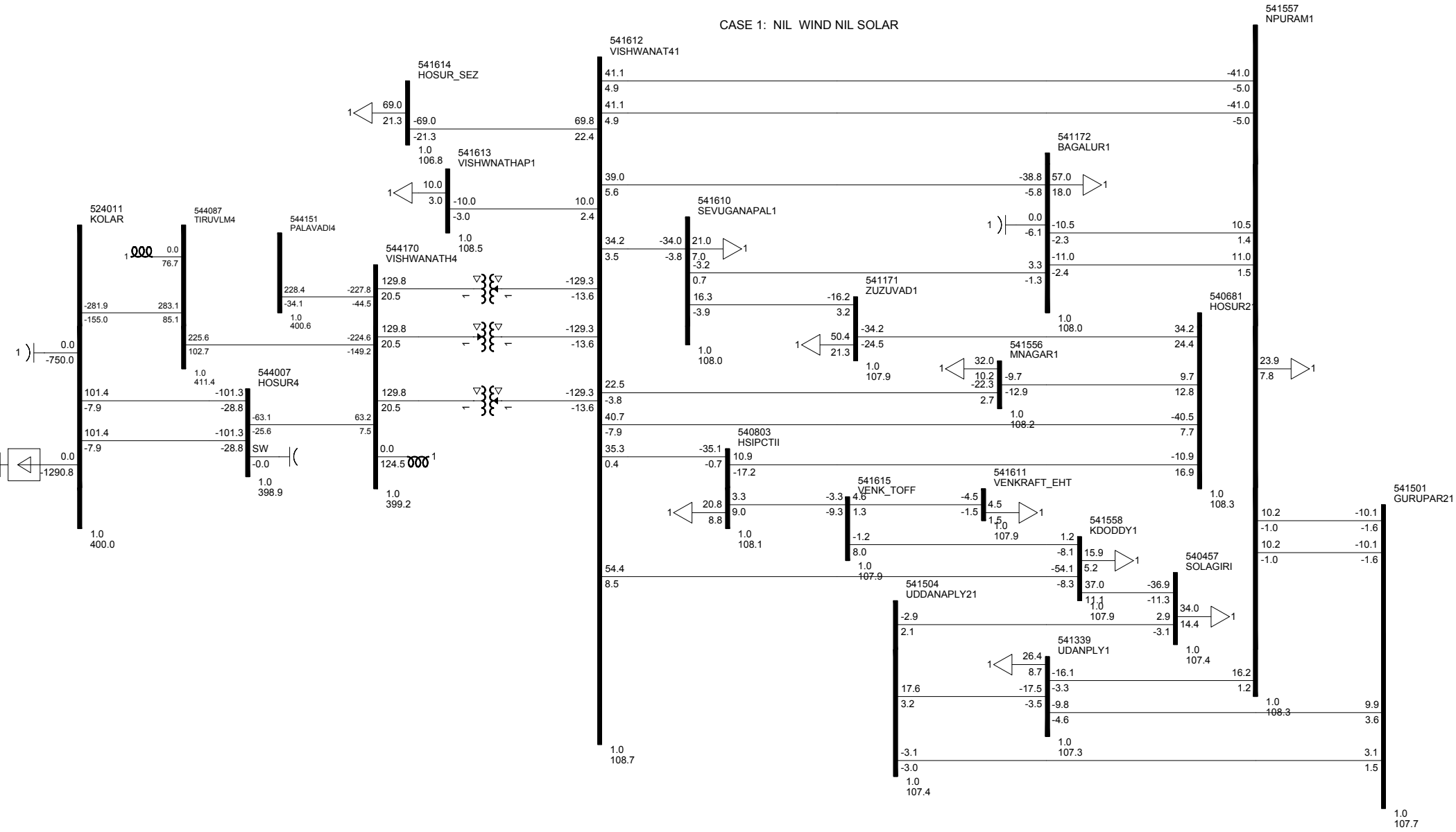
ESTABLISHMENT OF VISHWANATHAPURAM 400 / 110 KV SS

CASE 1: FULL WIND FULL HYDRO FULL SOLAR



ESTABLISHMENT OF VISHWANATHAPURAM 400 / 110 KV SS

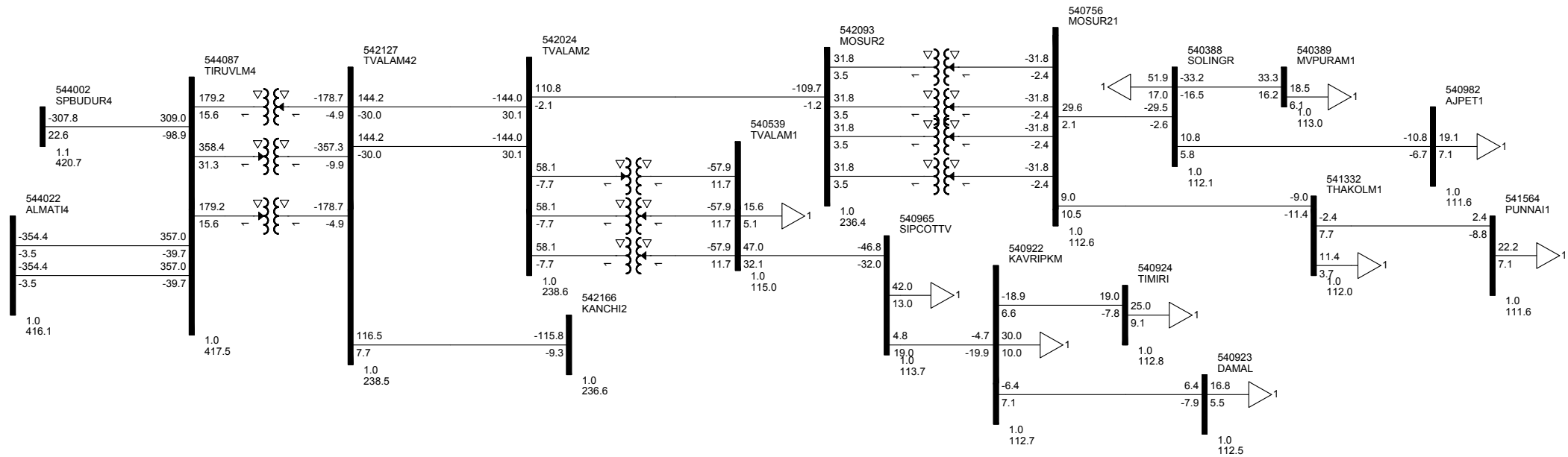
CASE 1: NIL WIND NIL SOLAR



ANNEXURE -1

BASE CASE: WITHOUT PROPOSED 400 kV /230 kV -110 kV SHOLINGHUR SUBSTATION

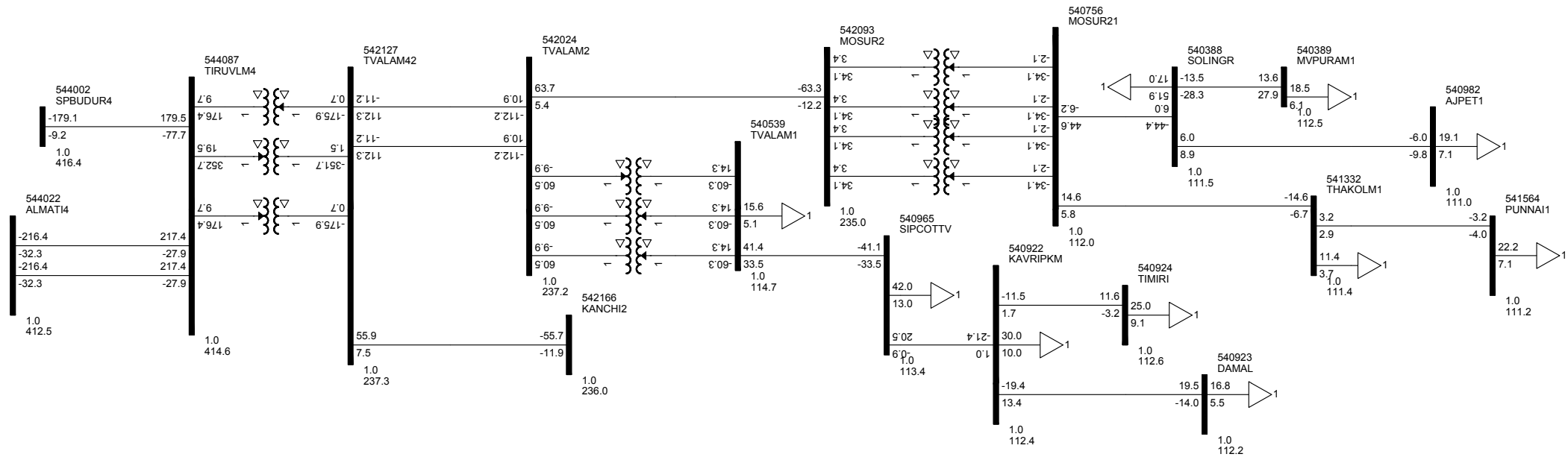
FULL WIND-FULL HYDRO -FULL SOLAR



ANNEXURE -1

BASE CASE: WITHOUT PROPOSED 400 kV /230 kV -110 kV SHOLINGHUR SUBSTATION

NIL WIND-FULL HYDRO -NIL SOLAR

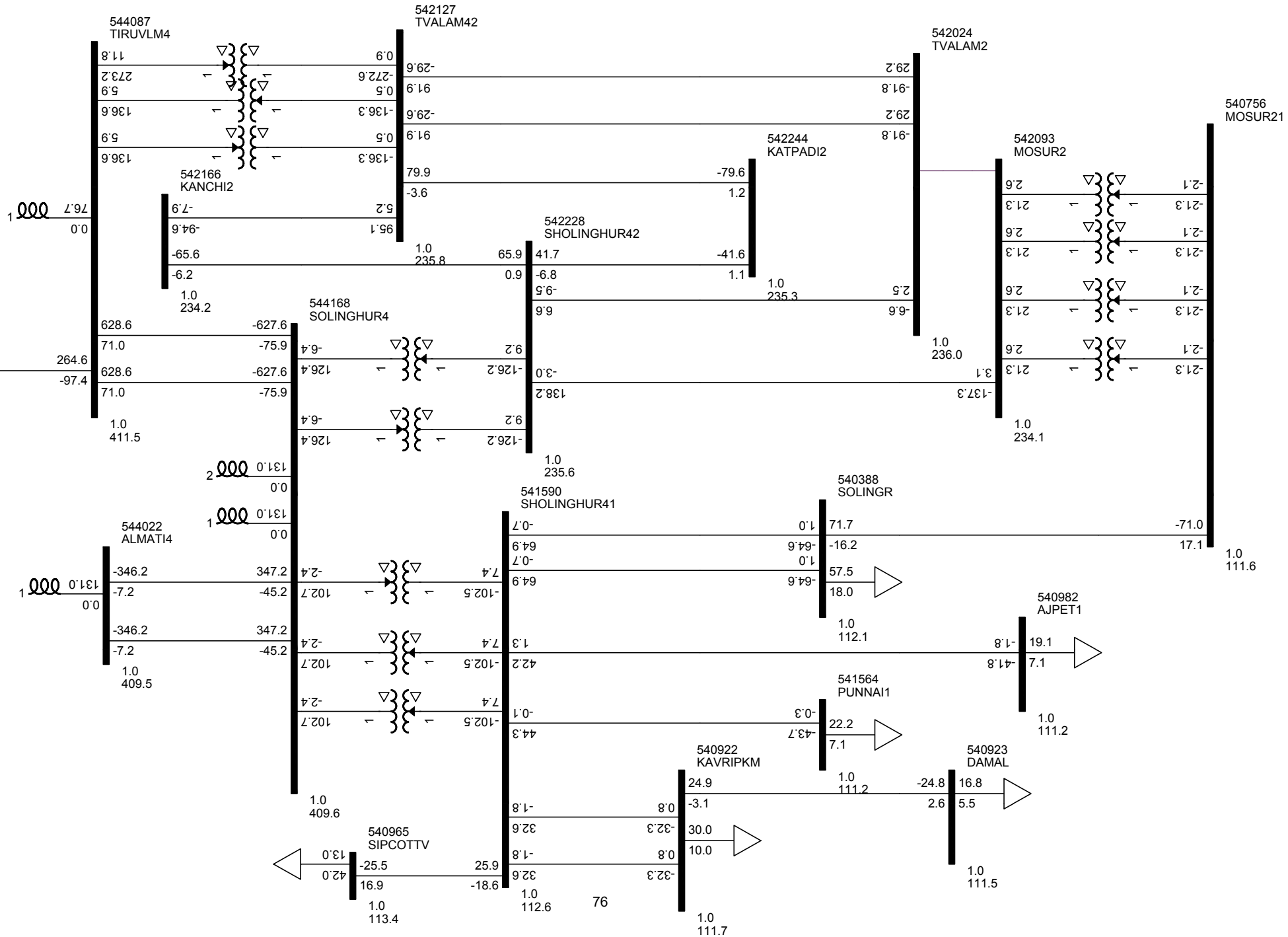


CASE 1 : WITH PROPOSED 400 kV /230 kV -110 kV SHOLINGHUR SUBSTATION

Agenda for 1st meeting of SRSCT (07.09.2018)

Annex-VII/3

FULL WIND-FULL HYDRO -FULL SOLAR

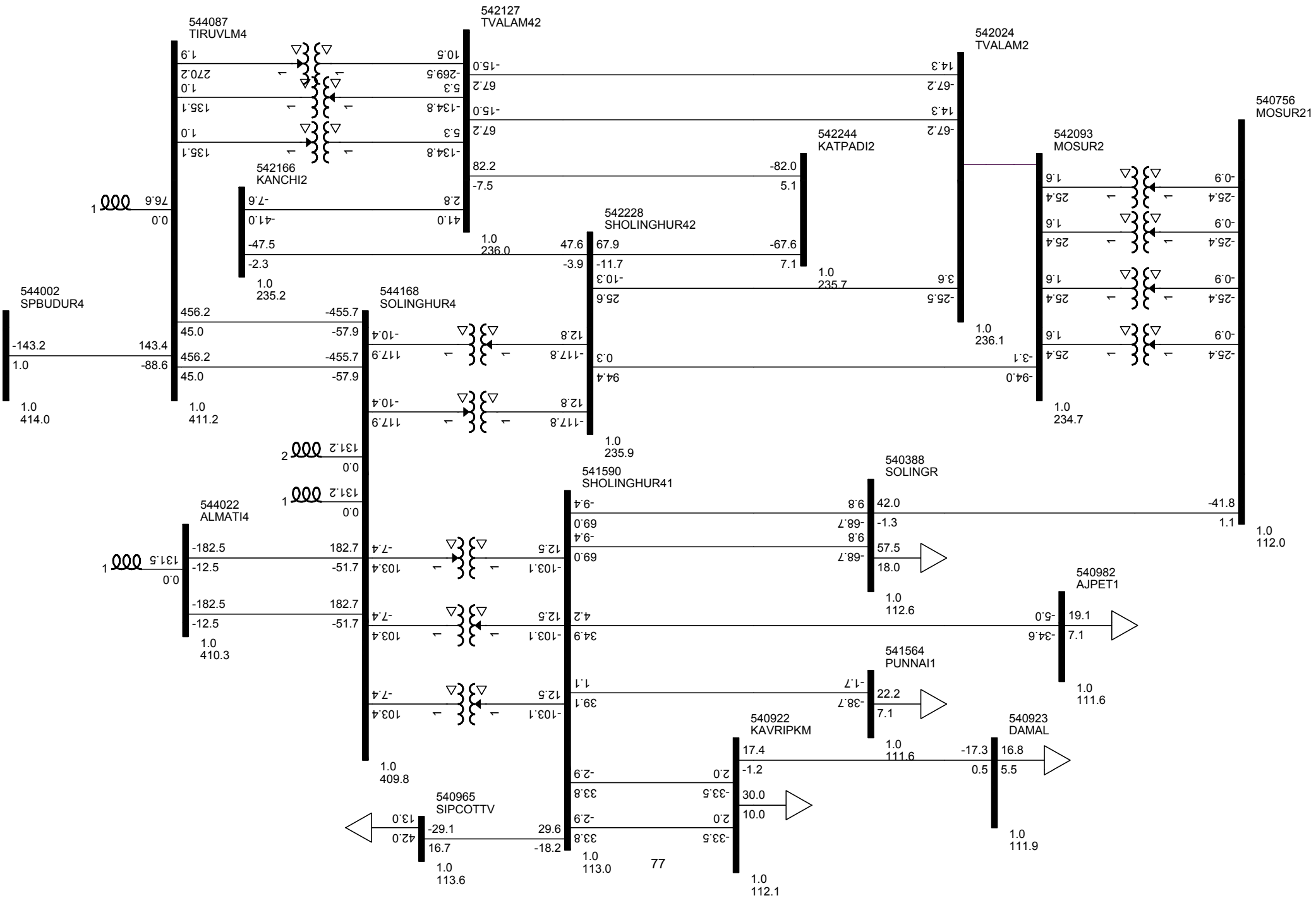


CASE 1 : WITH PROPOSED 400 kV /230 kV -110 kV SHOLINGHUR SUBSTATION

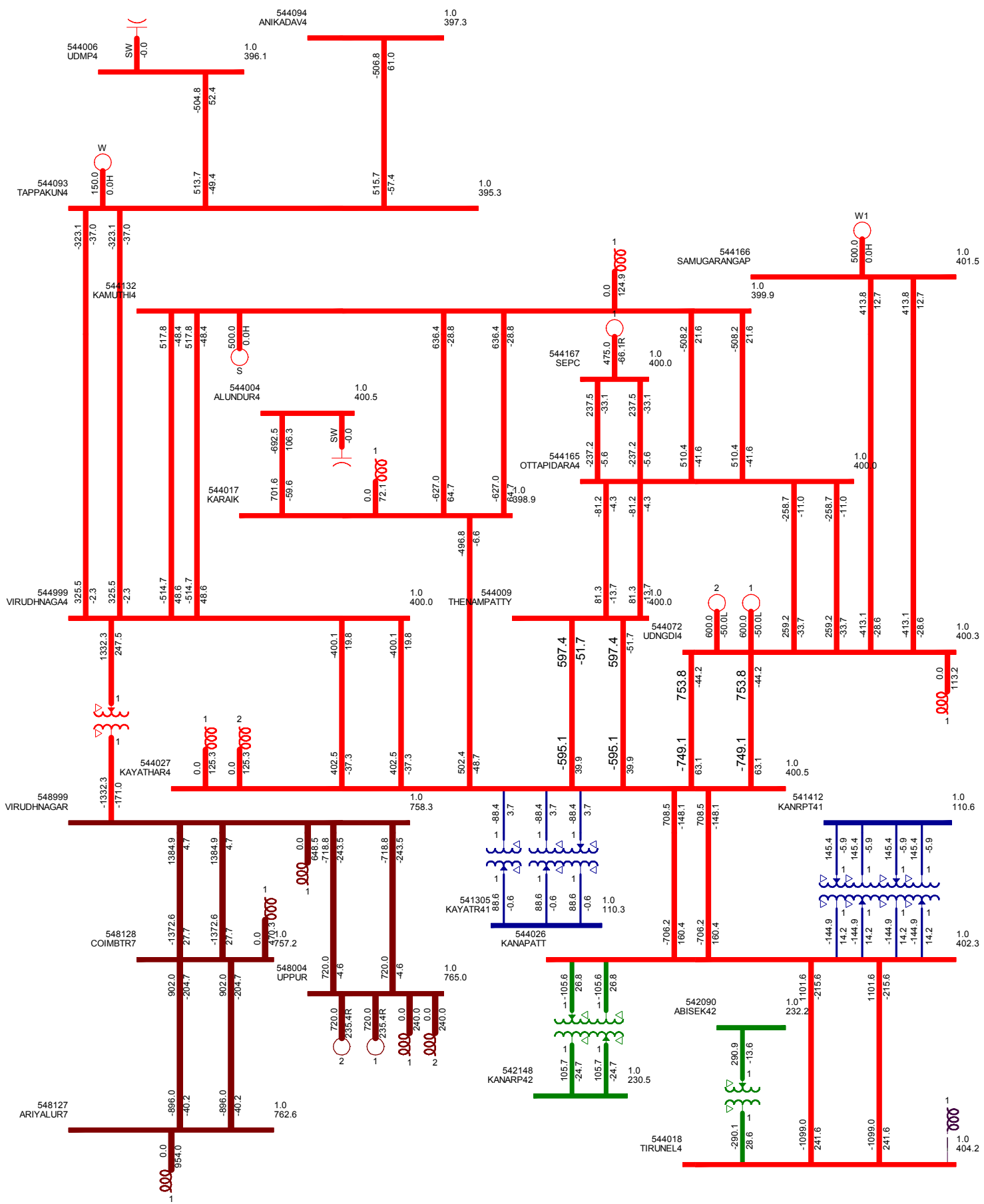
Agenda for 1st meeting of SRSCT (07.09.2018)

Annex-VII/4

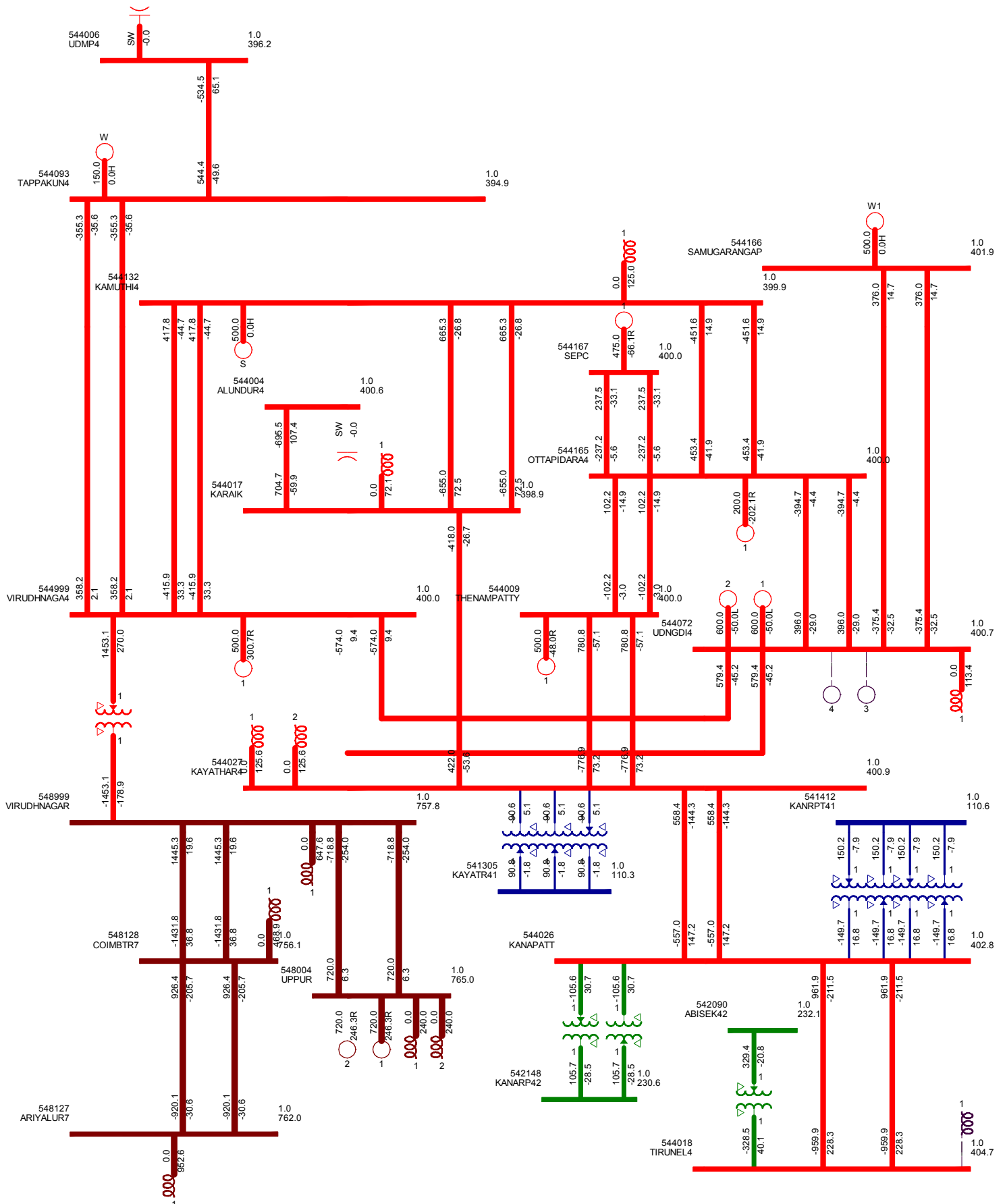
NIL WIND-FULL HYDRO -NIL SOLAR



BASECASE(FWFS) : WITH UDANGUDI (2X660 MW) GENERATION+ WITH 400KV FEEDERS AS PER APPROVAL
(BOTH TENNAMPATTY & UDANGUDI CONNECTED TO KAYATHAR 400KV SS)

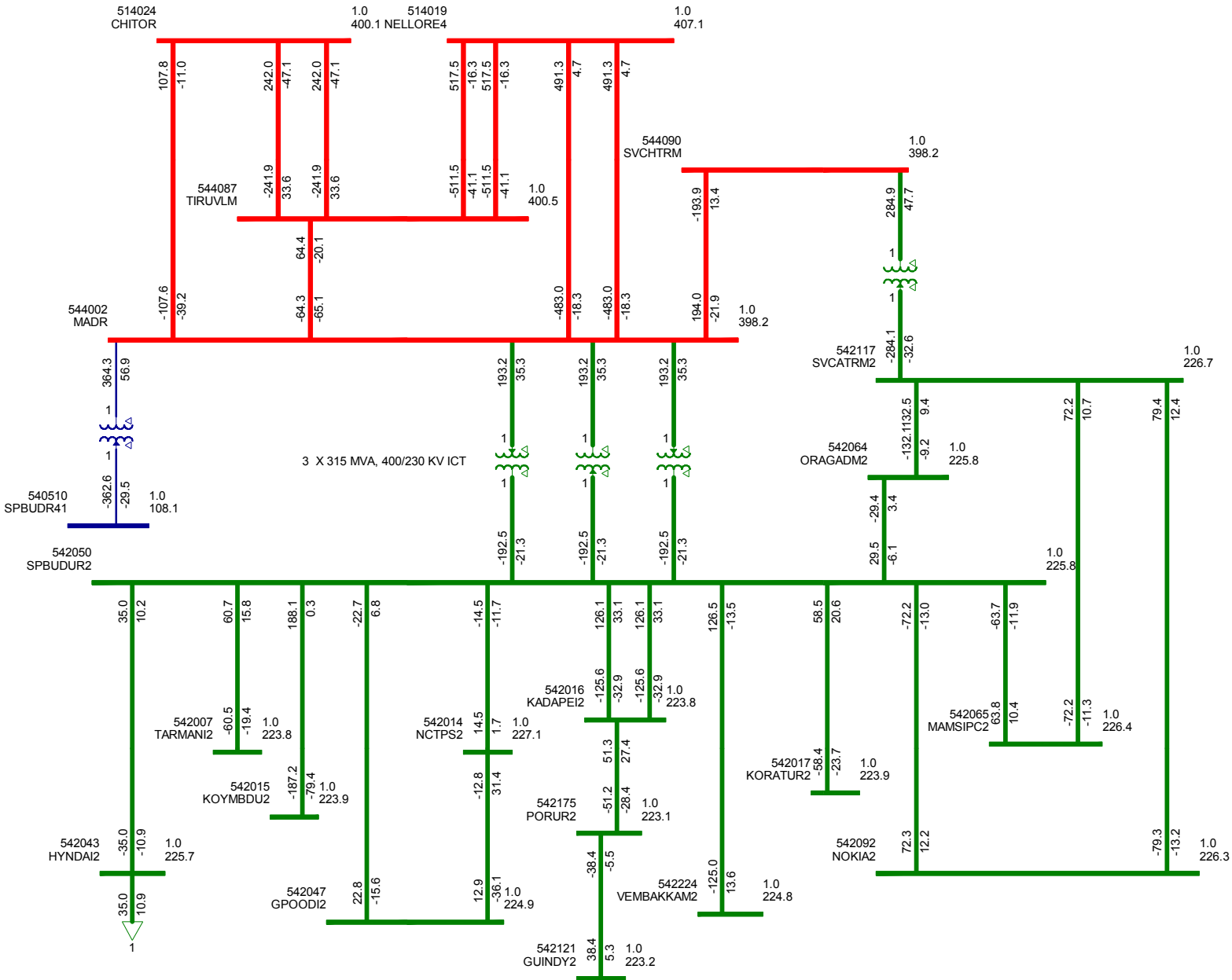


CASE1 : REVISED CONNECTIVITY -UDANGUDI TO VIRUDHUNAGAR & THENNAMPATTY TO KAYATHAR 400KV SS



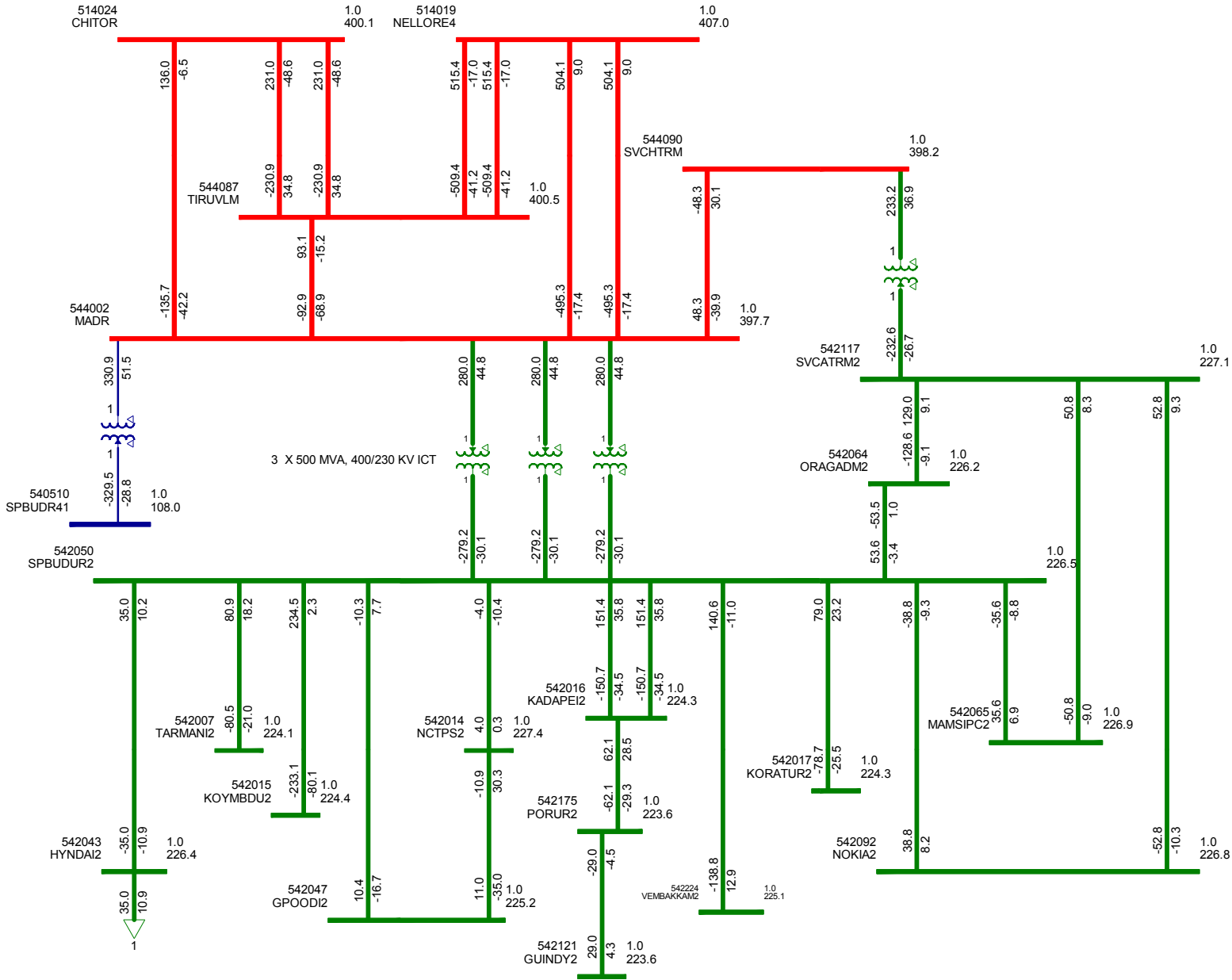
BASE CASE : PROVISION OF 1 NO. 500 MVA, 400/230 KV ICT AT SRIPERUMBUDUR 400/230-110 KV SS

NETWORK YEAR CONDITION : 2019-20

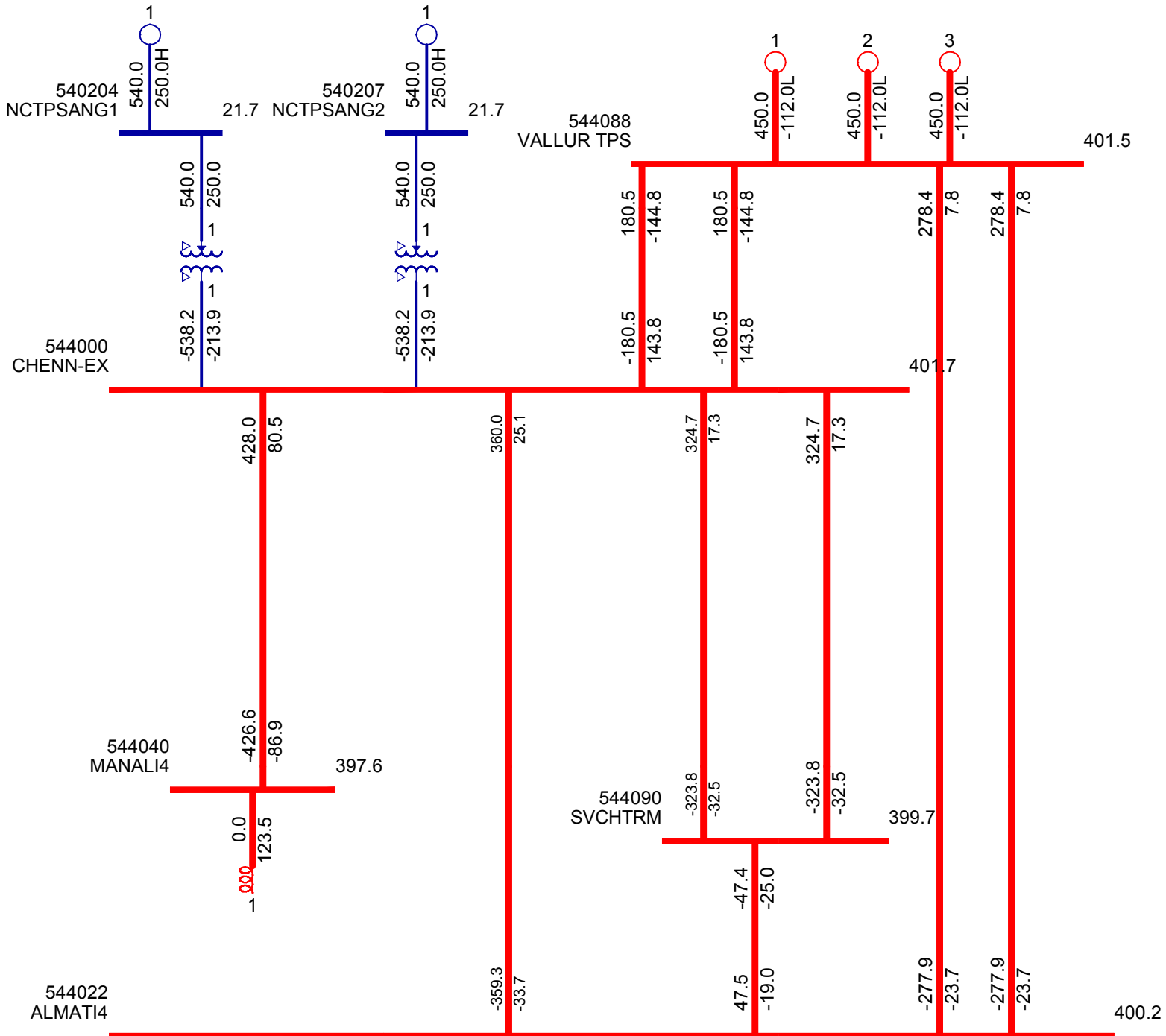


CASE 1 : BASE CASE + ENHANCEMENT OF 400/230 KV ICT CAPACITY FROM 3 X 315 MVA TO 3 X 500 MVA AT SRIPERUMBUDUR 400/230-110 KV SS

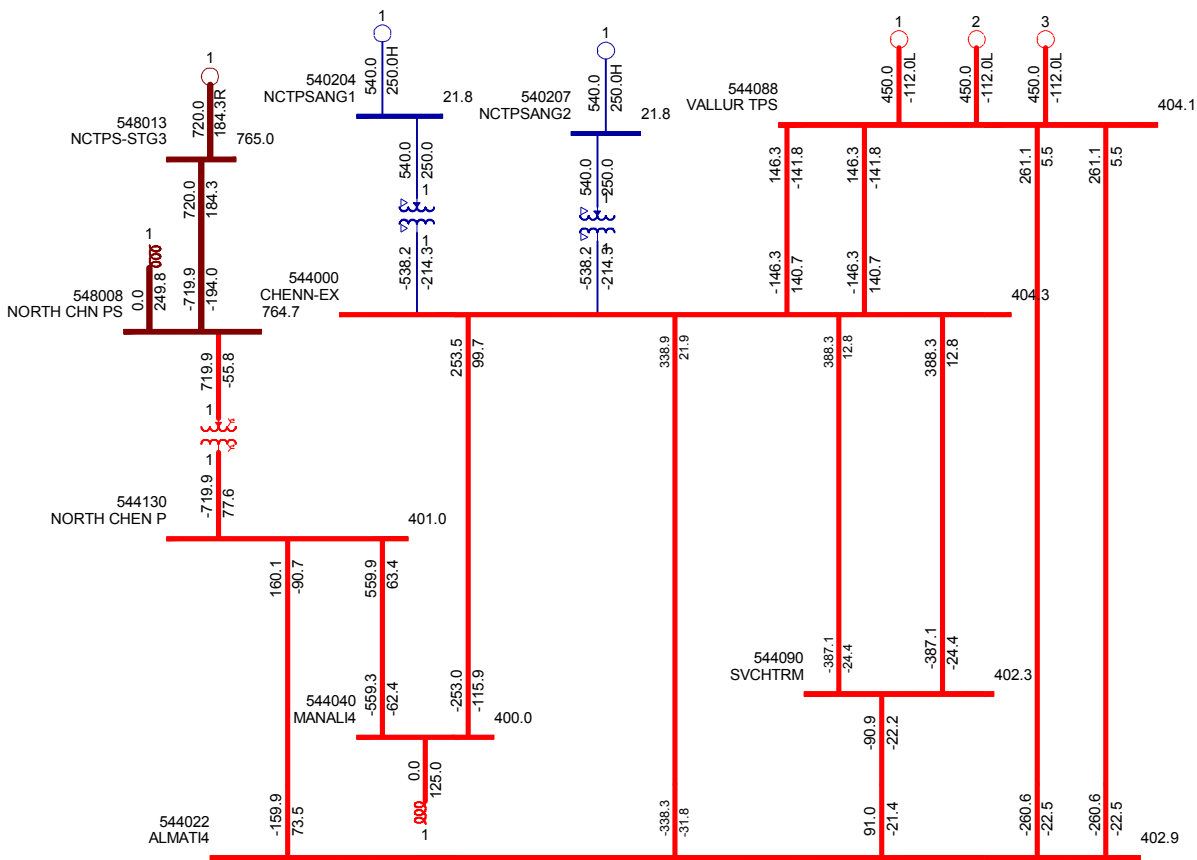
NETWORK YEAR CONDITION : 2019-20



Base Case : 2019-20 Year Network condition -NCTPS Stage III (1X 800 MW)



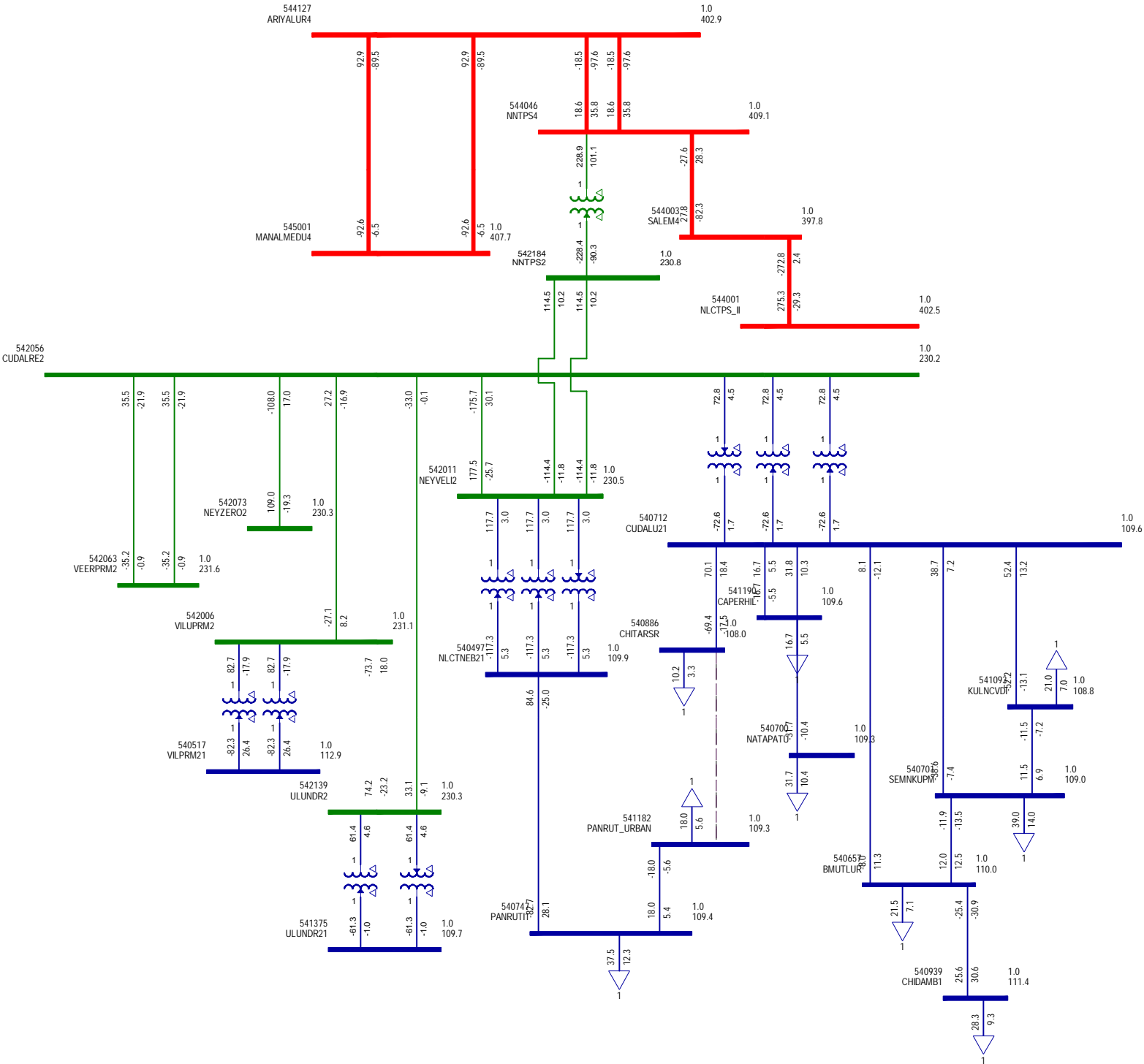
Case 1: Base case + NCTPS Stage III (1 X 800 MW) Contingency arrangement of making LILO of Alamathy - Manali 400 kV # at 765/400 kV North Chennai Pooling Station



ESTABLISHMENT OF 400/230-110 kV CUDDALORE SS

BASE CASE : WITHOUT PROPOSED 400 / 230-110 kV CUDDALORE SS

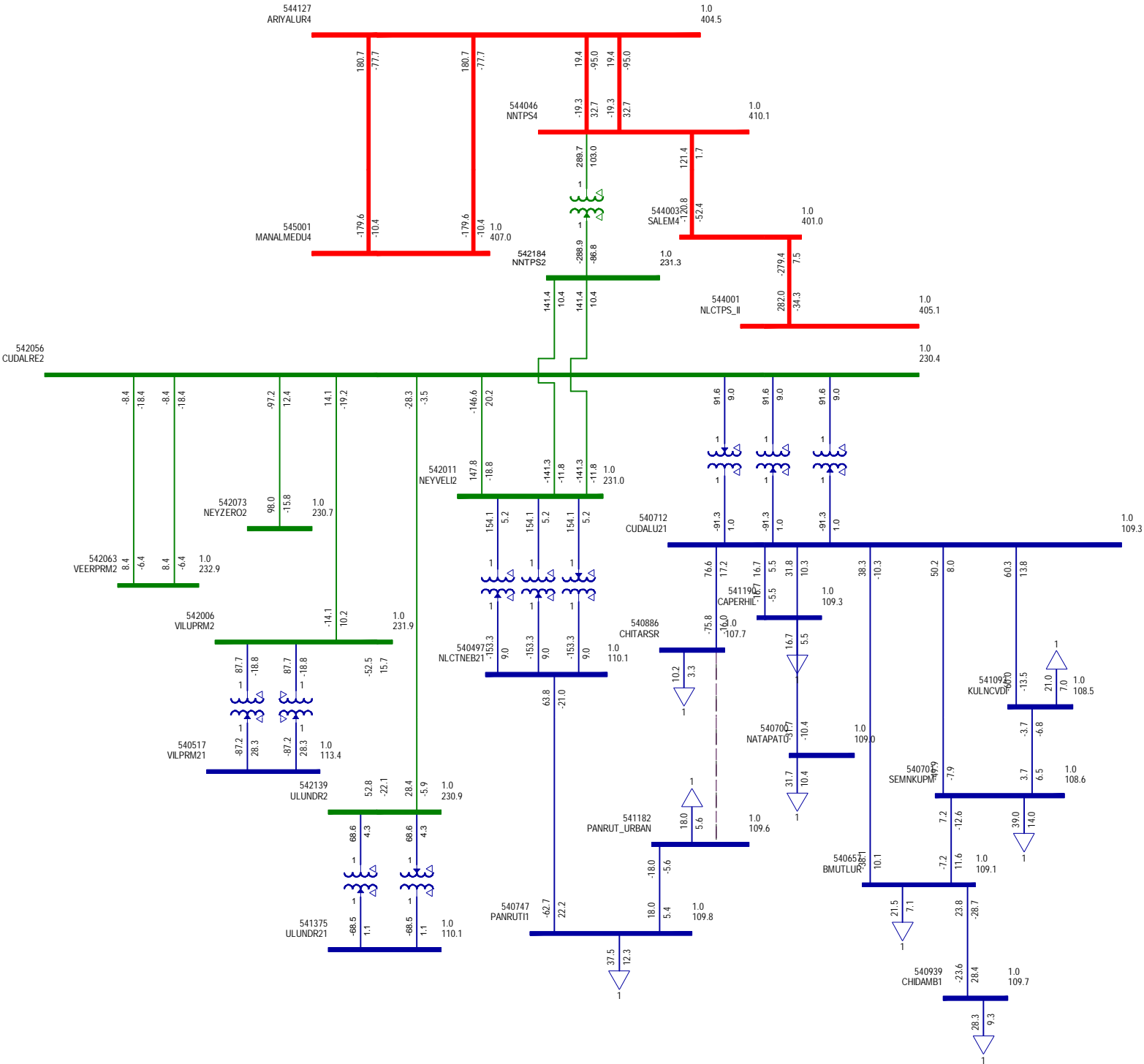
FULL WIND FULL HYDRO FULL SOLAR



ESTABLISHMENT OF 400/230-110 kV CUDDALORE SS

BASE CASE : WITHOUT PROPOSED 400 / 230-110 kV CUDDALORE SS

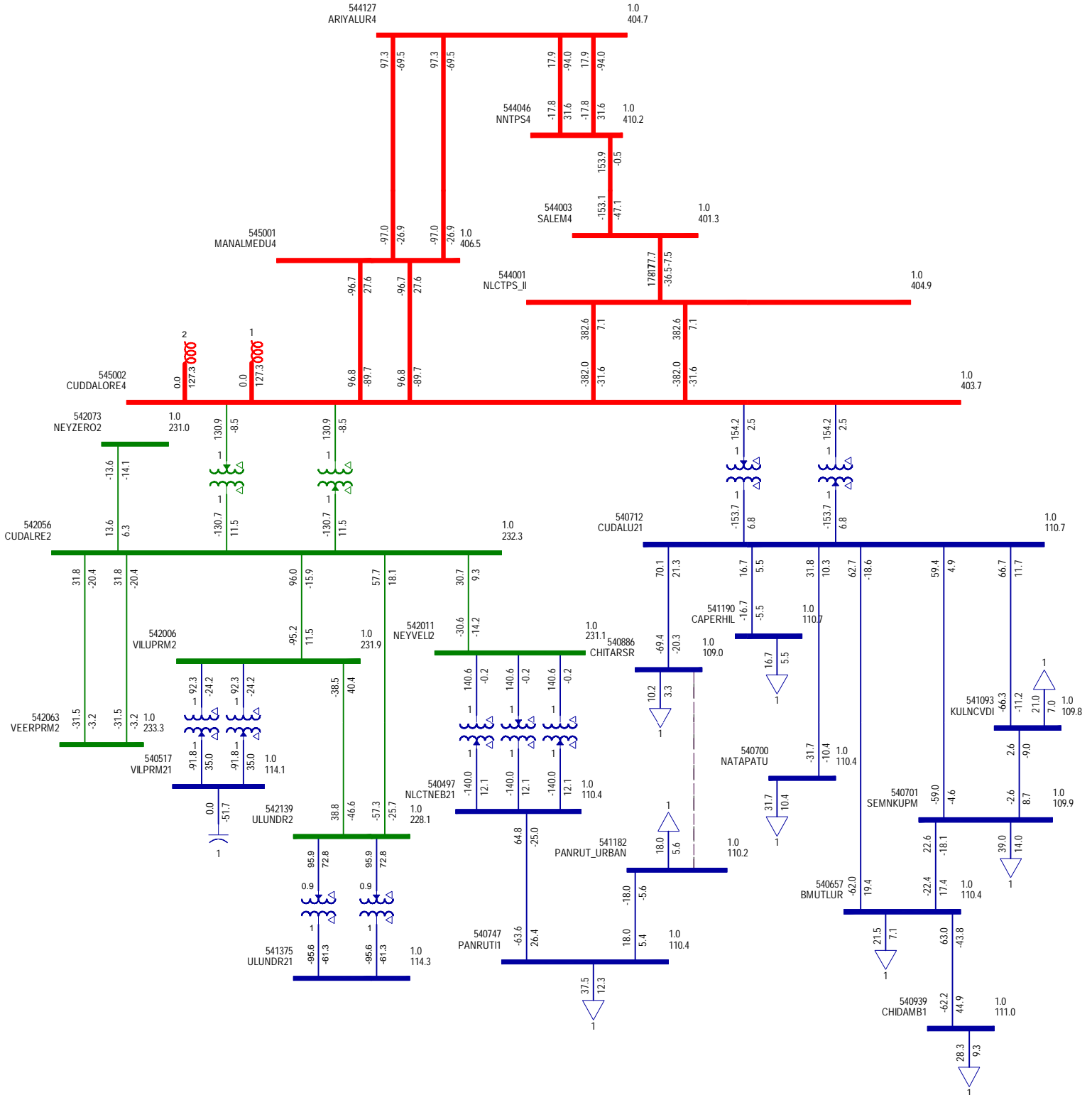
NIL WIND FULL HYDRO NIL SOLAR



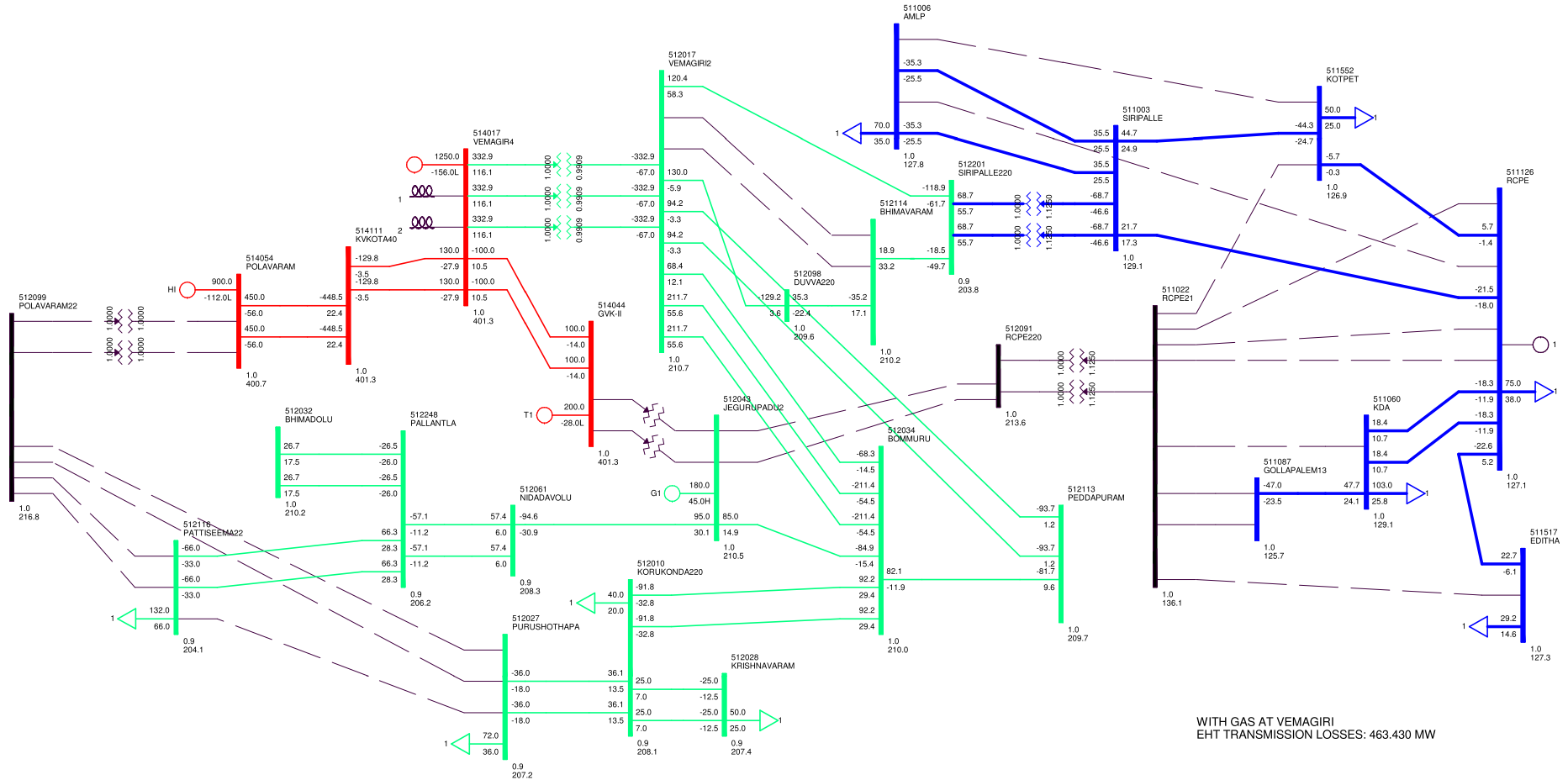
ESTABLISHMENT OF 400/230-110 kV CUDDALORE SS

CASE 1: WITH PROPOSED 400kV CUDDALORE SS WITH SOURCE AS 400kV DC LINE TO MANALMEDU SS & 400 kV DC LINE TO NLCTSII SS

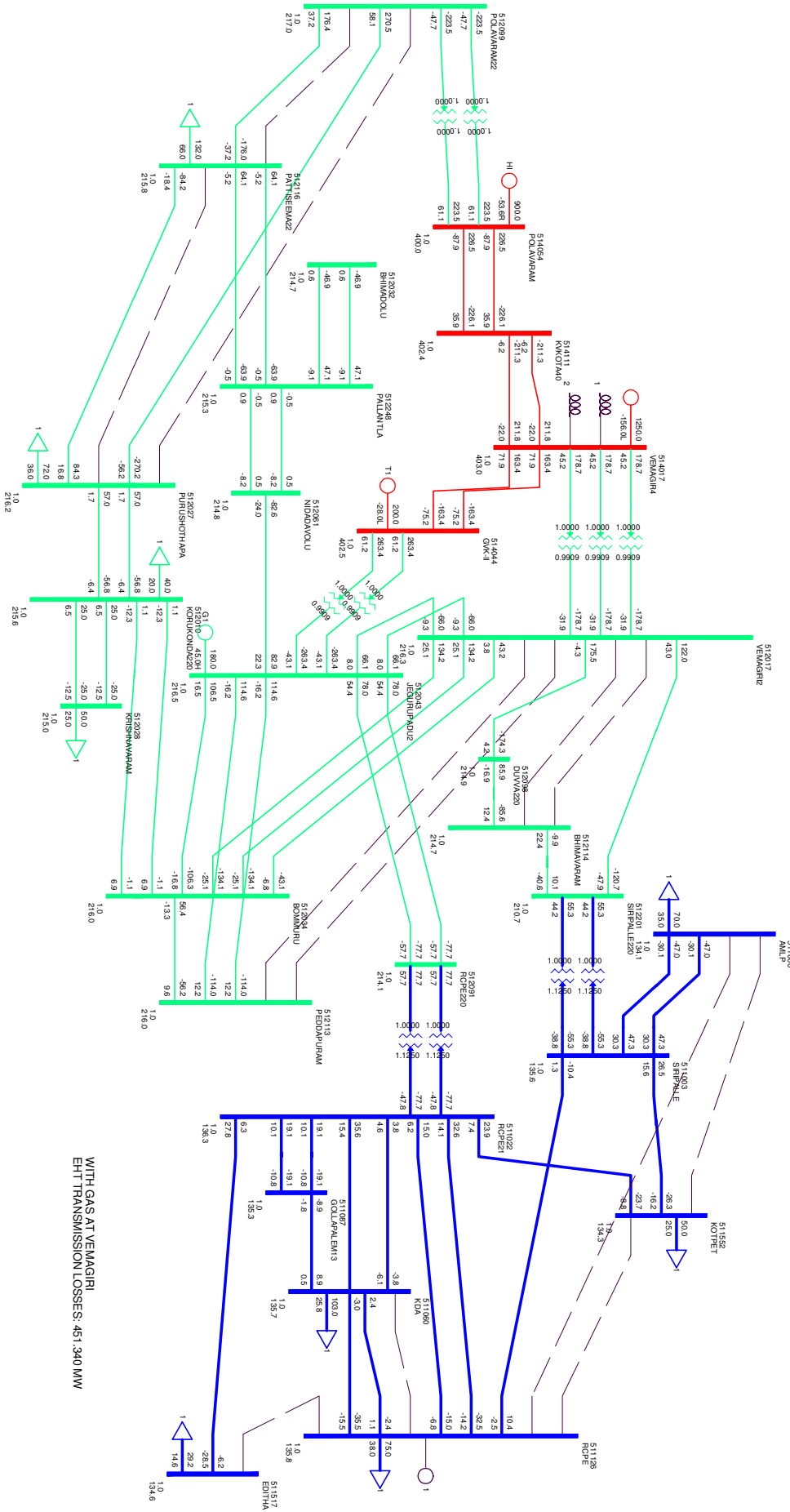
NIL WIND FULL HYDRO NIL SOLAR



BASE CASE

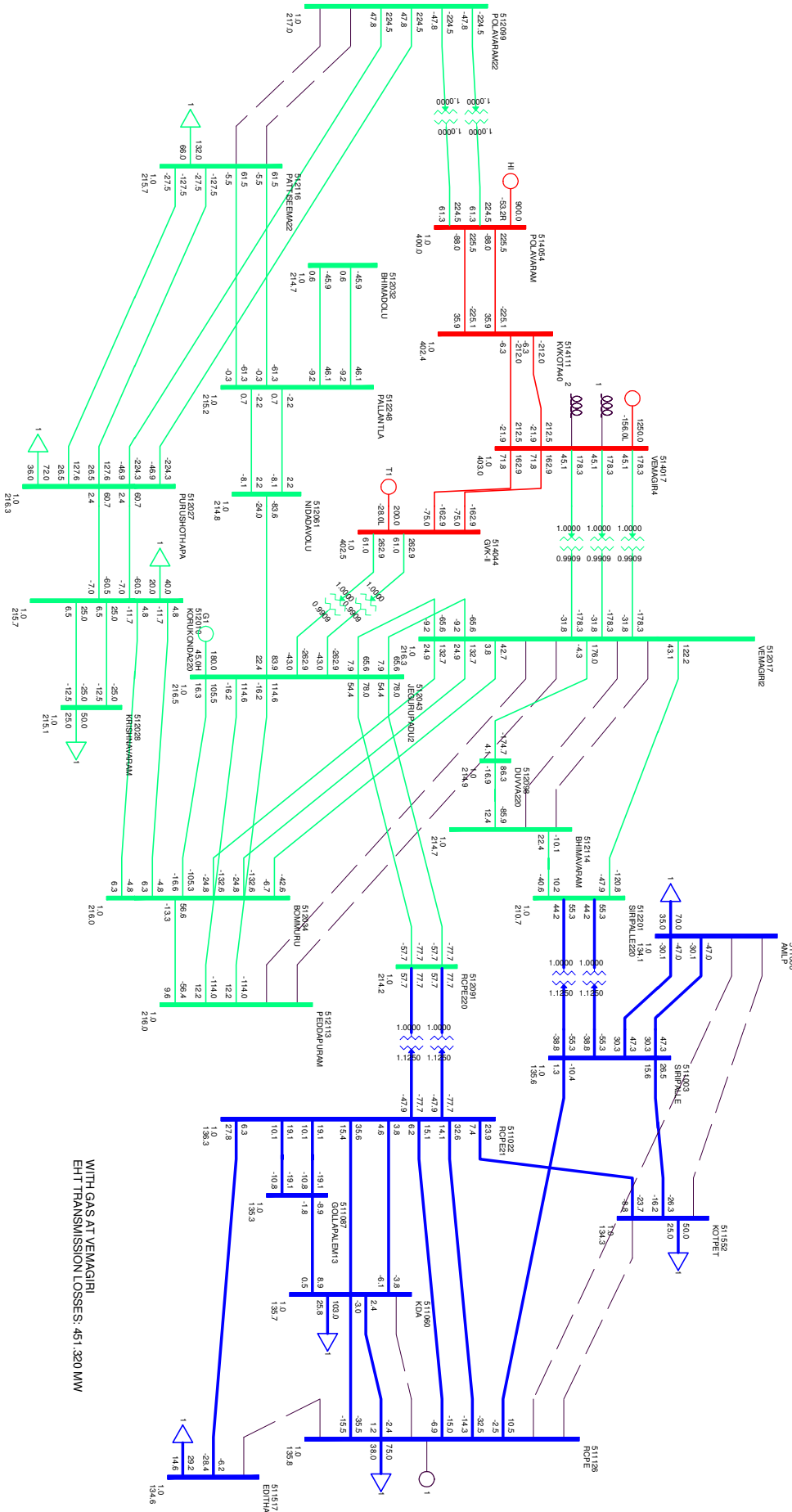


WITH PROPOSED RAMACHANDRAPURAM 220KV SS



WITH GAS AT VEMAGIRI
EHT TRANSMISSION LOSSES: 451.340 MW

WITH PROPOSED RAMACHANDRAPURAM 220KV SS



WITH GAS AT VEMAGIRI
EHT TRANSMISSION LOSSES: 451.320 MW

**LOAD FLOWS WITH & WITHOUT PROPOSED 220kV FEATURES AT 400 KV GVK POWER PLANT TO EXTEND
POWER SUPPLY TO PROPOSED 220/132/33 KV RAMACHANDRAPURAM SS**

Sl. No.	Description	Base Case (MW)	With proposed 220 kV features at 400 kV GVK Power Plant and to extend power supply to proposed 220/132 kV RC Puram SS along with 220kV features at Polavaram HEP with one circuit LIL0 with Twin Moose at 220 kV Purushothapatnam (MW)	With proposed 220 kV features at 400 kV GVK Power Plant and to extend power supply to proposed 220/132 kV RC Puram SS along with 220kV features at Polavaram HEP with DC LIL0 with Twin Moose at 220 kV Purushothapatnam (MW)
1	ICT Loadings at 400/220 kV Venagiri SS	3 x 332.9	3 x 178.7	3 x 178.3
2	ICT Loadings at 400/220 kV GVK SS	-	2 x 263.4	2 x 262.9
3	PTR Loadings at 220/132 kV RC Puram	-	2 x 77.7	2 x 77.7
4	220 kV RC Puram - Jegunupadu	-	2 X -77.7	2 X -77.7
5	220 kV Bonnur - Jegunupadu	-84.9	-106.5	-105.3
6	PTR Loadings at 220/132 kV Siripalle	2 x 68.7	2 x 55.3	2 x 55.3
7	220 kV Venagiri - Siripalli	120.4	122	122.2
8	220 kV Undi - Siripalli	18.9	-9.9	-10.1
9	ICT Loadings at 400/220 kV Polavaram SS	-	2 x 223.5	2 x 224.5
10	400/220 kV Polavaram - Pattiseema	-	176.4	-
11	400/220 kV Polavaram - Purushothapatnam	-	270.5	2 x 224.5
12	400/220 kV Pattiseema - Purushothapatnam	-	-84.2	2 x -127.5
13	220 kV Undi - Duvva	-35.2	-85.6	-85.9
14	220 kV Venagiri - Duvva	130	175.5	176
15	220 kV Venagiri - SSS	2 x 94.2	-	-
16	220 kV Venagiri - Jegunupadu	-	2 x -66.0	2 x -65.6
17	220 kV SSS - Jegunupadu	-	2 x -114.2	2 x -114.0
18	220/132 kV Siripalli - Anjalapuram	2 x 35.5	2 x 47.3	2 x 47.3
19	220/132 kV Siripalli - Kothapeta	44.7	26.5	26.5
20	220/132 kV Siripalli - Ramachandrapuram	21.7	-10.4	-10.4
21	132 kV Ramachandrapuram - Kothapeta	5.7	-	-
22	132 kV Ramachandrapuram - Kakirada	2 x -18.3	-2.4	-2.4
23	132 kV Ramachandrapuram - Editha	-22.6	-	-
24	132 kV Gollapalem - Kakirada	-47	-8.9	-8.9
25	220/132 kV RC Puram - Kothapeta	-	23.9	23.9
26	220/132 kV RC Puram - Editha	-	6.3	6.3
27	220/132 kV RC Puram - RC Puram	-	1 x 32.6+ 1 x 15.0+ 1 x 35.6	1 x 32.6+ 1 x 15.1+ 1 x 35.6
28	220/132 kV RC Puram - Kakirada	-	3.8	3.8
29	220/132 kV RC Puram - Gollapalem	-	2 x 19.1	2 x 19.1
EHT Transmission Losses		463.430	451.340	451.320

Annexure – 1

1. List of applicants granted Stage-I Connectivity in 23rd Connectivity / LTA meeting of SR held on 07.06.2018.

Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Quantum (MW)	Nature of Applicant	Primary location for Connectivity / Tr. System under ISTS	Dedicated Tr. System	Alternative location for Connectivity / Tr. System under ISTS	Dedicated Tr. System for alternative connectivity
Connectivity applications near Munirabad										
1.	1200000405	Ostro Dakshin Power Pvt. Ltd.	Koppal, Karnataka	21.06.2016	300	Wind	Koppal / Munirabad-II (new) <ul style="list-style-type: none"> Establishment of Koppal / Munirabad-II 400/220kV S/s at suitable location near Koppal/Munirabad along with 1x500 MVA, 400/220kV ICT Koppal/Munirabad-II – Munirabad (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Ostro Dakshin – Koppal / Munirabad-II 220kV S/c line	Munirabad-III (new) <ul style="list-style-type: none"> Establishment of Munirabad-III 400/220kV S/s at suitable location near Munirabad along with 1x500 MVA, 400/220kV ICT Munirabad-III – Munirabad-II or Munirabad (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal 	Ostro Dakshin – Munirabad-III 220kV S/c line
2.	1200000616	Clean Wind Power Tuticorin Pvt. Ltd.	Gadag & Koppal, Karnataka	13.01.2017	300	Wind		Clean Wind – Koppal / Munirabad-II 220kV S/c line		Clean Wind – Munirabad-III 220kV S/c line
3.	1200000650	Mytrah Energy (India) Pvt. Ltd. (Kyadiguppa Wind Farm)	Koppal Dist., Karnataka	22.02.2017	200	Wind		Mytrah Energy – Koppal / Munirabad-II 220kV S/c line		Mytrah Energy – Munirabad-III 220kV S/c line
4.	1200000722	IMPEL Renewable Power Pvt. Ltd.	Koppal, Karnataka	09.05.2017	300 (enhanced from 250 MW as per applicant request)	Wind		IMPEL Renewable – Koppal / Munirabad-II 220kV S/c line		IMPEL Renewable – Munirabad-III 220kV S/c line
Connectivity applications near Gooty/Kurnool										
5.	1200000628	Devarabanda Renewable Energy Pvt. Ltd.	Kurnool, Andhra Pradesh	07.02.2017	200	Wind	Kurnool / Gooty-II (new) <ul style="list-style-type: none"> Establishment of 	Devarabanda – Kurnool / Gooty-II 220kV S/c line	Gooty-III (new) <ul style="list-style-type: none"> Establishment of Gooty-III 	Devarabanda – Gooty-III 220kV S/c line

6.	12000006 32	Tuljapur Windfarms Pvt. Ltd.	Dhone, Andhra Pradesh	08.02.2017	150	Wind	<p>Kurnool / Gooty- II 400/220kV S/s at suitable location near Kurnool / Gooty (with provision to upgrade to 765kV level in future) along with 1x500 MVA, 400/220kV ICT</p> <ul style="list-style-type: none"> • Kurnool/Gooty-II – Gooty(existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Tuljapur – Kurnool / Gooty- II 220kV S/c line	<p>400/220kV S/s at suitable location near Gooty along with 1x500 MVA, 400/220kV ICT</p> <ul style="list-style-type: none"> • Gooty-III – Gooty- II or Gooty (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Tuljapur – Gooty- III 220kV S/c line
7.	12000006 33	Kutch Renewable Pvt. Ltd.	Dhone, Andhra Pradesh	13.02.2017	200	Wind		Kutch renewable – Kurnool / Gooty-II 220kV S/c line		Kutch renewable – Gooty-III 220kV S/c line
8.	12000006 47	Mytrah Energy (India) Pvt. Ltd. (Veldurthi Wind Farm)	Kurnool, Andhra Pradesh	22.02.2017	250	Wind		Mytrah Energy – Kurnool/Gooty-II 220kV S/c line		Mytrah Energy – Gooty-III 220kV S/c line
9.	12000006 52	Mytrah Energy (India) Pvt. Ltd. (Karadikonda Wind Farm)	Anantapur, Andhra Pradesh	22.02.2017	250	Wind		Mytrah Energy – Kurnool/Gooty-II 220kV S/c line		Mytrah Energy – Gooty-III 220kV S/c line
10.	12000006 66	Poovani Wind Farms Pvt. Ltd.	Kurnool, Andhra Pradesh	27.02.2017	100	Wind		Poovani Wind – Kurnool/Gooty-II 220kV S/c line		Poovani Wind – Gooty-III 220kV S/c line
11.	12000006 06	Powerica Ltd. (Yerukalacheruvu)	Kurnool, Andhra Pradesh	20.03.2017	150	Wind		Powerica – Kurnool/Gooty-II 220kV S/c line		Powerica – Gooty-III 220kV S/c line
12.	12000007 21	Sreeja Infrastructure Pvt. Ltd.	Kurnool, Andhra Pradesh	06.05.2017	350	Wind		Sreeja – Kurnool/Gooty-II 220kV D/c line		Sreeja – Gooty- III 220kV D/c line
13.	12000007 32	Ecoren Energy India Pvt. Ltd.	Kurnool, Andhra Pradesh	25.05.2017	250	Wind		Ecoren Energy – Kurnool/Gooty-II 220kV S/c line		Ecoren Energy – Gooty-III 220kV S/c line
14.	12000007 76	Anemoi Energy Pvt. Ltd.	Kurnool, Andhra Pradesh	19.06.2017	300	Wind		Anemoi Energy – Kurnool/Gooty-II 220kV S/c line		Anemoi Energy – Gooty-III 220kV S/c line
15.	12000007 74	Soganur Pvt. Ltd.	Kurnool, Andhra	19.06.2017	300	Wind		Soganur – Kurnool/Gooty-II		Soganur – Gooty-III 220kV

			Pradesh					220kV S/c line		S/c line
16.	12000007 77	Anemoi Energy Pvt. Ltd.	Kurnool, Andhra Pradesh	19.06.2017	300	Wind		Anemoi Energy – Kurnool/Gooty-II 220kV S/c line		Anemoi Energy – Gooty-III 220kV S/c line
17.	12000007 73	Anemoi Energy Pvt. Ltd.	Kurnool, Andhra Pradesh	19.06.2017	300	Wind		Anemoi Energy – Kurnool/Gooty-II 220kV S/c line		Anemoi Energy – Gooty-III 220kV S/c line
18.	12000007 79	Clean Wind Power (Kurnool) Pvt. Ltd.	Kurnool, Andhra Pradesh	20.06.2017	300	Wind		Clean Wind – Kurnool/Gooty-II 220kV S/c line		Clean Wind – Gooty-III 220kV S/c line
19.	12000008 48	Greenko Energies Pvt. Ltd. (Brahman Palle / Kurnool Solar Park)	Kurnool, Andhra Pradesh	02.09.2017	1000	Solar		Greenko Energies – Kurnool/Gooty-II 400kV D/c line		Greenko Energies – Gooty-III 400kV D/c line

Connectivity applications near Tuticorin/Tirunelveli

20.	12000006 13	*Mytrah Energy (India) Private Ltd (Maniyachi Wind Farm)	Tirunelveli, Tamil Nadu	04.01.2017	200	Wind	Tuticorin-II GIS PS (erstwhile Tirunelveli GIS PS)	Mytrah Energy – Tuticorin-II 230kV D/c line (existing)	Tuticorin-III <ul style="list-style-type: none"> • Establishment of Tuticorin-III(new) 400/230kV S/s at suitable location near Tuticorin along with 1x500 MVA, 400/230kV ICT • Tuticorin-III(new) – Tuticorin-II(existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Mytrah Energy – Tuticorin-III 230kV S/c line
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*Note: M/s Mytrah Energy (India) Private Ltd requested that they intend to utilize the existing 230 kV D/c line implemented as a part of already granted connectivity for 300 MW wind farms of MEIPL at Tirunelveli and connectivity may be allowed on the same transmission system, the same was agreed subject to MEIPL fulfills the criteria stipulated in the Detailed Procedure.

21.	12000006 10	Praptha Renewable Energy Pvt. Ltd. (Thoothukudi Wind Farm)	Thoothukudi, Tamil Nadu	30.01.2017	250	Wind	Tuticorin-II GIS PS (erstwhile Tirunelveli GIS PS)	Praptha – Tuticorin-II 230kV S/c line	Tuticorin-III <ul style="list-style-type: none"> Establishment of Tuticorin-III(new) 400/230kV S/s at suitable location near Tuticorin along with 1x500 MVA, 400/230kV ICT Tuticorin-III(new) – Tuticorin-II(existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Praptha – Tuticorin-III 230kV S/c line
22.	12000006 75	Green Infra Renewable Energy Ltd.	Tuticorin, Tamil Nadu	02.03.2017	250	Wind		Green Infra – Tuticorin-II 230kV S/c line		Green Infra – Tuticorin-III 230kV S/c line
23.	12000007 48	Ecoren Anemoi Winds Pvt. Ltd.	Madathupatti, Tamil Nadu	27.05.2017	250	Wind		Ecoren Anemoi – Tuticorin-II 230kV S/c line		Ecoren Anemoi – Tuticorin-III 230kV S/c line
24.	12000007 64	Green Infra Wind Energy Ltd.	Tuticorin, Tamil Nadu	31.05.2017	250	Wind		Green Infra – Tuticorin-II 230kV S/c line		Green Infra – Tuticorin-III 230kV S/c line
25.	12000007 70	Sitac Starcap buildwell Private Ltd.	Tuticorin, Tamil Nadu	14.06.2017	600	Wind		Sitac Starcap – Tuticorin-II 230kV D/c line		Sitac Starcap – Tuticorin-III 230kV D/c line
26.	12000007 91	Clean Wind Power (Tuticorin) Pvt. Ltd	Tuticorin, Tamil Nadu	20.06.2017	300	Wind		Clean Wind – Tuticorin-II 230kV S/c line		Clean Wind – Tuticorin-III 230kV S/c line
27.	12000008 84	Orange Ashok North Wind Power Pvt. Ltd. (Thalavaipuram Wind Farm)	Thoothukudi, Tamil Nadu	30.10.2017	300	Wind		Orange Ashok – Tuticorin-II 230kV S/c line		Orange Ashok – Tuticorin-III 230kV S/c line
Connectivity applications at Narenda										
28.	12000005 54	Wind World (India) Ltd.	Dharwad Dist,	28.11.2016	500	Wind	Narenda(Existing) <ul style="list-style-type: none"> Establishment of 400kV Narenda 	Wind World – Narenda 220kV D/c line	Narenda-III(new) <ul style="list-style-type: none"> Establishment of 	Wind World – Narenda-III 220kV D/c line

			Karnataka				along with 1x500 MVA, 400/220kV ICT on adjacent land/new location		Narendra-III 400/220kV S/s at suitable location near Narendra along with 1x500 MVA, 400/220kV ICT	
29.	1200000661	Mytrah Energy (India) Pvt. Ltd. (Guledakoppa Wind Farm)	Dharwad Dist, Karnataka	23.02.2017	200	Wind	• Inter connection with existing 400kV Narendra through 400kV bus extension/Narendra(existing) to Narendra(New) through 400kV Quad/HTLS D/c line	Mytrah Energy – Narendra 220kV S/c line		Mytrah Energy – Narendra-III 220kV S/c line
30.	1200000788	Clean Wind Power (Tuticorin) Pvt. Ltd.	Belgaum Dist, Karnataka	20.06.2017	300	Wind		Clean Wind – Narendra 220kV S/c line	• Narendra-III – Narendra(New) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage	Clean Wind – Narendra-III 220kV S/c line
31.	1200001161	Greenko Solar Energy Private Limited	Narendra, Karnataka	10.05.2018	1200	Solar	• Establishment of separate 220kV GIS/AIS bus	Greenko Solar – Narendra 400kV D/c line		Greenko Solar – Narendra-III 400kV D/c line

Connectivity applications at Trichy

32.	1200000629	Viralipatti Renewable Pvt. Ltd. (Viralipatti Wind Farm)	Karur, Tamil Nadu	07.02.2017	200	Wind	Tichy (Existing)	Viralipatti – Trichy 230kV S/c line	• Establishment of Trichy-II 400/230 kV S/s at suitable location near Trichy along with 1x500 MVA, 400/230kV ICT	Viralipatti – Trichy-II 230kV S/c line
33.	1200000754	Saunshi Renewable Energy Pvt. Ltd.	Karur, Tamil Nadu	29.05.2017	200	Wind	• Installation of 1x500 MVA, 400/230kV ICT at Trichy S/s • Establishment of separate 230kV bus	Saunshine – Trichy 230kV S/c line	• Trichy-II – Trichy (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage	Saunshine – Trichy-II 230kV S/c line

Connectivity applications at Pugalur

It was informed that total 8 nos. of connectivity applications are to be processed for grant of Stage-I connectivity in Pugalur Area. The Stage-I connectivity to these applications

was proposed at Pugalur-II (New substation) in the agenda looking into the bay constraints at Pugalur(existing) substation. However, considering the number of applications and the consideration of 220kV bays as GIS bays at Pugalur (existing) substation, it was agreed that the Stage-I connectivity may be granted to the applicants with Pugalur(existing) as primary location and Pugalur-II(new)/Karur as alternate location.
Further establishment of Pugalur-II(new)/Karur substation by LILO of Pugalur-Pugalur (HVDC) 400kV Quad D/c line was agreed in place of earlier proposed Pugalur-II-Dharmapuri 400 kV D/c line. Further Pugalur-II- Dharmapuri 400 kV D/c line shall be taken up as additional transmission scheme for power evacuation from Pugalur-II(new)/karur.

34.	12000006 58	Mytrah Energy (India) Pvt. Ltd. (KParamathi Wind Farm)	Karur, Tamil Nadu	23.02.2017	200	Wind	Pugalur (existing)	Mytrah Energy – Pugalur 230kV S/c line	Pugalur-II (new) / Karur • Establishment of Karur / Pugalur-II 400/230kV S/s at suitable location near Pugalur along with 1x500 MVA, 400/230kV ICT • LILO of Pugalur-Pugalur (HVDC) 400kV Quad D/c line at Pugalur-II (new)/ Karur	Mytrah Energy – Pugalur-II/Karur 230kV S/c line
35.	12000007 56	Zalki Renewable Pvt. Ltd.	Karur, Tamil Nadu	29.05.2017	200	Wind		Zalki Renewable – Pugalur 230kV S/c line		Zalki Renewable –Pugalur-II/Karur 230kV S/c line
36.	12000007 55	Umrani Renewable Pvt. Ltd.	Karur, Tamil Nadu	29.05.2017	200	Wind		Umrani Renewable – Pugalur 230kV S/c line		Umrani Renewable – Pugalur-II/Karur 230kV S/c line
37.	12000007 66	Hertz Wind Parks Pvt. Ltd.	Karur, Tamil Nadu	02.06.2017	250	Wind		Hertz Wind – Pugalur 230kV S/c line		Hertz Wind – Pugalur-II/Karur 230kV S/c line
38.	12000007 89	Clean Wind Power (Tuticorin) Pvt. Ltd.	Tripur, Tamil Nadu	20.06.2017	300	Wind		Clean Wind – Pugalur 230kV S/c line		Clean Wind – Pugalur-II/Karur 230kV S/c line
39.	12000008 63	Sprng Renewable Energy Pvt. Ltd. (Mulanur Wind Farm)	Tirupur, Tamil Nadu	13.12.2017	300	Wind		Sprng Renewable – Pugalur 230kV S/c line		Sprng Renewable – Pugalur-II/Karur 230kV S/c line
40.	12000011 55	Sprng Vayu Vidyut Private Limited	Pugalur, Tamil Nadu	02.05.2018	300	Wind		Sprng Vayu – Pugalur 230kV S/c line		Sprng Vayu – Pugalur-II/Karur 230kV S/c line
41.	12000011 54	Sprng Natural Power Source Private Limited	Pugalur, Tamil Nadu	02.05.2018	300	Wind		Sprng Natural – Pugalur 230kV S/c line		Sprng Natural – Pugalur-II/Karur 230kV S/c line

Connectivity application at Hyderabad

42.	12000006 49	Mytrah Energy (India) Pvt. Ltd. (Tapaspalle Wind Farm)	Rangareddy, Telangana	22.02.2017	200	Wind	<p>Maheshwaram 765/400kV (Existing)</p> <ul style="list-style-type: none"> Establishment of separate 220kV GIS bus with 1x500 MVA, 400/220kV ICT at Maheshwaram 765/400kV S/s 	Mytrah Energy – Maheshwaram 220kV S/c line	<p>Maheshwaram-II</p> <ul style="list-style-type: none"> Establishment of Maheshwaram-II 400/220kV S/s at suitable location near Maheshwaram along with 1x500 MVA, 400/220kV ICT Maheshwaram-II – Maheshwaram 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Mytrah Energy – Maheshwaram-II 220kV S/c line
Connectivity applications at Hiriyur										
43.	12000006 51	Mytrah Energy (India) Pvt. Ltd. (Lakkenahalli Wind Farm)	Hiriyur, Karnataka	22.02.2017	200	Wind	Hiriyur (Existing)	Mytrah Energy – Hiriyur 220kV S/c line	<p>Hiriyur-II (new)</p> <ul style="list-style-type: none"> Establishment of Hiriyur-II 400/220kV S/s at suitable location near Hiriyur along with 1x500 MVA, 400/220kV ICT Hiriyur-II – Hiriyur(existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal 	Mytrah Energy – Hiriyur-II 220kV S/c line
44.	12000007 23	IMPEL Power Solutions Pvt. Ltd.	Chitradurga, Karnataka	09.05.2017	300 (enhanced from 250 MW as per applicant request)	Wind		IMPEL Power – Hiriyur 220kV S/c line		IMPEL Power – Hiriyur-II 220kV S/c line
45.	12000007 29	INOX Wind Infrastructure Service Ltd.	Chitradurga, Karnataka	12.05.2017	500	Wind		Inox Wind – Hiriyur 220kV D/c line		Inox Wind – Hiriyur-II 220kV D/c line
46.	12000007 87	Clean Wind Power (Tuticorin) Pvt. Ltd.	Hiriyur, Karnataka	20.06.2017	300	Wind		Clean Wind – Hiriyur 220kV S/c line		Clean Wind – Hiriyur-II 220kV S/c line

47.	12000009 15	#Vempalli Renewable Energy Pvt. Ltd. (Mustur Wind Farm)	Davanger e, Karnataka	22.11.201 7	*270 (enhanced from 170 MW as per applicant request)	Wind		Vempalli Renewable – Hiriyur 220kV S/c line	voltage	Vempalli Renewable – Hiriyur-II 220kV S/c line
<p>#Note: M/s Vempalli Renewable Energy Pvt. Ltd.(VREPL) (Mustur Wind Farm) requested for enhancement of connectivity quantum to 270 MW. CTU stated that since the change in connectivity quantum is less than 100 MW same may be allowed. It was agreed that a formal request shall be submitted by applicant by 23.06.2018 failing which intimation for 170 MW shall be issued. Subsequently, VREPL has submitted formal request for enhancement in connectivity vide letter dated 07.06.2018.</p>										
Connectivity application at Udumalpet										
48.	12000006 60	Mytrah Energy (India) Pvt. Ltd. (Devanallur Wind Farm)	Tiruppur, Tamil Nadu	23.02.201 7	200	Wind	Arasur(Existing)	Mytrah Energy – Arasur 230kV S/c line	Arasur-II (new) <ul style="list-style-type: none"> Establishment of Arasur-II 400/230kV S/s at suitable location near Arasur along with 1x500 MVA, 400/230kV ICT Arasur-II – Arasur (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Mytrah Energy – Arasur-II 230kV S/c line
Connectivity application at Palakkad										
49.	12000006 57	Mytrah Energy (India) Pvt. Ltd. (Mettupalayam Wind Farm)	Coimbatore, Tamil Nadu	23.02.201 7	300 (enhanced from 200 as per applicant request)	Wind	Palakkad(Existing)	Mytrah Energy – Palakkad 220kV S/c line	Palakkad-II (new) <ul style="list-style-type: none"> Establishment of Palakkad-II 400/220kV S/s at suitable location near Palakkad along with 1x500 MVA, 400/220kV 	Mytrah Energy – Palakkad-II 220kV S/c line

									ICT	
									<ul style="list-style-type: none"> Palakkad-II – Palakkad (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	
Connectivity applications at Mahaboob Nagar/ Raichur										
50.	12000006 91	Induvasi Wind farm Pvt. Ltd.	Mahaboob Nagar, Telangana	20.03.2017	300	Wind	Raichur 765/400kV (Existing)	Induvasi Wind – Raichur 220kV S/c line	Raichur-II	Induvasi Wind – Raichur-II 220kV S/c line
51.	12000006 92	Kondapalli Wind farm Pvt. Ltd.	Mahaboob Nagar, Telangana	20.03.2017	300	Wind		Kondapalli Wind – Raichur 220kV S/c line		Kondapalli Wind – Raichur-II 220kV S/c line
52.	12000006 97	Achyuta Power Pvt. Ltd.	Mahaboob Nagar, Telangana	27.03.2017	250	Wind		Achyuta Power – Raichur 220kV S/c line		Achyuta Power – Raichur-II 220kV S/c line
53.	12000007 90	Clean Wind Power (Tuticorin) Pvt. Ltd. (Sindhur Wind Farm)	Raichur, Karnataka	19.06.2017	300	Wind		Clean Wind – Raichur 220kV S/c line		Clean Wind – Raichur-II 220kV S/c line
Connectivity application at Khammam										
54.	12000006 55	Mytrah Energy (India) Pvt. Ltd. (Gowravaram Wind Farm)	Krishna, Andhra Pradesh	22.02.2017	200	Wind	Khammam (Existing)	Mytrah Energy – Khammam 220kV S/c line	Khammam-II (new)	Mytrah Energy – Khammam-II 220kV S/c line
							<ul style="list-style-type: none"> Installation of 1x500 MVA, 400/220kV ICT at Khammam S/s Establishment of 		<ul style="list-style-type: none"> Establishment of Khammam-II 400/220kV S/s at suitable location near Gooty along with 1x500 MVA, 	

								separate 230kV bus		400/220kV ICT • Khammam-II – Khammam(Existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage	
Connectivity application at NP Kunta/Cudappah											
55.	12000007 59	Impel Alternate Energy Pvt. Ltd.	Kadapa, Andhra Pradesh	30.05.2017	300 (enhanced from 250 MW as per applicant request)	Wind	NP Kunta (Existing)	Impel Alternate – NP Kunta 220kV S/c line	NP Kunta-II (new) • Establishment of NP Kunta-II 400/220kV S/s at suitable location near NP Kunta along with 1x500 MVA, 400/220kV ICT • NP Kunta-II – NP Kunta(Existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage	Impel Alternate – NP Kunta-II 220kV S/c line	
56.	12000007 42	Ecoren Energy India Pvt. Ltd.	Kadapa, Andhra Pradesh	25.05.2017	250	Wind		Ecoren Energy – NP Kunta 220kV S/c line		Ecoren Energy – NP Kunta-II 220kV S/c line	
57.	12000008 37	Azure Power India Pvt. Ltd.(NP Kunta Solar Project)	Ananthapur, Andhra Pradesh	18.08.2017	100	Solar		Azure Power – NP Kunta 220kV S/c line		Azure Power – NP Kunta-II 220kV S/c line	
Connectivity application at Pavagada											
58.	12000007 15	Powerica Ltd. (Dharmavaram)	Anantapur, Andhra Pradesh	13.04.2017	300 (enhanced from 250 MW & change of location to Pavagada as per	Wind	Tumkur (Pavagada) Existing	Powerica – Pavagada 220kV S/c line	Pavagada-II (new) • Establishment of Pavagada-II 400/220kV S/s at suitable location near Pavagada along with 1x500	Powerica – Pavagada-II 220kV S/c line	

					applicant request)				MVA, 400/220kV ICT	
59.	1200000775	Benigere Energy Pvt. Ltd.	Ananthapur, Andhra Pradesh	19.06.2017	300	Wind		Benigere Energy – Pavagada 220kV S/c line	<ul style="list-style-type: none"> Pavagada-II – Pavagada (Existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Benigere Energy – Pavagada-II 220kV S/c line
60.	1200000866	Viridi Clean Alternatives Pvt. Ltd. (Pavagada Wind Farm)	Tumkur, Karnataka	27.09.2017	300 (enhanced from 250 MW as per applicant request)	Wind		Viridi Clean – Pavagada 220kV S/c line		Viridi Clean – Pavagada-II 220kV S/c line
61.	1200000862	Sprng Power Pvt. Ltd. (Peruru Wind Farm)	Anantpur, Andhra Pradesh	25.10.2017	250	Wind		Sprng Power – Pavagada 220kV S/c line		Sprng Power – Pavagada-II 220kV S/c line
62.	1200001106	Vespower Windfarm Pvt. Ltd. (M.Bandameedapa Ili Wind Farm)	Anantapur, Andhra Pradesh	23.03.2018	300	Wind		Vespower Wind – Pavagada 220kV S/c line		Vespower Wind – Pavagada-II 220kV S/c line

2. List of applicants granted Stage-I Connectivity in 24th Connectivity / LTA meeting of SR held on 11.07.2018.

Sl. No.	Application No.	Applicant	Location	Date of Application	Connectivity Sought (MW)	Nature of Applicant	Proposed primary location for Connectivity	Dedicated Tr. System	Proposed Alternative location for Connectivity / Tr. System under ISTS	Dedicated Tr. System for alternative connectivity
Connectivity applications near Tirunelveli										
1	1200001415	Betam Wind Energy Private Limited	Tuticorin, Tamil Nadu	12.06.2018	250.2	Wind	Tuticorin-II GIS PS (erstwhile Tirunelveli GIS PS)	Betam Wind – Tuticorin-II 230kV S/c line	<ul style="list-style-type: none"> Establishment of Tuticorin-III(new) 400/230kV S/s at suitable location near Tuticorin along with 1x500 MVA, 400/230kV ICT 	Betam Wind – Tuticorin-III 230kV S/c line
2.	1200001448	Viento Renewables Private Limited	Tirunelveli, Tamil Nadu	15.06.2018	300	Wind		Viento Renewables – Tuticorin-II 230kV S/c line		Viento Renewables – Tuticorin-III 230kV S/c line

3.	1200000974	Anurudra Renewables Pvt Ltd	Thuthukudi, Tamil Nadu	29.12.2017	300	Wind		Anurudra – Tuticorin-II 230kV S/c line	<ul style="list-style-type: none"> Tuticorin-III(new) – Tuticorin-II(existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Anurudra – Tuticorin-III 230kV S/c line
Connectivity applications near Munirabad										
4.	1200000604	Axis Wind farm (Anantapur) Pvt. Ltd.	Koppal, Karnataka	22.12.2016	300	Wind	Koppal / Munirabad-II(new) <ul style="list-style-type: none"> Establishment of Koppal / Munirabad-II 400/220kV S/s at suitable location near Koppal / Munirabad along with 1x500 MVA, 400/220kV ICT 	Axis Wind – Koppal/Munirabad -II 220kV S/c line	Munirabad-III(new) <ul style="list-style-type: none"> Establishment of Munirabad-III 400/220kV S/s at suitable location near Munirabad along with 1x500 MVA, 400/220kV ICT 	Axis wind – Munirabad-III 220kV S/c line
5.	1200000883	Orange Ashok Wind Power Pvt. Ltd. (Jakkali Wind Farm)	Gadag, Karnataka	31.10.2017	500	Wind		Orange Ashok – Koppal/Munirabad -II 220kV D/c line		Orange Ashok – Munirabad-III 220kV D/c line
6.	1200001102	Hungund Renewable Energy Pvt Ltd	Gadag, Karnataka	17.03.2018	300	Wind		Hungund – Koppal/Munirabad -II 220kV S/c line		Hungund – Munirabad-III 220kV S/c line
Connectivity applications near Hiriyyur										
7.	1200001464	ReNew Power Ltd.	Davangere, Karnataka	22.06.2018	300	Wind	Hiriyyur (Existing)	ReNew Power – Hiriyyur 220kV S/c line	Hiriyyur-II (new) <ul style="list-style-type: none"> Establishment of Hiriyyur-II 400/220kV S/s at suitable location near Hiriyyur along with 1x500 MVA, 400/220kV ICT Hiriyyur-II – Hiriyyur (existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	ReNew Power – Hiriyyur-II 220kV S/c line
Connectivity application at Pavagada										

8.	1200000876	Cuddalore Bioenergy Pvt. Ltd. (Pavagada Wind Farm)	Tumkur, Karnataka	18.10.2017	300	Wind	Tumkur (Pavagada) Existing	Cuddalore Bioenergy – Pavagada 220kV S/c line	<p>Pavagada-II (new)</p> <ul style="list-style-type: none"> • Establishment of Pavagada-II 400/220kV S/s at suitable location near Pavagada along with 1x500 MVA, 400/220kV ICT • Pavagada-II – Pavagada (Existing) 400kV Quad/HTLS D/c line with carrying capacity of 2000 MW at nominal voltage 	Cuddalore Bioenergy – Pavagada-II 220kV S/c line
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