सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref: CTU/S/00/32nd CMETS-SR

Date: 19.07.2024

As per distribution list

Subject: Minutes of 32nd Consultation Meeting for Evolving Transmission Schemes in Southern Region held on 28.06.2024 – reg.

Dear Sir/Ma'am,

दक्षिण क्षेत्र में पारेषण योजनाओं के उत्थान के लिए 32वीं परामर्श बैठक दिनांक 28.06.2024 को वर्चुअल मोड (वीडियो कॉन्फ्रेंसिंग) के माध्यम से संपन्न हुई । अतः इस संदर्भ में संबंधित परामर्श बैठक का कार्यवृत संलग्नक है और वेबसाइट (www.ctuil.in>> ISTS Planning and Coordination >>Consultation Meeting for ISTS>> Southern Region) पर भी उपलब्ध है ।

Please find attached minutes of the 32nd Consultation Meeting for Evolving Transmission Scheme in Southern Region held on 28.06.2024 through virtual mode. The minutes are also available at our website (www.ctuil.in>> ISTS Planning and Coordination >>Consultation Meeting for ISTS>> Southern Region).

Thanking you,

Yours faithfully,

Anil 19/7/24

(Anil Kr. Meena)
General Manager

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Minutes of the 32nd Consultation Meeting for Evolving Transmission Scheme in SR, held on 28.06.2024.

GM, CTU welcomed all participants to the 32nd Consultation Meeting for Evolving Transmission Scheme in SR, held on 28.06.2024. Subsequently, agenda of the meeting was taken up for deliberations. List of the participant is attached at **Annexure-A.**

A. ISTS Network Expansion Scheme in Southern Region

1. Reconductoring of Somanahalli – Bidadi 400kV kV D/c line with HTLS conductor and reconductoring of Maheshwaram (PG) – Hyderabad 400kV S/c line with HTLS conductor

CTU informed that reconductoring of the Somanahalli – Bidadi 400kV D/c line and Maheshwaram (PG) – Hyderabad 400kV S/c line with HTLS conductors was discussed and agreed in the 25th CMETS-SR held on 28.11.2023. Keeping in view that these lines are critical lines feeding major load centers in Bangalore and Hyderabad metropolitan areas, rating of HTLS conductor has been considered as 2100 MVA/ckt for reconductoring of the subject transmission lines.

SRLDC informed that along with reconductoring of the subject transmission lines, the terminal equipment at both ends also need to be upgraded for effective utilization of the lines. CTU informed that the reconductoring of the above transmission lines along with upgradation of bay equipment at both ends has been already allocated to the TSP (POWERGRID) under RTM. This proposal has been brought up for kind information of the members.

KPTCL opined that there were only limited vendors offering HTLS conductor with 2100 MVA capacity, accordingly, it is suggested that global tenders may be invited by POWERGRID for reasonable price quotes.

It was informed that POWERGRID may be requested for inviting the global tenders for the reconductoring works for the subject transmission lines.

Members noted the above.

2. Augmentation of transformation capacity by 1x500 MVA (3rd), 400/220kV ICT at Yelahanka 400/220kV GIS S/s in Karnataka

CTU informed that KPTCL vide letter dated 28.03.2024 (Copy of letter attached at **Annexure-B**) has communicated that residential load of about 250 MW is coming up at Dr. Shivaram Karanath BDA layout near Ganigarahalli in Bengaluru. KPTCL is proposing to establish a new 220kV substation in that area by interconnecting with Yelahanka 400/220kV GIS S/s through 1200sqmm UG cable for meeting the demand. It was also informed that as per the conditions of supply of electricity of distribution licensees in the State of

Karnataka, the developer / applicant shall provide the space for establishment of substation and also bear the entire charges of such substation and associated lines/equipment in case of the load requirement is more than 7.5 MW.

Keeping in view of the upcoming 250 MW load, KPTCL opined that additional 1x500 MVA, 400/220kV ICT (3rd) at Yelahanka GIS is required considering the N-1 contingency criteria. Accordingly, they had requested for augmentation of 1x500 MVA (3rd), 400/220kV ICT at Yelahanka 400/220kV GIS S/s. They had also requested for consent for utilization of 220kV bay at Yelahanka for termination of the proposed 220kV UG cable.

Presently, 6 nos. of 220kV line bays are existing at Yelahanka S/s which were implemented under ISTS. Out of 6 nos. of 220kV bays only 2 nos. of 220kV bays are being utilized by KPTCL. Accordingly, the remaining 220kV bay(s) may be utilized by KPTCL for termination of the proposed 220kV UG cable.

Keeping above in view, augmentation of transformation capacity by 1x500 MVA (3rd), 400/220kV ICT at Yelahanka 400/220kV GIS S/s is proposed.

During the meeting, CTU informed that presently 2x500 MVA ICTs and 10 nos. of 220kV line bays are existing at Yelahanka. Out of the 10 nos. of 220kV line bays 6 nos. were implemented under ISTS and balance 4 nos. are implemented by KPTCL. Out of the 6 nos. of 220kV ISTS line bays, only 2 nos. are being utilized through termination of 220kV UG cables. KPTCL is requested to confirm whether ISTS bays or KPTCL owned bays shall be utilized for termination of proposed 220kV UG cable.

KPTCL informed that 4 nos. of KPTCL owned 220kV line bays shall be shifted to some other location at later stage as per requirements. They intend to utilize the ISTS line bays for termination of proposed 220kV UG cable and requested to spare 2 nos. of 220kV ISTS line bays for the same. Further, 1x500 MVA (3rd), 400/220kV ICT at Yelahanka is also required for meeting the residential load of BDA.

TGTRANSCO enquired about the requirement of 3rd 500 MVA ICT as only 4 nos. of 220kV line bays will be utilized with the proposed additional load. Towards this KPTCL informed that the existing 2 nos. of 220kV cables emanating from Yelahanka are 2000 sqmm cables and shall be capable to meet the entire demand in that area and the 3rd ICT is required for meeting the N-1 contingency criteria.

SRLDC informed that as per the information provided earlier, each cable can carry about 400 MW. Presently, loading of about 280 MW is observed on each cable and it is not meeting the N-1 criteria. Towards this KPTCL clarified that each cable has a capability to carry about 600 MW and they will share the details.

SRLDC informed that high loadings are observed in the 220kV downstream network in Yelahanka area and suitable strengthening is required along with the augmentation of 3rd ICT. KPTCL informed that the 220kV downstream network is being strengthened and details of the same shall also be shared.

After detailed deliberations, augmentation of transformation capacity by 1x500 MVA (3rd), 400/220kV ICT at Yelahanka 400/220kV GIS S/s with suitable re-arrangements was agreed. It was also agreed that KPTCL shall strengthen the 220kV downstream network.

3. Augmentation of transformation capacity by 1x500 MVA (3rd), 400/220kV ICT at Narendra (existing) S/s in Karnataka

CTU informed that requirement of additional ICT at Narendra (existing) S/s due to continuous over loading / N-1 violation of existing ICTs was discussed in the 210th OCC meeting of SRPC held on 10.01.2024. During the meeting the proposal for additional 500 MVA ICT at Narendra (existing) was approved in principle. It was decided that POWERGRID may submit the proposal in CMETS meeting with all the information regarding site availability and connectivity scheme. Accordingly, POWERGRID is requested to provide the above information.

Further, SRLDC in its quarterly report Q4(Jan'24-Mar'24) has mentioned that during high demand period of Karnataka, about 3% of time in Jan'24, 10% of time in Feb'24 and 46% of time in Mar'24, ICTs at Narendra are not complying to N-1 criteria.

The issue of high loading of ICTs at Narendra (existing) was also deliberated during the joint study meeting held on 01.04.2024 to discuss the intra- state transmission system proposals of Karnataka (Copy of MoM attached at **Annexure-B**). During the meeting, augmentation of 1x500 MVA, 400/220kV (3rd) ICT at Narendra (existing) was agreed considering the load growth of Karnataka and 'N-1' contingency criteria. Accordingly, augmentation of transformation capacity by 1x500 MVA (3rd), 400/220kV ICT at Narendra(existing) 400/220kV S/s was proposed.

During the meeting CTU informed that Narendra 400/220kV substation was earlier commissioned with 2x315 MVA ICTs and later these ICTs were replaced with 2x500 MVA ICTs considering the loading on the ICTs and space constraints for augmentation of ICTs. Now POWERGRID has informed that space is available for 3rd 1x500 MVA ICT at Narendra(existing) S/s. POWERGRID was requested to provide the information regarding space availability for 3rd ICT and its interconnection with 400kV and 220kV switchyards. POWERGRID informed that they will provide the information within 2-3 days.

After detailed deliberations, it was decided that the proposal may be deliberated in the next CMETS-SR meeting after receipt of inputs from POWERGRID.

4. Augmentation of transformation capacity by 2x500 MVA (9th & 10th), 400/220kV ICTs at Tumkur (Pavagada) 400/220kV Pooling Station in Karnataka

CTU informed that M/s Karnataka Solar Power Development Corporation Ltd. (KSPDCL) has been granted Connectivity for 2050 MW at Tumkur (Pavagada) PS and same has been commissioned. Further, M/s KSPDCL has submitted application for enhancement of Connectivity for 300 MW at Tumkur (Pavagada) PS (from 2050 MW to 2350 MW at Pavagada PS) as Renewable Power Park Developer in the month of November, 2023. The connectivity application was discussed in the 26th CMETS-SR held on 29.12.2023 wherein it was decided that due to non-availability of margins for grant of additional connectivity at Tumkur (Pavagada) PS, the connectivity has been granted at Tumkur-II PS. During the meeting, it was also informed that a meeting was held on 13.12.2023 between CTU, SECI, KSPDCL and POWERGRID regarding space availability at Tumkur (Pavagada) PS for augmentation of transformation capacity / grant of additional connectivity wherein PGCIL mentioned that additional land of about 100 m (width) x 540 m (length) is required on right side of the Tumkur (Pavagada) PS for expansion of Tumkur (Pavagada) PS with 2 nos. of additional 500 MVA ICTs & 220 kV line bays. KSPDCL stated that they have earmarked the available land around Tumkur (Pavagada) PS which is available on lease-basis with KSPDCL. KSPDCL also confirmed that they shall immediately be taking up the matter with the land owners to facilitate acquisition of required land by PGCIL for expansion of Tumkur (Pavagada) PS in coordination with KSPDCL.

In 26th CMETS-SR, KSPDCL mentioned that they have taken initiatives towards acquisition of land for augmentation of Tumkur (Pavagada) PS and requested for grant of connectivity for 300 MW at Tumkur (Pavagada PS) instead of Tumkur-II PS. CTU informed that at present, for grant of connectivity, there is no margin in existing Tumkur (Pavagada) PS. After getting confirmation towards land acquisition and possibility of Tumkur (Pavagada) PS augmentation, the same shall be considered for grant of connectivity. Further, applicants will be offered to shift connectivity from Tumkur-II PS to Tumkur (Pavagada) PS in order of the priority of the receipt of application, if additional connectivity shall be granted at Tumkur (Pavagada) PS

KSPDCL vide letter dated 31.05.2024 (Copy of letter attached at **Annexure-C**) informed that following actions have been initiated by KSPDCL subsequent to the 26th CMETS-SR meeting:

- Deputy Commissioner, Tumkur was requested to fix the rate for purchase of land for expansion of Tumkur (Pavagada PS) in Jan'24.
- The total land of about 13 Acres 22 Guntas is required for the proposed expansion and land rate has been fixed by the Deputy Commissioner at **Rs. 2.62 Cr.** (Rs. 19.35 L per Acre) in Feb'24.
- Land owners (of the leased land with M/s KSPDCL) of adjacent identified land have consented to sell their land for the proposed expansion in May'24.

- POWERGRID was requested to take up registration of the land for proposed expansion along with payment of compensation.

In view of the above, KSPDCL has requested to consider grant of connectivity for additional 300 MW at Tumkur(Pavagada PS) instead of Tumkur-II PS.

Presently, connectivity of about 3350 MW was granted at Tumkur (Pavagada) PS and 500 MW has been granted at Tumkur-II PS. As land is available for expansion of the pooling station and for optimal utilization of the transmission system, it is proposed to augment the transformation capacity by 2x500 MVA (9th & 10th), 400/220kV ICTs at Tumkur (Pavagada) PS. With the proposed augmentation connectivity margin of about 1150 MW shall be available at Tumkur (Pavagada) PS. System studies has been carried out for integration and immediate evacuation of above potential from Tumkur (Pavagada) PS and the loadings are generally in order. Study results are attached at **Annexure-D**.

Further, applicants who had been granted connectivity at Tumkur-II PS will be offered to shift connectivity from Tumkur-II PS to Tumkur (Pavagada) PS in the order of priority of the receipt of application.

During the meeting SRLDC informed that the reconductoring of Nelamangala – Hoody and Devanahalli – Hoody 400kV S/c lines was agreed during the Joint Study meeting of SR constituents held from 2-4 may, 2024. With the proposed augmentation of 9th and 10th ICTs at Tumkur (Pavagada) PS the loading on the above lines shall further increase. Accordingly, KPTCL may take up the reconductoring of these lines at the earliest.

CTU informed that 9th and 10th ICTs at Tumkur (Pavagada) PS are required under ISTS and the reconductoring of STU lines shall be carried out by respective STUs.

After detailed deliberations, proposal for augmentation of transformation capacity by 2x500 MVA (9th & 10th), 400/220kV ICTs at Tumkur (Pavagada) 400/220kV PS was agreed.

5. Transmission System for integration of Kurnool-IV and Anantapur-II REZs in Andhra Pradesh

It was informed that the transmission System for integration of Kurnool-IV and Anantapur-II REZs was discussed in the 28th CMETS-SR held on 29.02.2024 wherein it was informed that Govt. of India has set a target of 500 GW generation capacity from non-fossil fuel resources by 2030. In this direction, MNRE has identified addition of 86 GW RE Potential in the State of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu (Offshore) in Southern Region. Out of the identified (86 GW) RE Potential in Southern Region, 51 GW has been identified in the State of Andhra Pradesh (Ananthapur– 20 GW, Kurnool – 23 GW & Kadapa – 8 GW).

A comprehensive transmission system for integration of 51 GW RE Potential in Andhra Pradesh have been identified by CEA and a report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022. The details of district wise potential is given as below.

District	Pooling Station	Potential (GW)		Total (GW)	Maximum Dispatch (GW)	BESS (GW)	Evacuation System (GW)
		Wind	Solar				
Anantapur	Anantapur, Anantapur-II	10	10	20	15	5	10
Kurnool	Kurnool-IV, Kurnool-V	8	15	23	18	6	12
Kadapa	Kadapa-II	0	8	8	8	3	5
Total		**18**	**33**	**51**	**41**	**14**	**27**

As per the CEA 500 GW RE report, following transmission system has been identified for integration of Kurnool-IV and Anantapur-II:

a. Transmission System for integration of Kurnool REZ-I (7.5 GW Solar, 4 GW Wind, 3 GW BESS)

- Establishment of 5x1500 MVA, 765/400 & 7x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Kurnool-IV PS (3 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (~100 km)
- Kurnool-IV – Bidar PS 765 kV D/c line with 240 MVAr SLR at both ends (~280 km)

b. Transmission System for integration of Anantapur-II REZ (7.5 GW Solar, 4 GW Wind, 3 GW BESS)

- Establishment of 6x1500 MVA, 765/400 kV & 9x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 4 GW injection at 400 kV level)
- Anantapur-II – Cuddapah 765 kV D/c line with 240 MVAr SLR at Anantapur-II PS (~250 km)
- Anantapur-II – Kurnool-V PS 765 kV D/c line (~100 km)

During the 28th CMETS-SR, it was informed that Connectivity of about 7740 MW (2390 MW at 220kV level & 5350 MW at 400kV level) has been granted / agreed for grant at Kurnool-III PS. Similarly, Connectivity of about 3765 MW (1055 MW at 220kV level & 2710 MW at 400kV level) has been granted / agreed for grant at Ananthapuram PS. In view of the same, it is prudent to take up the implementation of Kurnool-IV PS and Anantapur-II PS for integration of RE generation projects in Kurnool and Anantapur areas. It

was also informed that NRED-CAP has also requested for establishment of a new 765kV pooling station near Aspiri in Kurnool district for integration of nearby RE potential. Accordingly, it was proposed that Kurnool-IV PS may be established at suitable location near Aspiri in Kurnool district. Further, as requested by NRED-CAP, Ananthapuram-II PS may be established at suitable location near Raydurg in Ananthapuram district. After detailed deliberations, it was decided that a physical joint study may be carried out for finalization of the transmission system for Kurnool-IV PS and Ananthapuram-II PS.

Accordingly, Joint Study meeting of Southern Region Constituents was held from 2nd to 4th May, 2024 at Hyderabad (Copy of Joint Study MoM attached at **Annexure-E)** wherein following transmission system was finalized for integration of RE generation projects at Kurnool-IV and Anantapur-II in Andhra Pradesh :

a. Transmission System for Integration of Kurnool-IV (Near Aspiri) REZ (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 & 10x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- Kurnool-IV – Veltoor-II 765kV D/c line (about 180 kms) with 330 MVAR SLR at Kurnool-IV on both circuits
- Veltoor-II– Bidar 765kV D/c line (about 200 kms) with 330 MVAR SLR at Bidar end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta
- Veltoor-II– Veltoor TS 400 kV (quad) D/c line (about 60 kms)
- Veltoor-II– Udandpur 400 kV (quad) D/c line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

Phase-I (4.5 GW)

- Establishment of 4x1500 MVA, 765/400 & 4x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (1.5 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR

- Kurnool-IV – Bidar 765kV D/c line (about 330 kms) with 330 MVAR SLR at both end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta

Phase-II (3 GW)

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- LILO of Kurnool-IV – Bidar 765kV D/c line at Veltoor-II (about 60 kms)
- Veltoor-II– Veltoor TS 400 kV D/c (quad) line (about 60 kms)
- Veltoor-II– Udandpur 400 kV D/c (quad) line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

b. Transmission System for Integration of Anantapur-II (Near Rayadurgam) REZs (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 kV & 10x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station 765/400 along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

Phase-I (4 GW)

- Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (1.5 GW injection at 220 kV level and 2.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits

Phase-II (3.5 GW)

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2.5 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

During the Joint Study meeting, it was agreed that transmission system for Kurnool-IV may be phased out with Kurnool-IV – Bidar 765kV D/c line and Kurnool-IV – Kurnool-III PS 765 kV D/c line in the first phase and balance transmission system in second phase. Similarly, it was agreed that transmission system of Anantapur-II may be phased out with Anantapur-II – Davangere 765kV D/c line and Anantapur-II – Cuddapah 765kV D/c line in the first phase and balance transmission system in second phase. It was also agreed that the transmission system may taken-up for further approval in the upcoming CMETS meeting of SR, SRPC and NCT.

TGTRANSCO stated that as per the proposal, proposed Veltoor-II ISTS substation is planned to be integrated with TGTRANSCO Veltoor and Udandpur LI substations under "Transmission System for Integration of Kurnool-IV (Near Aspiri) REZ (for 7.5 GW)". Same may be reviewed on account of increase in fault level at nearby TGTRANSCO substations and N-1 non-compliance of Udandapur-Shadnagar and Veltoor-Shadnagar 220 kV lines with the above interconnections. TGTRANSCO informed that they are planning Chendenaveli 220 kV substation near Shadnagar wherein a lot of data centers are expected to come-up. Two no. of application for 700 MW each have already been received and the demand is expected to further increase to 3000 MW at these locations. Accordingly, 765/400 KV substations may be planned nearer to these locations instead of Veltoor-II for meeting the demand

requirements. In this regard, CTU stated that the transmission system has been proposed as per agreed during the Joint studies, however same may be reviewed based on the observations from Telangana.

KPTCL stated that as per the proposal, it is observed that Kurnool-IV- Bidar 765 kV D/c line carries very less power. In this regard, CTU stated that Kurnool-IV-Bidar transmission line is longer line as compared to Kurnool-IV-Kurnool-III 765 kV line, accordingly, power has greater tendency to flow towards Kurnool-III rather than Bidar. Further, atleast two no. of 765 KV corridors shall be required for evacuation of 4.5 GW from Kurnool-IV in first phase. Moreover, with further addition of potential at Kurnool-IV and LILO of Kurnool-IV – Bidar 765kV D/c line at Veltoor-II or Shadnagar / Chandanvelli as proposed by TGTRANSCO, the power flow shall increase substantially. Further, during the joint studies, Bidar-Parli 765 kV D/c inter-regional link between WR & SR was identified for further enhancement of the import capability of SR region as well as export of power from SR and Kurnool-IV – Bidar 765kV D/c line shall further facilitate power flow through Bidar-Parli 765 kV D/c line for import as well as export.

APTRANSCO stated that they have submitted their observations vide email dated 27.06.2024. APTRANSCO stated that LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta) proposed under Phase-II may be taken up along with augmentation of ICTs at C'Peta which is planned in Phase-1 as augmentation at C'Peta SS may lead to over loading of 400KV VTS-Nunna feeder. It was also submitted that instead of Kurnool-IV – Bidar 765kV D/c line, Kurnool-IV – Raichur 765kV D/c line (about 100 km) may be examined. In this regard, CTU stated that RE potential at Koppal-II and Gadag-II are already being integrated at Raichur at 765 kV level, further Bijapur is also being integrated at Raichur at 400 kV level. Accordingly, further integration of power at Raichur may not be considered.

APTRANSCO also submitted that Double LILO (45KM) of 765KV Davangere/Madhugiri DC line at Anantapur-II may facilitate Strengthening of 765KV Davangere to meet proposed Green Hydrogen loads and Strengthening of Madhugiri. In this regard, CTU stated that interconnection with the proposed double LILO, one section of the LILO i.e., Anantapur-Davangere shall be overloaded and may pose constraints in certain operational scenarios. Further, direct interconnection of Anantapur-II PS with Davangere shall facilitate power drawl for Green hydrogen projects coming up in Mangalore area, as there shall be power available from Davangere as well as Anantapur-II REZ. Further, other observations may be considered as per the technical analysis.

Towards a query raised by KPTCL whether upgradation of Tuticorin-Salem-Madhugiri 765 kV corridor at its rated voltage has been considered in the studies, as in the absence of the same, 400 KV transmission system from Madhugiri onwards shall be loaded. In this regard, CTU stated that upgradation of Tuticorin-Salem-Madhugiri 765 kV corridor at its rated voltage has been agreed in the 31st CMETS-SR held on 30.05.2024 wherein CEA has also observed that connectivity to Green Hydrogen applicants at Tuticorin area may be granted through development of 765/400 kV Green Hydrogen PS in Tuticorin along with required system upgradation.

KPTCL stated that integration of proposed CN'Halli 765/400 kV ss under ISTS with KPTCL CN'Halli 400/220 kV substation may be reviewed as KPTCL is also planning for development of 765 kV KPTCL CN'Halli substation for evacuation of RE connected to STU. CTU stated that Phase-I of the transmission system for integration of Kurnool-IV & Anantapur-II REZs with the consideration of LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta along with augmentation of ICTs at C'Peta under Phase-I of Kurnool-IV REZ may be agreed. Further, as per the observation received from TGTRANSCO, APTRANSCO & KPTCL, Phase-II of the transmission system for integration of Kurnool-IV & Anantapur-II REZs may be reviewed and may be taken-up again in upcoming CMETS meeting upon finalization of the same.

SRPC stated that as per the proposal, 4 GW injection at 220kV level is planned at Kurnool-IV and Anantpur-II PS. Considering the injection of 4GW at 220kV, 9x500 MVA, 400 /220 kV ICTs may be sufficient for meeting N-1 criteria. In this regard, CTU stated that the substation capacity is planned for maximum capacity of 9 GW as per the Planning criteria and considering evacuation in MW terms, 9 nos. of ICTs may not be sufficient for meeting 'N-1' compliance. SRPC opined that ICTs may taken-up based on receipt of the applications. After deliberations, it was agreed that 9x500 MVA, 400 /220 kV ICTs may be considered for the transmission scheme with space provision for balance ICTs.

SRLDC requested that all the switchable line reactors may be made as convertible also.

After detailed deliberations, following transmission system under "Transmission System for Integration of Kurnool-IV REZ" and "Transmission System for Integration of Anantapur-II REZs" was agreed :

Transmission System for Integration of Kurnool-IV REZ - Phase-I (4.5 GW)

- Establishment of 4x1500 MVA, 765/400 & 4x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (1.5 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Kurnool-IV – Bidar 765kV D/c line (about 330 kms) with 330 MVAR SLR (convertible) at both end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR (convertible) at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

Transmission System for Integration of Anantapur-II REZ - Phase-I (4 GW)

- Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (1.5 GW injection at 220 kV level and 2.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR (convertible) at Anantapur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR (convertible) at Anantapur-II end on both circuits

The transmission schemes shall be put-up to SRPC for its views and subsequently the scheme along with SRPC views shall be submitted to NCT for consideration.

It was also agreed that separate meeting shall be convened with SR constituents for finalization of Phase-II of the transmission system for integration of Kurnool-IV and Anantapur-II REZ and upon finalization of the system, same shall be taken-up again in CMETS meeting.

6. Transmission system strengthening at Bijapur PS for integration of additional RE generation projects

CTU informed that presently Bijapur PS is under bidding with an implementation schedule of 24 months with following broad transmission system:

- Establishment of 400/220kV 5x500 MVA Pooling Station near Bijapur (Vijayapura), Karnataka
- Bijapur PS – Raichur New 400kV (Quad) D/c line
- 2x125MVAr 420kV bus reactors at Bijapur PS

Connectivity of about 1915 MW has been granted / agreed for grant at Bijapur with the above system. In addition to the above, Connectivity of about 1656 MW has been received at Bijapur PS in the months of April and May 2024. Considering the above, the total connectivity quantum granted / agreed for grant / proposed for grant at Bijapur PS will be about 3570 MW at 220kV level. In view of the above, augmentation of additional 4x500 MVA, 400/220kV ICTs (6th, 7th, 8th & 9th) at Bijapur PS is required (considering N-1 contingency criteria) for providing connectivity to RE generation projects.

Further, as the total connectivity quantum at Bijapur is about 3570 MW, the proposed Bijapur PS – Raichur New 400kV (Quad) D/c line shall not be adequate for evacuation of power from Bijapur PS. Therefore, Bijapur PS – Raichur New 400kV (Quad) 2nd D/c line

is required. With the proposed Bijapur PS – Raichur New 400kV 2nd D/c line, the existing 2x1500 MVA, 765/400kV ICTs at Raichur New are not meeting the N-1 contingency criteria. Accordingly, augmentation of 1x1500 MVA, 765/400kV ICT (3rd) at Raichur New is required. System studies have been carried out for integration and immediate evacuation of additional power from Bijapur and line loadings are generally found to be in order. Study results are attached at **Annexure-D.**

In view of the above, following is proposed:

- Bijapur PS – Raichur New 400kV (Quad) 2nd D/c line
- Augmentation of 4x500 MVA, 400/220kV ICTs (6th, 7th, 8th & 9th) at Bijapur PS
- Augmentation of 1x1500 MVA, 765/400kV ICT (3rd) at Raichur New

During the meeting APTRANSCO opined that instead of proposing Bijapur PS – Raichur New 400kV (Quad) 2nd D/c line of about 200km and stepping up at Raichur with ICT augmentation and exporting to Solapur, integration of Bijapur with Solapur 765/400kV S/s or Solapur STPP may be explored. Further, augmentation of 765/400KV ICTs may be proposed at Solapur based on the requirement.

CTU informed that detailed analysis shall be carried out in consultation with CTU-WR team and proposal shall be put up in the next CMETS-SR meeting.

SRLDC stated that the existing 2x1500 MVA, 765/400kV ICTs at Raichur New are not meeting the N-1 contingency criteria under certain conditions and augmentation of 3rd 1500 MVA ICT at Raichur New is required.

CTU requested to provide the details of loading of the ICTs at Raichur New, so that same shall be deliberated in the next CMETS-SR meeting.

After detailed deliberations, it was decided that the proposal shall be deliberated in the next CMETS-SR meeting.

7. System strengthening by making LILO of VTS – Manubolu 400 kV S/c line and Nunna – Manubolu 400 kV S/c line (ISTS) at 400 kV Podili S/s.

CTU informed that a meeting was held on 25th April 2024 through VC to discuss the intra-state transmission system proposals of APTRANSCO. CEA vide letter dated 17.05.2024 has issued the minutes of the meeting (attached at **Annexure-F**), wherein it has been mentioned that M/s Indosol Solar Pvt. Ltd. has requested APTRANSCO for extending Interim power requirement up to 280

MVA in phased manner at 220 kV level until 400 kV lines and switching station at Ramayapatnam is commissioned for their power requirement of 900 MVA. Further, APTRANSCO proposed to extend 280 MVA power supply to M/s INDOSOL Solar Pvt. Ltd. from existing 220/132 kV Kandukuru S/s at 220 kV level. Further, 220 kV Kandukuru S/s is radially fed from 400/220 kV Podili S/s and it was observed that voltages at 400/220 kV Podili S/s are below 390 kV during peak load period, and in order to improve the voltage profile at 400/220 kV Podili S/s and at downstream substations duly considering the future load growth and upcoming loads at Ramayapatnam, APTRANSCO proposed LILO of VTS – Manubolu 400 kV S/c line and Nunna – Manubolu 400 kV S/c line at 400 kV Podili S/s. After detailed deliberations, LILO of VTS – Manubolu 400 kV S/c line and Nunna – Manubolu 400 kV S/c line at 400 kV Podili S/s to be implemented in matching timeframe of Kandukur – Ramayapatnam 220 kV D/c line to supply 280 MVA load was agreed.

Subsequently, POWERGRID vide letter dated 17.06.2024 (attached at **Annexure-G**) has requested CTUIL to take above matter in Southern Region monthly meeting i.e. CMETS-SR.

Members noted the above.

8. Conversion of 80 MVAr FLR to SLR on Vijayawada – Nellore 400kV D/c line (Line-2) at Nellore as per 44th SRPC and 42nd TCC

CTU informed that POWERGRID vide letter dated 04.10.2023 informed that replacement of 50 MVAr line reactor at Nellore end on Vijayawada – Nellore 400kV D/c line (Line-2) with 80 MVAr under AddCap was approved in the 44th SRPC meeting held on 04.11.2022. Further, it was decided that line reactors would be made switchable for use of bus reactors wherever technically feasible / space available. Accordingly, POWERGRID requested that conversion of 80 MVAr fixed line reactor at Nellore end on Vijayawada – Nellore 400kV D/c line (Line-2) to switchable line reactor along with NGR and its bypassing scheme in the CMETS-SR meeting.

Accordingly, it is proposed to convert 80 MVAr fixed line reactor as switchable line reactor at Nellore end on Vijayawada – Nellore 400kV D/c line (Line-2).

After detailed deliberations, conversion of 80 MVAr fixed line reactor at Nellore end on Vijayawada – Nellore 400kV D/c line (Line-2) to switchable line reactor along with NGR and its bypassing scheme was agreed.

B. Connectivity related issued deliberated in earlier CMETS-SR

1. Connectivity Related proposal at Koppal-II PS & Gadag-II PS

Sl. No.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity [requested]	Total Installed Capacity	Connectivity Sought for [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000585 dt. 05.03.2024	Chandragiri Wind Park Pvt. Ltd.	Naregal, Gadag, Karnataka	Connectivity	Land route	Generating station(s), including REGS(s), without ESS	Gadag-II PS	290 (wind)	290	30.09.2025
II.	2200000714 dt. 15.04.2024	Amplus Cenedus Solar Pvt. Ltd.	Dharwad, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Gadag-II PS	380 (wind)	350	30.09.2026

CTU informed that M/s Chandragiri Wind Park Pvt. Ltd. has sought connectivity for 290 MW, as per above details, and requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS. Application was discussed in 30th and 31st CMETS-SR meeting held on 30.04.2024 and 30.05.2024 respectively.

M/s Amplus Cenedus Solar Pvt. Ltd. has sought connectivity for 350 MW at Gadag-II PS and requested to implement 220 kV line bays for termination of DTL at ISTS under the scope of ISTS. Application was discussed in 31st CMETS-SR meeting.

In 31st CMETS-SR, CTU reiterated that Gadag-II PS & Koppal-II PS have already been closed for grant of additional connectivity. Further, applications are required to be processed in time bound manner, therefore applicants may opt other locations viz. Bijapur / Davanagere / Bellary Polling Stations for grant of connectivity, else application shall be closed.

M/s Chandragiri Wind Park Pvt. Ltd. stated that it will submit the consent within 2-3 working days. Subsequently, vide email dated 02.06.2024, M/s Chandragiri Wind Park Pvt. Ltd. opted for grant of connectivity at Davangere PS. M/s Amplus Cenedus Solar Pvt. Ltd. stated that it will confirm the location for grant of connectivity within a week. Subsequently, vide letter dated 10.06.2024, applicant has requested to grant the connectivity at Davangere PS.

Accordingly, the applications are considered as per the request and the proposal is being discussed with other applications at the pooling stations.

2. **Connectivity Related proposal at Ananthapuram PS**

Sl. No.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity [requested]	Total Installed Capacity	Connectivity Sought for [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000780 dt. 30.04.2024	Renew Solar Power Pvt. Ltd.	Ananthapuram, AP	Connectivity	LOA/PPA [Allocated capacity:400 MW]	Generating station(s), including REGS(s), without ESS	Ananthapuram PS	400 (Wind)	400	30.06.2027

CTU informed that M/s Renew Solar Power Pvt. Ltd. has sought connectivity for 400 MW at Ananthapuram PS and requested to implement 220 kV line bays for termination of DTL at ISTS under the scope of ISTS.

Application was discussed in 30th CMETS-SR meeting, where in it was informed that margins are not available for grant of additional connectivity at under implementation Ananthapuram PS, therefore, application shall be taken up for deliberation in next CMETS-SR, and considered for grant of connectivity at Ananthapuram-II PS.

Accordingly, the application is considered as per the request and the proposal is being discussed with other applications at Ananthapuram-II PS.

C. Connectivity/ GNA Related proposal for applications received in Southern Region

Details of the Connectivity/ GNA applications, in line with CERC Regulations, received in the month of April.'2024 & May'2024 as given below.

1. Connectivity related proposal at Davangere/ Chitradurga PS

Sl.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity [requested]	Total Installed Capacity	Connectivity Sought for [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000876 Dt. 30.05.2024	Jade Hybren Pvt. Ltd.	Harpanahalli and Jagalur, Davangere, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Davangere	300 [Solar 200 MW + Wind: 100 MW]	300	31.12.2026

CTU informed that :

- Applicant has requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS
- 4x1500 MVA, 765/400kV and 4x500 MVA, 400/220 kV Davanagere / Chitradurga Pooling Station is being established as part of 'Transmission system for integration of Davanagere/ Chitradurga REZ'. Details of transmission system as per Annexure-II. The transmission scheme has been recommended for implementation through TBCB route in the 18th NCT held on 05.03.2024 and Gazette Notification published on 15.03.2024 by Ministry of Power with implementation time frame of 24 months. Considering the bidding process timeline, the scheme is expected tentatively by July/Aug'2026.
- Total Connectivity already granted/ agreed for grant at Davagere PS : 1400 MW
- Total additional connectivity capacity under consideration: 940 MW [considering 290 MW from M/s Chandragiri Wind Park Pvt. Ltd. + 350 MW from M/s Amplus Cenedus Solar Pvt. Ltd.+300 MW from M/s Jade Hybren Pvt. Ltd.]
- For grant of additional connectivity, augmentation of 2x500 MVA, 400/220 kV ICT (Considering N-1 contingency criteria) is required at Davangere PS.
- System studies has been carried out and it is observed that connectivity may be granted for 940 MW [290 MW + 350 MW + 300 MW] at Davanagere / Chitradurga with existing/under-construction/under bidding transmission system which includes ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region (details given at Annexure-I) and Transmission system for integration of Davanagere/ Chitradurga REZ (details as per Annexure-II) and augmentation of 2x500 MVA, 400/220 kV ICT at Davangere PS.

After deliberation it was agreed to grant connectivity to above applicants (M/s Chandragiri Wind Park Pvt. Ltd. for 290 MW, M/s Amplus Cenedus Solar Pvt. Ltd. for 350 MW and M/s Jade Hybren Pvt. Ltd. for 300 MW) through following connectivity transmission system.

Sl.	Application ID	Name of the Applicant	Connectivity at	Connectivity Quantum (MW)	Connectivity Transmission System under GNA			Start date of Connectivity/	BG details
					Dedicated Connectivity Transmission System (DTL)	ATS	Augmentation other than ATS		
I.	2200000585	Chandragiri Wind Park Pvt. Ltd.	Davangere	290	• Generation Station of M/s Chandragiri Wind Park Pvt. Ltd. – Davanagere/ Chitradurga PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Davanagere/ Chitradurga PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	31.08.2026* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 5.80 Cr (@ Rs. 2.0 lakh /MW)
II.	2200000714	Amplus Cenedus Solar Pvt. Ltd.	Davangere	350	• Generation Station of M/s Amplus Cenedus Solar Pvt. Ltd. – Davanagere/ Chitradurga PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Davanagere/ Chitradurga PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	30.09.2026* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 7.0 Cr (@ Rs. 2.0 lakh /MW)

III.	2200000876	Jade Hybren Pvt. Ltd.	Davangere	300	• Generation PS Station of M/s Jade Hybren Pvt. Ltd. – Davanagere/ Chitradurga PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Davanagere/ Chitradurga PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	31.12.2026* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6.0 Cr (@ Rs. 2.0 lakh /MW)

*With availability of common transmission system (augmentation other than ATS) required for effectiveness of Connectivity

Common transmission system (augmentation) other than ATS for M/s Chandragiri Wind Park Pvt. Ltd. (application no. 2200000585), M/s Amplus Cenedus Solar Pvt. Ltd. (application no. 2200000714) and M/s Jade Hybren Pvt. Ltd. (application no. 2200000876) :

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.
- Transmission system for integration of Davanagere/ Chitradurga REZ (details as per **Annexure-II**).
- Augmentation of 2x500 MVA, 400/220 kV ICT at Davangere PS.

Note : applicants are required to submit BGs as per above details within one month of the in-principle grant of Connectivity intimation.

Members agreed for same.

Further, details of the applicants grated / agreed for grant Connectivity at Davangere PS is given at **Annexure-H**

2. Connectivity related proposal at Bijapur PS

Sl.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity / GNA requested	Total Installed Capacity/ GNA	Connectivity sought [Power injection to ISTS (MW)]	Start date of Connectivity / GNA (requested)
I.	2200000692 dt. 05.04.2024	Vismaya Renewables India Project Pvt. Ltd.	Bijapur, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	300 (Wind)	300	01.04.2027
II.	2200000708 dt. 12.04.2024	Sunsure SolarPark RJ One Pvt. Ltd.	Bijapur, Karnataka	Connectivity Enhancement	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	48 (Wind)	48	31.12.2027
III.	2200000717 dt. 16.04.2024	Welspun Godavari Pvt. Ltd.	Bijapur, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	250 (Wind)	250	31.01.2027
IV.	2200000764 dt. 25.04.2024	Enfinity Global Haritha Udwal Pvt. Ltd.	Bijapur, Karnataka	Connectivity	Land Route	Generating station(s), including REGS(s), without ESS	Bijapur PS	100 (Wind)	100	31.12.2026
V.	2200000792 dt. 02.05.2024	UPC Renewables India Management Pvt. Ltd.	Bijapur, Karnataka	Connectivity Enhancement	Land Route	Generating station(s), including REGS(s), without ESS	Bijapur PS	56 (Wind)	56	30.11.2026
VI.	2200000868 dt. 30.05.2024 at 13:50 hrs	Purvah Green Power Pvt. Ltd.	Bijapur, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	351 (Wind)	351	01.08.2026
VII.	2200000870 dt. 30.05.2024 at 14:20 hrs	Ganeko Four Energy Pvt. Ltd.	Bijapur, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	354 (Hybrid: Wind-99 MW & Solar-255 MW)	300	30.06.2028
VIII.	2200000871 dt. 30.05.2024 at 15:40 hrs	Purvah Green Power Pvt.Ltd.	Bijapur, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bijapur PS	250.8 (Wind)	250.8	01.04.2027
	Total								**1655.8**	

- Additional details submitted by applicants are as below -

- M/s Vismaya Renewables India Project Pvt. Ltd (app. no. 2200000692) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.
- M/s Sunsure SolarPark RJ One Pvt. Ltd. (app. no 2200000708) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS. Connectivity already granted for 252 MW for app. no 2200000586.
- M/s Welspun Godavari Pvt. Ltd(app. no 2200000717) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.
- M/s Enfinity Global Haritha Udwal Pvt. Ltd. (app. no 2200000764) submitted the sharing agreement requested to grant connectivity through sharing of dedicated connectivity infrastructure of M/s Tepsol Green Energy Pvt. Ltd. (granted connectivity for 200 MW, appl. No. 2200000657) and M/s EG Solwin Renewables Pvt (already granted connectivity for 100 MW through sharing of dedicated connectivity transmission system of M/s Tepsol Green Energy Pvt. Ltd. i.e. Generation Pooling Station of M/s Tepsol Green Energy Pvt. Ltd. – Bijapur PS 220 kV S/c line). However, it may be noted that already 300 MW connectivity has been granted granted through 220 kV S/c line and it is not possible to evacuate 400 MW through 220 kV S/c line.
- M/s UPC Renewables India Management Pvt. Ltd. (app. No 2200000792). Applicant has already granted connectivity for 160 MW at Bijapur PS (app. no. 2200000584) through 220 kV S/c line on D/c tower with start date of connectivity as 30.09.2026(tentative). Applicant has requested to grant connectivity through dedicated connectivity system for app. no. 2200000584.
- M/s Purvah Green Power Pvt. Ltd. (app. no 2200000868) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.
- M/s Ganeko Four Energy Pvt. Ltd. (app. no 220000870) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.
- M/s Purvah Green Power Pvt.Ltd. (app. no 2200000871) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.

- CTU informed that 5x500 MVA, 400/220kV Bijapur Pooling Station is being established as part of '**Transmission scheme for integration of Bijapur REZ in Karnataka**' for integration of 2 GW RE potential under 500 GW generation capacity from non-fossil fuel resources by 2030. Details of transmission system required for immediate evacuation of power from Bijapur PS as given at **Annexure-III**. The transmission scheme has been recommended for implementation through TBCB route in the 18th NCT held on 05.03.2024 and Gazette Notification published on 15.03.2024 by Ministry of Power with implementation time frame of 24 months. Considering the bidding process timeline, the scheme is expected tentatively by July/Aug'2026
- Total Connectivity already granted/ agreed for grant at Davagere PS : 1814.4 MW
- Total additional connectivity capacity under consideration: 1655.8 MW

- For grant of additional connectivity, augmentation of 4x500 MVA, 400/220 kV ICT at Bijapur PS and addition 400 kV D/c (quad) line as an additional evacuation system is required.
  It was proposed to consider Bijapur – Raichur 400 kV 2nd D/c line as additional evacuation system from Bijapur PS for grant of additional connectivity.
- After deliberation it was agreed that the possibility of interconnection of Bijapur PS with Solapur S/s (ISTS) may be analyzed. The interconnection shall provide additional interregional link which shall help in import as well as export of power.
- For grant of connectivity to above applications, it was agreed that all above applications shall be deliberated in next CMETS meeting after identification and finalization of additional interlink between Bijapur PS (SR) and Solapur (WR).

Details of applicants already granted / agreed for grant connectivity/ under process at Bijapur PS are given at **Annexure-H.**

3. Connectivity related proposal at Anantapur-II PS

Sl.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity [requested]	Total Installed Capacity	Connectivity Sought for [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000820 dt. 17.05.2024	Sembcorp Green Infra Wind Energy Pvt. Ltd.	Anantapur, AP	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Ananthpuram PS	300 (Solar)	300	31.05.2027
II.	2200000869 dt. 30.05.2024 at 14:10 Hrs	Ganeko Three Energy Pvt. Ltd.	Kurnool, AP	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Ananthpur-II PS	354 (Hybrid: Solar-255 MW & Wind-99 MW)	300	31.03.2028
III.	2200000872 dt. 30.05.2024 at 16:23 Hrs	Purvah Green Power Pvt. Ltd.	Anantapur, AP	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Ananthpur-II PS	349.8 (Wind)	349.8	01.04.2028
IV.	2200000881 dt. 31.05.2024	Purvah Green Power Pvt. Ltd.	Anantapur, AP	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Ananthpur-II PS	339.9 (Wind)	339.9	01.04.2028
	TOTAL								**1289.7**	

- Additional information submitted by the applicants are as below :
  - M/s Sembcorp Green Infra Wind Energy Pvt. Ltd. (app. no 2200000820) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS.
  - M/s Ganeko Three Energy Pvt. Ltd. (app. no 2200000869) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS
  - M/s Purvah Green Power Pvt. Ltd. (app. no 2200000872) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS
  - M/s Purvah Green Power Pvt. Ltd. (app. no 2200000881) requested to implement 220 kV line bay at ISTS end for termination of DTL under the scope of ISTS
- CTU informed that after closure of Ananthapur PS, 6x1500 MVA, 765/400 kV & 9x500 MVA, 400/220 kV (along with 2x330 MVAr, 765 kV & 2x125 MVAr, 400 kV bus reactors) Anantapur-II PS, Andhra Pradesh has been identified for integration of additional RE capacity (7.5 GW Solar, 4 GW Wind, 3 GW BESS) from Ananthapur area of Andhra Pradesh. Anantapur-II PS has been envisaged with provision of 4 GW injection at 220 kV level and 4 GW injection at 400 kV level. Details of the transmission system are given at **Annexure-IV.** Considering administrative approval and bidding process with implementation time period of 24 months, transmission scheme is expected by Feb. / March 2027.
- Considering Connectivity application of M/s Renew Solar Power Pvt. Ltd. (app. no 2200000780) for 400 MW, pending for grant of connectivity as item no. A.2 and above mentioned applications, total connectivity under consideration for grant is **1689.7 MW**
- System studies has been carried out and it is observed that connectivity may be granted for 1689.7 MW at Anantapur-II PS with existing/under-construction/under bidding transmission system which includes ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region (details given at Annexure-I), Transmission system for integration of Davanagere/ Chitradurga REZ (details as per **Annexure-II**) and Phase-1 of Transmission System for Integration of Anantapur-II (near Rayadurgam) REZs (details as per **Annexure-IV**).

  In the meeting, M/s Sembcorp Green Infra Wind Energy Pvt. Ltd. (app. no 2200000820) requested to consider start date of connectivity as 30.09.2028 and have submitted the request letter, dated 01.07.2024, for same. Similarly, M/s Ganeko Three Energy Pvt. Ltd. (app. No. 2200000869) requested to consider the start date of connectivity as **30.11.2027 instead of 31.03.2028**. M/s Ganeko Three Energy Pvt. Ltd. was requested to submit the request through formal letter.

  After deliberations, it was agreed that connectivity may be granted to the application as per the details below through following connectivity transmission system.

Sl.	Application ID	Name of the Applicant	Connectivity at	Connectivity Quantum (MW)	Connectivity Transmission System under GNA			Start date of Connectivity/	BG details
					Dedicated Connectivity Transmission System (DTL)	ATS	Augmentation other than ATS		
I.	2200000780	Renew Solar Power Pvt. Ltd	Anantapur-II PS	400	• Generation Station of M/s Renew Solar Power Pvt. Ltd – Anantapur-II PS 220 kV S/c line on D/c tower [through stringing of both arms of D/c tower and bunching at both ends to form S/c line for termination in single bay] along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Anantapur-II PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	30.06.2027 * (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 8.0 Cr (@ Rs. 2.0 lakh /MW)
II.	2200000820	Sembcorp Green Infra Wind Energy Pvt. Ltd.	Anantapur-II PS	300	• Generation Station of M/s Sembcorp Green Infra Wind Energy Pvt. Ltd – Anantapur-II PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Anantapur-II PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	30.09.2028* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6.0 Cr (@ Rs. 2.0 lakh /MW)
III.	2200000869	Ganeko Three Energy Pvt. Ltd.	Anantapur-II PS	300	• Generation Station of M/s Ganeko Three Energy Pvt. Ltd – Anantapur-II PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant**	NIL	Details given below.	31.12.2027* (Tentative) Applicant request received vide email dated 05.07.2024 for preponement	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6.0 Cr (@

					• 1 no. 220 kV line bay at Anantapur-II PS for above DTL – **under the scope of ISTS**			of start date of connectivity from 31.03.2028 to 31.12.2027	Rs. 2.0 lakh /MW)
IV.	2200000872	Purvah Green Power Pvt. Ltd.	Anantapur-II PS	349.8	• Generation Station of M/s Purvah Green Power Pvt. Ltd – Anantapur-II PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Anantapur-II PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	01.04.2028* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6.996 Cr (@ Rs. 2.0 lakh /MW)
V.	2200000881	Purvah Green Power Pvt. Ltd.	Anantapur-II PS	339.9	• Generation Station of M/s Purvah Green Power Pvt. Ltd – Anantapur-II PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Anantapur-II PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	01.04.2028* (Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6.798 Cr (@ Rs. 2.0 lakh /MW)

*With availability of common transmission system (augmentation other than ATS) required for effectiveness of Connectivity

Common transmission system (augmentation) other than ATS for M/s Renew Solar Power Pvt. Ltd (app. no 2200000780), M/s Sembcorp Green Infra Wind Energy Pvt. Ltd. (app. no 2200000820), M/s Ganeko Three Energy Pvt. Ltd. (app. no 2200000869), M/s Purvah Green Power Pvt. Ltd. (app. no 2200000872) and M/s Purvah Green Power Pvt. Ltd. (app. no 2200000881) :

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.

- Transmission system for integration of Davanagere/ Chitradurga REZ (details as per **Annexure-II**).
- Transmission System for Integration of Anantapur-II (near Rayadurgam) REZs (**Phase-1**) (details as per **Annexure-IV**)

Note : applicants are required to submit BGs as per above details within one month of the in-principle grant of Connectivity intimation.

The details of Connectivity granted/ agreed for grant at Anantapur-II are enclosed at **Annexure-H**

Members agreed for same.

4. Connectivity related proposal at Bidar PS

Sl.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity / GNA requested	Total Installed Capacity/ GNA	Connectivity Sought [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000753 dt 01.05.2024 at 15:15 Hrs	Sprng Green Energy Pvt. Ltd.	Bidar, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bidar PS	100 (Wind)	100	31.12.2028
II.	2200000763 dt 01.05.2024 at 17:20 Hrs	Ampin Energy Utility Pvt. Ltd.	Bidar, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bidar PS	185.4 (hybrid: Wind-50.4 MW & Solar-135 MW)	150	31.12.2027
III.	2200000760 dt 01.05.2024 at 18:15 Hrs	SAEL Industries Ltd.	Bidar, Karnataka	Connectivity	LoA/ PPA [Allocated capacity : 300 MW at Kurnool-III PS]	Generating station(s), including REGS(s), without ESS	Bidar PS	300 (Solar)	300	22.04.2026
IV.	2200000767 dt 06.05.2024	Sprng Energy Pvt. Ltd.	Bidar, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bidar PS	100 (wind)	100	30.06.2030

V.	2200000892 dt 31.05.2024 at 18:55 Hrs	Ampin Energy Utility Pvt. Ltd.	Bidar, Karnataka	Connectivity	LoA/ PPA [Allocated capacity : 150 MW]	Generating station(s), including REGS(s), without ESS	Bidar PS	185.4 (hybrid: Wind-50.4 MW & Solar-135 MW)	150	31.12.2027
VI.	2200000893 dt 31.05.2024 at 22:45 Hrs	AMP Energy C&I Thirteen Pvt. Ltd.	Bidar, Karnataka	Connectivity	Land BG	Generating station(s), including REGS(s), without ESS	Bidar PS	68.9 (hybrid: Wind-18.9 MW & Solar-50 MW)	50	31.03.2027
	TOTAL								**850**	

- Additional information submitted by the applicants are as below :
  - M/s Sprng Green Energy Pvt. Ltd. (app. no 2200000753) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS.
  - M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000763) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS. Applicant has requested to grant connectivity through already agreed for grant dedicated connectivity transmission system of M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000762)
  - M/s SAEL Industries. Ltd. (app. no 2200000760) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS. Applicant has submitted application on basis of SECI LOA, SECI/C&P/SPD/ISTS-XIV/LOA/SIL/P1/63588 dated 23.04.2024. As per LoA interconnection point is Kurnool-III PS, however SPD is allowed to change project location as per terms & conditions of RfS.
  - M/s Sprng Energy Pvt. Ltd. (app. no 2200000767) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS.
  - M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000892) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS. Applicant sought connectivity on basis of NTPC LoA, NTPC/RE-CS/2023-24/Hybrid/BOO-15-LOA-246 dated 15.05.2024. applicant has submitted agreement for sharing the dedicated connectivity infrastructure with M/s AMP Energy C&I Thirteen Pvt. Ltd.
  - M/s Ampin Energy C&I Thirteen Pvt. Ltd. (app. no 2200000893) requested to implement 220 kV bay for termination of DTL at ISTS under the scope of ISTS and submitted agreement for sharing the dedicated connectivity infrastructure with M/s AMP Energy Utility Pvt. Ltd.

- CTU informed that 3x1500 MVA, 765/400kV & 5x500 MVA, 400/220 kV Bidar PS has been under implementation as part of "**Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka**" with implementation schedule of 09.02.2026.
- Earlier Connectivity granted / agreed for grant at Bidar PS is 1650 MW.
- Additional grant of **connectivity** under consideration is 850 MW
- Connectivity to M/s Sprng Green Energy Pvt. Ltd. (app. no 2200000753) for 100 MW and M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000763) for 150 MW may be granted with under implementation system. However, for grant of **additional** connectivity (600 MW, Sl. No III – VI of above table), augmentation of 1x500 MVA, 400/220 kV 6th ICT (considering N-1 contingency criteria) at Bidar PS is required. Considering implementation schedule of 18 months and other administrative and bidding process, augmentation of transformation capacity may be available tentatively by Feb. / March. 2026, if required in matching time frame.
- Study analysis has been carried out for grant of additional connectivity for 850 MW. From study analysis, it is observed that Connectivity may be granted along with existing/under-construction transmission system which includes ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region (details given at **Annexure-I**), Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka (details as per **Annexure-V**) and augmentation of 1x500 MVA, 400/220 kV 6th ICT at Bidar PS .
- Further, following may be noted
  - M/s Sprng Powerinfra Pvt. Ltd. (application no. 2200000560) has already granted connectivity for 200 MW through 220 kV S/c line with start date of connectivity as 30.06.2027. M/s Sprng Green Energy Pvt. Ltd. may be granted 100 MW connectivity through sharing of dedicated connectivity transmission system of M/s Sprng Powerinfra Pvt. Ltd. (application no. 2200000560).
  - M/s Sprng Vayu Kiran Pvt. Ltd. (app. no 2200000751) has already granted connectivity for 200 MW through 220 kV S/c line with start date of connectivity as 30.06.2029. M/s Sprng Energy Pvt. Ltd. (app. no 2200000767). may be granted 100 MW connectivity through sharing of dedicated connectivity transmission system ōf M/s Sprng Vayu Kiran Pvt. Ltd. (application no. 2200000751)
- M/s SAEL Industries Ltd. stated that it has withdrawn its application at Bidar PS.
- After deliberations, it was agreed that connectivity may be granted to M/s Sprng Green Energy Pvt. Ltd. (app. no 2200000753), M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000763), M/s Sprng Energy Pvt. Ltd. (app. no 2200000767), M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000892) and M/s Ampin Energy C&I Thirteen Pvt. Ltd. (app. no 2200000893) through following connectivity transmission system.

Sl.	Application ID	Name of the Applicant	Connectivity at	Connectivity Quantum (MW)	Connectivity Transmission System under GNA			Start date of Connectivity/	BG details
					Dedicated Connectivity Transmission System (DTL)	ATS	Augmentation other than ATS		
I.	2200000753 dt 01.05.2024 at 15:15 Hrs	Sprng Green Energy Pvt. Ltd. #	Bidar PS	100	• Through dedicated connectivity transmission system of M/s Sprng Powerinfra Pvt. Ltd. (granted for application no. 2200000560 for 200 MW) i.e. Generation Pooling Station of M/s Sprng Powerinfra Pvt. Ltd. – Bidar PS 220 kV S/c line – **all arrangement under the scope of applicant**	NIL	Details given below.	31.12.2028	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 2.0 Cr (@ Rs. 2.0 lakh /MW)
II.	2200000763 dt 01.05.2024 at 17:20 Hrs	Ampin Energy Utility Pvt. Ltd.	Bidar PS	150	• Through dedicated connectivity transmission system of M/s Ampin Energy Utility Pvt. Ltd. (granted to app. no. 2200000762 for 150 MW) i.e. Generating station of M/s Ampin Energy Utility Pvt. Ltd. – Bidar PS 220 kV S/c line - **all arrangement under the scope of applicant**	NIL	Details given below.	31.12.2027	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 3.0 Cr (@ Rs. 2.0 lakh /MW)
III.	2200000767 dt 06.05.2024	Sprng Energy Pvt. Ltd. #	Bidar PS	100	• Through dedicated connectivity transmission system of M/s Sprng Vayu Kiran Pvt. Ltd. (granted to app. no 2200000751 for 200 MW) i.e. Generation Pooling Station of M/s Sprng Vayu Kiran Pvt. Ltd. – Bidar PS 220 kV S/c line – **all arrangement under the scope of applicant**	NIL	Details given below.	30.06.2030	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 2.0 Cr (@ Rs. 2.0 lakh /MW)

IV.	2200000892 dt 31.05.2024 at 18:55 Hrs	Ampin Energy Utility Pvt. Ltd.	Bidar PS	150	• Generating station of M/s Ampin Energy Utility Pvt. Ltd. – Bidar PS 220 kV S/c line along with line bay at generating station end – **under the scope of applicant** • 1 no 220 kV bay for termination of above DTL – **under scope of ISTS**	NIL	Details given below.	31.12.2027	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 3.0 Cr (@ Rs. 2.0 lakh /MW)
V.	2200000893 dt 31.05.2024 at 22:45 Hrs	AMP Energy C&I Thirteen Pvt. Ltd.	Bidar PS	50	• Through dedicated connectivity transmission system agreed for app. no. 2200000892 i.e. Generating station of M/s Ampin Energy Utility Pvt. Ltd. – Bidar PS 220 kV S/c line - **all arrangement under the scope of applicant**	NIL	Details given below.	31.03.2027	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 1.0 Cr (@ Rs. 2.0 lakh /MW)

Intimation for in-principle grant of connectivity shall be issued only after submission of dedicated connectivity infrastructure sharing agreement.

Common transmission system (augmentation) other than ATS for M/s Sprng Green Energy Pvt. Ltd. (app. no 2200000753) for 100 MW and M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000763) for 150 MW :

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.
- Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka (details as per **Annexure-V**)

Common transmission system (augmentation) other than ATS for M/s Sprng Energy Pvt. Ltd. (app. no 2200000767), M/s Ampin Energy Utility Pvt. Ltd. (app. no 2200000892), M/s Ampin Energy C&I Thirteen Pvt. Ltd. (app. no 2200000893) :

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.
- Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka (details as per **Annexure-V**)

- Augmentation of 1x500 MVA, 400/220 kV 6th ICT at Bidar PS

Note : applicants are required to submit BGs as per above details within one month of the in-principle grant of Connectivity intimation.

The details of Connectivity granted/ agreed for grant at Anantapur-II are enclosed at **Annexure-H**

Members agreed for same.

5. Connectivity Related proposal at Kurnool IV

Sl.	Application ID, date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity / GNA requested	Installed Capacity/ GNA (Break up)	Power interchange with ISTS (MW)	Connectivity Sought (MW)	Start date of Connectivity/ GNA (requested)
I.	2200000609 dt. 14.03.2024	Auro Infra Pvt. Ltd.	Nandyala, Andhra Pradesh	Connectivity	-	Standalone ESS (PSP)	Kurnool-IV PS	800 (PSP)	800	800	30.12.2030*
II.	2200000882 dt. 31.05.2024	Indosol Solar Pvt. Ltd.	Paidipalem near Simhadripuram, YSR, AP	Connectivity	-	Standalone ESS (PSP)	Kurnool-V PS	1000 (PSP)	1100	1100	30.06.2030
III.	2200000884 dt 31.05.2024	Indosol Solar Pvt. Ltd.	Paidipalem / Simhadripuram, YSR, AP	Connectivity	-	Standalone ESS (PSP)	Kurnool-V PS	1200 (PSP)	1200	1320	30.06.2030
IV.	2200000843 dt 25.05.2024	SAEL Industries Ltd.	Anatapuramu, YSR Kadapa, AP	Connectivity	Land BG Route	Generating station(s), including REGS(s), without ESS	Kurnool-III PS	300 (Solar)	300	300	16.06.2026
V.	2200000844 dt 25.05.2024	SAEL Industries Ltd.	,YSR Kadapa, Kurnool, AP	Connectivity	Land BG Route	Generating station(s), including REGS(s), without ESS	Kurnool-III PS	300 (Solar)	300	300	16.06.2026
	TOTAL									**3820**	

*Vide letter dated 23.05.2024, M/s Auro Infra Pvt. Ltd. have requested to consider the start date of connectivity as 30.12.2030 instead of 31.12.2027, as provided in the application.

- Additional information submitted by the applicants are as below
  - Application at Si. No. I to III of above table are standalone PSP with start date of connectivity as 2030. Applicants are requested to share status of approval with CEA/ State Govt/ concerned ministries. Applicants may present the case.
  - M/s Auro Infra Pvt. Ltd. has requested to implement terminal bay at ISTS end for termination of DTL.
  - M/s Indosol Solar Pvt. Ltd. has requested to implement terminal bay at ISTS end for termination of DTL for both applications no. 2200000882 & 22000000884.
  - As M/s SAEL has sought connectivity at Kurnool-III PS, which has already been closed for grant of additional connectivity for injection of power. Further, M/s SAEL has requested to implement terminal bay at ISTS end for termination of DTL for both applications no. 2200000843 & 2200000844.

- CTU mentioned that after closure of Kurnool-III PS for grant of addition connectivity for injection of power, 6x1500 MVA, 765/400 kV & 10x500 MVA, 400/220 kV Kurnool-IV PS, near Aspiri, has planned for integration of additional RE capacity (7.5 GW). Kurnool-IV has been envisaged with expected 4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level. Details of the transmission system is given at **Annexure-VI.** Considering administrative approval and bidding process with implementation time period of 24 months, transmission scheme is expected by Feb / Mar, 2027.
- It may also be noted that as per 19th NCT meeting and a separate meeting held on 28.05.2024 in CEA (MoM attached at **Annexure-I**), wherein it was decided that PSP shall neither be consider as drawl nor injection during high RE scenario.
- Though, Kurnool-V has been identified as part of 500 GW report, however transmission system shall be reviewed and finalized in due course of time. Further, sufficient margins are available for grant of connectivity at Kurnool-IV. Accordingly, system studies have been carried out and it is observed that connectivity may be granted for 3220 MW [800 MW +1100 MW +1320 MW] and 600 MW RE at Kurnool-IV PS with existing/under-construction/under bidding transmission system which includes ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region (details given at Annexure-I), Transmission system for integration of Davanagere/ Chitradurga REZ (details as per **Annexure-II**) and **Phase-1** of Transmission System for Integration of Kurnool-IV REZs (details as per **Annexure-VI**).

  Further, considering start date of connectivity sought of all above 3 nos. PSP based standalone ESS projects as in 2030 (6 years ahead), it is proposed to implement 400 kV line bays for termination of dedicated connectivity lines at ISTS Kurnool-IV under the scope of applicant.

- M/s Auro Infra Pvt. Ltd. stated that Aspiri area, where Kurnool-IV PS has been planned, is about 125-150 Km away from the identified location of its PSP project. Therefore, it is requested that with identification of transmission system for Kurnool-V, connectivity may be shifted from Kurnool-IV to Kurnool-V, if it is close to its project location.

  M/s Indosol Solar Pvt. Ltd. mentioned that it has requested to grant connectivity for applications no. 2200000882 and 2200000884 at Kurnool-V, therefore connectivity may be shifted from Kurnool-IV to Kurnool-V, after identification of transmission system for Kurnool-V.

- CTU stated that at present transmission system for Kurnool-IV has been identified and is being taken up for implementation and transmission scheme for Kurnool-V is yet to be reviewed. Further, under CERC GNA Regulations, CTU cannot hold the applications and have to process the applications in time bound manner. In view of above, presently Connectivity to all above applications may be granted at Kurnool-IV. Regarding shifting of connectivity from Kurnool-IV to Kurnool-V for all PSP applications, it is to mention that applicant may submit their request after finalization of Kurnool-V system and shifting of connectivity from Kurnool-IV to Kurnool-V shall be considered on basis of prevailing conditions at that time.

- After detailed deliberation, it was agreed that connectivity may be granted to M/s Auro Infra Pvt. Ltd. (application no. 2200000609), M/s Indosol Solar Pvt. Ltd. for applications no. 2200000882 & 22000000884 and M/s SAEL Industries Ltd. for application no. 2200000843 and 2200000844 at Kurnool-IV PS through following connectivity transmission system.

Sl.	Application ID	Name of the Applicant	Connectivity at	Connectivity Quantum (MW)	Connectivity Transmission System under GNA			Start date of Connectivity/	BG details
					Dedicated Connectivity Transmission System (DTL)	ATS	Augmentation other than ATS		
I.	2200000609	Auro Infra Pvt. Ltd.	Kurnool-IV PS	800	• Generation Station of M/s Auro Infra Pvt. Ltd.– Kurnool -IV PS 400 kV D/c line along with line bay at generation PS – **under the scope of applicant** • 2 no. 400 kV line bay at Kurnool-IV PS for above DTL – **under the scope of applicant**	NIL	Details given below.	30.12.2030	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 16.0 Cr (@ Rs. 2.0 lakh /MW)
II.	2200000882	Indosol Solar Pvt. Ltd.	Kurnool-IV PS	1100	• Generation Station of M/s Indosol Solar Pvt. Ltd. – Kurnool -IV PS 400 kV D/c line along with line bay at	NIL	Details given below.	30.06.2030	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA

					generation PS – **under the scope of applicant** • 2 no. 400 kV line bay at Kurnool-IV PS for above DTL – **under the scope of applicant**				• Conn-BG-3 : Rs. 22.0 Cr (@ Rs. 2.0 lakh /MW)
III.	2200000884	Indosol Solar Pvt. Ltd.	Kurnool-IV PS	1320	• Generation Station of M/s Indosol Solar Pvt. Ltd.– Kurnool -IV PS 400 kV D/c line along with line bay at generation PS – **under the scope of applicant** • 2 no. 400 kV line bay at Kurnool-IV PS for above DTL – **under the scope of applicant**	NIL	Details given below.	30.06.2030	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : NA • Conn-BG-3 : Rs. 26.40 Cr (@ Rs. 2.0 lakh /MW)
IV.	2200000843	SAEL Industries Ltd.	Kurnool-IV PS	300	• Generation Station of M/s SAEL Industries Ltd. – Kurnool -IV PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Kurnool-IV PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	31.03.2027 #(Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6 Cr (@ Rs. 2.0 lakh /MW)
V.	2200000844	SAEL Industries Ltd.	Kurnool-IV PS	300	• Generation Station of M/s SAEL Industries Ltd. – Kurnool -IV PS 220 kV S/c line along with line bay at generation PS – **under the scope of applicant** • 1 no. 220 kV line bay at Kurnool-IV PS for above DTL – **under the scope of ISTS**	NIL	Details given below.	31.03.2027 #(Tentative)	• Conn-BG1 : Rs. 50 lakhs • Conn-BG2 : Rs.3.0 Cr (towards bay) • Conn-BG-3 : Rs. 6 Cr (@ Rs. 2.0 lakh /MW)

#With availability of common transmission system (augmentation other than ATS) required for effectiveness of Connectivity. Firm date of start date of connectivity shall be informed after successful transfer of SPV.

Common transmission system (augmentation) other than ATS for M/s Auro Infra Pvt. Ltd. (app. no 2200000609), M/s Indosol Solar Pvt. Ltd. (app. no 2200000882 & 2200000884), M/s SAEL Industries Ltd. (app. no 2200000842 & 2200000844) :

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.
- Transmission System for Integration of Kurnool-IV PS (Near Aspiri) (**Phase-1**) details as per **Annexure-VI**)

Note : applicants are required to submit BGs as per above details within one month of the in-principle grant of Connectivity intimation.

Members agreed for same.

6. Connectivity Related proposal at Karur PS

Sl.	Application ID, date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity / GNA requested	Installed Capacity/ GNA (Break up)	Power injection to ISTS (MW)	Start date of Connectivity/ GNA (requested)
I.	2200000818 dt.25.05.2024	JSW Neo Energy Ltd..	Karur, Tamil Nadu	Connectivity	Land BG Route	Generating station(s), including REGS(s), without ESS	Karur PS	175 (Wind : 110 MW & Solar : 65 MW)	150	31.05.2025

- Karur PS was planned for 2500 MW potential RE capacity. Presently, Karur PS is under operation with 2x500 MVA, 400/230 kV ICTs. Further, 2x500 MVA, 400/230 kV ICTs (3rd & 4th) are under implementation with SCOD as 12.09.2025. The Connectivity corresponding to about 1349.6 MW has already been granted/ agreed for grant at Karur PS. Margins are available for grant of additional connectivity corresponding to 150 MW.
- Applicant has sought enhancement of connectivity against application no. 1200003212, already granted connectivity for 150 MW.
- CTU informed that M/s JSW Renew Energy Ltd. (application no. 22000002868) and M/s JSW Neo Energy Ltd. (application no. 22000003212) have granted Connectivity for 270 MW and 150 MW respectively at Karur PS through separate 230 kV Single circuit for each application. Further, M/s First Energy Pvt. Ltd. was granted in-principle grant of connectivity for 100 MW (application no. 2200000441) through sharing of dedicated connectivity infrastructure of M/s JSW Neo Energy Ltd. (application no. 22000003212).

- M/s JSW informed that it has implemented D/c tower line for stringing of both circuits for applications no. 22000003212 and 22000002868. Further, length of dedicated connectivity line(s) is about 4 Km and both pooling stations (for application no. 22000002868 & 22000003212) are adjacent.
- Accordingly, CTU mentioned that connectivity corresponding to 520 MW (270 MW +150 MW +100 MW) has already been granted at Karur PS through generation pooling stations of M/s JSW. With consideration of requested connectivity for 150 MW, total connectivity granted / considered for grant through above mentioned generation Pooling Stations shall be 670 MW. In view of above, CTU proposed to grant connectivity to M/s JSW Neo Energy Ltd. for application no. 2200000818 (150 MW) at its Pooling Station (for application no. 22000003212) through interconnect of 230 kV Pooling Stations of M/s JSW Neo Energy Ltd. (for application no. 22000003212) and M/s JSW Renew Energy Ltd. (for application no. 22000002868). The schematic for proposed arrangement is given at **Exhibit-A**. The proposed interconnection shall provide evacuation of 670 MW power through 230 kV 2xS/c lines and also enhance the reliability for each project.
- M/s JSW Neo Energy Ltd. have requested for change in fuel source from Hybrid to wind. In this regard, CTU mentioned that in line with CERC order dated 12.05.2024 in petition no. 9/MP/2024, after submission of application, change of fuel source can be made only after final grant of connectivity. Accordingly, applicant may submit its request after issuance of final grant of connectivity for above mentioned application.
- After detailed deliberations, it was agreed to grant connectivity to M/s JSW Neo Energy Ltd. for 150 MW (application no. 2200000818) through the following connectivity transmission system.

Connectivity Transmission system for M/s JSW Neo Energy Ltd. (application no. 2200000818 for 150 MW):

i. **Dedicated Connectivity Tr. System**

- Through dedicated connectivity transmission system allocated to M/s JSW Neo Energy Ltd. for application no. 22000003212 (for 150 MW) and M/s First Energy Pvt. Ltd. (application no. 22000000441 for 100 MW) i.e. Generation Pooling Station of M/s JSW Neo Energy Ltd. – Karur PS 230 kV S/c line – **all arrangement under the scope of applicant**.
- Interconnection of 230 kV generation pooling stations of M/s JSW Neo Energy for application no. 22000003212 and M/s JSW Renew Energy Ltd. (application no. 22000002868) through bus extension / suitable mechanism – **all arrangement under the scope of applicant**.

ii. **Associated Transmission System for GNA: Nil**

iii. **Common Transmission system required for effectiveness of connectivity/GNA (augmentation other than ATS) :**

- ISTS Network Expansion scheme in Western Region & Southern Region for export of surplus power during high RE scenario in Southern Region as per **Annexure-I**.
- Augmentation of 2x500 MVA, 400/230 kV ICTS (3rd & 4th) at Karur PS.

Start date of Connectivity: 13.09.2025 with the availability of common transmission system required for effectiveness of Connectivity/ GNA.

Further, applicant is required to submit BGs as per following details within one month of the in-principle grant of intimation:

Conn-BG1 of Rs. 50 lakhs + Conn-BG3 of Rs. 3.0 Cr. (@Rs.2 lakhs/MW).

It was also agreed that as M/s First Energy Pvt. Ltd has been granted connectivity through sharing of dedicated connectivity infrastructure of M/s JSW Neo Energy Ltd. and dedicated connectivity infrastructure sharing agreement is yet to be submitted by both parties, therefore, intimation for in-principle grant of connectivity to M/s JSW Neo Energy Ltd. (application no. 2200000818) for 150 MW shall be issued only after submission of agreement for sharing of dedicated connectivity infrastructure.

Members agreed for above.

7. Connectivity Related proposal at Kadapa-II PS

Sl.	Application ID, date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity / GNA requested	Installed Capacity/ GNA (Break up)	Power injection to ISTS (MW)	Start date of Connectivity/ GNA (requested)
I.	2200000885 dt.31.05.2024	Shirdi Sai Electricals Limited	Rachayapeta/ Gopavaram, YSR, Andhra Pradesh	Connectivity	-	Satndalone ESS (PSPP)	Kadapa-II	990 MW	900	30.09.2030

CTU informed that applicant has sought connectivity at Kadapa-II as per above details. However, transmission scheme for Kaddpa-II is yet to be finalized. Applicant was suggested to consider grant of connectivity at existing Cuddapah S/s / Ananthapuram PS. Representative mentioned that it will submit the details after analysis of suggested locations.

8. Connectivity Related proposal at Gadag-II PS

Sl.	Application ID & date	Name of the Applicant	Project Location	Application for: Connectivity/ GNA/ GNARE	Eligibility criterion for application	Nature of Applicant	Location details of Connectivity (as requested)	Total Installed Capacity/ GNA	Connectivity Sought [Power injection to ISTS (MW)]	Start date of Connectivity/ GNA (requested)
I.	2200000825 dt. 20.05.2024	NTPC Renewable Energy. Ltd.	Taralakatt, Koppal, Karnataka	Connectivity	LoA	Generating station(s), including REGS(s), without ESS	Gadag-II PS	76 (wind)	76	16.04.2026
II.	2200000855 dt. 28.05.2024	Serentica Renewables INDIA 11 PVt. Ltd.	Bennikal, Bellary, Karnataka	Connectivity	LoA (contract capacity : 200 MW)	Generating station(s), including REGS(s), without ESS	Gadag-II PS	250 (wind)	250	31.12.2027

NTPC Renewable Energy. Ltd. has sought connectivity for 76 MW at Gadag-II PS and requested to implement 220 kV line bays for termination of DTL at ISTS under the scope of ISTS. Connectivity has been sought on basis of multilocational SECI LoA, SECI/C&P/HPD/T7/LOA-A3/NREL/P1/63858 dated 03.05.2024, for contract capacity of 300 MW.

M/s Serentica Renewables INDIA 11 PVt. Ltd. has sought connectivity for 76 MW at Gadag-II PS and requested to implement 220 kV line bays for termination of DTL at ISTS under the scope of ISTS Applicant has sought connectivity on basis of NTPC multilocation LOA, NTPC/RE-CS/2023-24/FDRE/BOO-12-LOA-241 dated 22.04.2024.

CTU informed that margins are not available at Gadag-II PS for grant of additional connectivity and both Gadag-II PS & Koppal-II PS have already closed for grant of additional connectivity. In view of above, it was opined that applicant may opt for other locations, viz. Bijapur/ Davanagere/ Bellary PS, for grant of connectivity.

9. Proposal for grant of GNA

Application ID, date of submission	Name of the Applicant	Application for: Connectivity/ GNA/ GNARE	GNA Breakup (Within & outside region)	Eligibility under GNA Regulations 2022	STU details	Nature of Applicant	Location details of Connectivity / GNA requested	~~Installed Capacity~~/ GNA quantum	Start date of GNA (requested)	End date of GNA (requested)
2200000857, dt. 28.05.2024	Linde India Ltd.	GNA	Within region : 8 MW Outside region : 0 MW	GNA under 17.1 (ii)	APTRANSCO	Drawee entity connected to Intra State of APTRANSCO	132 kV Cherivi S/s of APTRANSCO	8 MW	16.07.2024	30.06.2039

M/s Linde India Ltd. has sought grant of GNA as per above details. Applicant has submitted NoC dated 16.05.2024, issued by APTRANSCO. During the meeting applicant requested to consider start date of GNA as 01.01.2025. Applicant was requested to share the details regarding how existing 8 MW load shall be met till grant of GNA for 8 MW. After detailed deliberations, it was decided that application shall be discussed in next CMETS-SR meeting.

10. Proposal to review the Connectivity Transmission system of already agreed Connectivity at Karur PS

In 31st CMETS-SR, held on 30.05.2024, it was agreed to grant connectivity to M/s Amplus Theta Energy Pvt. Ltd for 65 MW (application no. 2200000699) through 230 kV S/c line & M/s Amplus Sun Beat Pvt. Ltd for 80 MW (application no. 2200000698) through sharing of connectivity infrastructure of M/s Amplus Theta Energy Pvt. Ltd. at Karur PS

It may be noted that M/s Nannai Solar Park Pvt. Ltd. has been granted in-principle grant of connectivity for 93 MW (application no. 2200000628) through 220 kV S/c separate line bay at Karur PS. Further, sufficient margins are available in the bay allocated to M/s Nannai Solar Park Pvt. Ltd for accommodation of connectivity agreed for grant to M/s Amplus Theta Energy Pvt. Ltd for 65 MW (application no. 2200000699) & M/s Amplus Sun Beat Pvt. Ltd. for 80 MW (application no. 2200000698).

For optimal utilization of ISTS, the proposal for connectivity to M/s Amplus Sun Beat Pvt. Ltd. & M/s Amplus Theta Energy Pvt. Ltd. may be reviewed. After deliberation, it was agreed that M/s Amplus Sun Beat Pvt. Ltd. & M/s Amplus Theta Energy Pvt. Ltd. may be granted connectivity through dedicated connectivity transmission system of M/s Nannai Solar Park Pvt. Ltd. and already agreed dedicated connectivity transmission system may be revised accordingly.

Therefore, following are revised in the connectivity transmission system for M/s Amplus Sun Beat Pvt. Ltd. & M/s Amplus Theta Energy Pvt. Ltd.

a. **Revised Connectivity Transmission system under GNA for M/s Amplus Theta Energy Pvt. Ltd. (application no. 2200000698 for 65 MW):**

Earlier agreed Connectivity transmission system [as per 31st CMETS-SR, held on 30.05.2024]	Modified connectivity transmission system
Dedicated Connectivity Tr. System: • Generation Pooling Station of M/s Amplus Theta Energy Pvt. Ltd. – Karur PS 230 kV S/c line along with line bay at generation pooling end – under the scope of applicant. • 1 no. 230 kV line bay at Karur PS for termination of above DTL – under the scope of ISTS	**Dedicated Connectivity Tr. System:** • Through sharing of dedicated connectivity transmission system granted to M/s Nannai Solar Park Private Ltd. for application no. 2200000628 (for 93 MW) i.e. M/s Nannai Solar Park Private Ltd. –Karur PS 230 kV S/c line – all arrangement under the scope of applicant.
• Conn-BG1 - Rs. 50 lakhs • Conn-BG2 - Rs. 3.0 Crs. (towards implementation of terminal bay under ISTS) • Conn-BG3 - Rs. 1.30 Crs. (@Rs.2 lakhs/MW)	• Conn-BG1 - Rs. 50 lakhs • Conn-BG2 - NA • Conn-BG3 - Rs. 1.30 Crs. (@Rs.2 lakhs/MW)

b. Revised Connectivity Transmission system under GNA for M/s Amplus Sun Beat Pvt. Ltd. (application no. 2200000699 for 80 MW):

Earlier agreed Connectivity transmission system [as per 31st CMETS-SR, held on 30.05.2024]	modified connectivity transmission system
Dedicated Connectivity Tr. System: • Through dedicated connectivity transmission of M/s Amplus Theta Energy Pvt. Ltd. for application no. 2200000699 (for 65 MW) i.e. Generation Pooling Station of M/s Amplus Theta Energy Pvt. Ltd. – Karur PS 230 kV S/c line – all arrangement under the scope of applicant.	**Dedicated Connectivity Tr. System:** Through sharing of dedicated connectivity transmission system granted to M/s Nannai Solar Park Private Ltd. for application no. 2200000628 (for 93 MW) i.e. M/s Nannai Solar Park Private Ltd. –Karur PS 230 kV S/c line – all arrangement under the scope of applicant.

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Annexure-I

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

Sl.	*Scope of the Transmission Scheme*	*Capacity /km*
1.	Narendra New (GIS) – Pune (GIS) 765kV D/c line with 1x330MVAr switchable line reactor on each ckt at both ends	340 km • 765 kV line bays -2 (GIS) (at Narendra New) • 765 kV line bays -2 (GIS) (at Pune) • 765 kV, 330 MVAr SLR – 2 nos (7 X 110 MVAr incl. 1 switchable spare unit) at Pune (GIS) • 765 kV, 330 MVAr SLR – 2 nos (6 X 110 MVAr) at Narendra (New) (GIS)
2.	Upgradation of Narendra (New) (GIS) to its rated voltage of 765 klevel along with 4x1500 MVA transformer and 2x330 MVAr Bus Reactor.	• 765/400 kV, 1500 MVA- 4 no. (13 X 500 MVA incl. 1 spare unit) • 765 kV ICT bays- 4 nos. (GIS) • 400 kV ICT bays- 4 nos. (GIS) • 765 kV, 330 MVAr BR – 2 nos. (7 X 110 MVAr incl. 1 switchable spare unit to be used for both bus/line reactors) • 765 kV Bus Reactor bays – 2 nos. (GIS)

Annexure-II

Transmission Scheme for integration of Davanagere / Chitradurga REZ in Karnataka

i) Establishment of 765/400kV 4x1500 MVA, 400/220kV 4x500 MVA Pooling Station near Davanagere / Chitradurga, Karnataka with provision of two (2) sections of 4500 MVA each at 400kV level and provision of four (4) sections of 2500 MVA each at 220kV level

ii) Upgradation of Narendra New – Madhugiri 765kV D/c line (presently charged at 400kV level) at its rated 765kV voltage level

iii) Upgradation of Madhugiri {Tumkur(Vasantnarsapura)} to its rated voltage of 765kV level alongwith 3x1500 MVA, 765/400kV ICTs and 2x330 MVAr, 765kV bus reactors

iv) LILO of Narendra New – Madhugiri 765kV D/c line at Davanagere / Chitradurga 765/400kV PS (~35 km) {with 240 MVAr SLR at both ends on Narendra New – Davanagere section (~280 km) and 330 MVAr SLR at Davanagere end on Davangere – Madhugiri section (~200 km)}

v) 400 kV line reactors (80 MVAr) on both ends of Narendra New – Madhugiri 765kV D/c line shall be utilized as bus reactors at respective 400kV substations based on availability of bays or may be utilized as line reactor / bus reactor at other line / substation as per requirements.

vi) 2x330 MVAr (765kV) bus reactors at Davanagere/ Chitradurga PS

Annexue-III

Transmission Scheme for integration of Bijapur REZ in Karnataka

- Establishment of 5x500 MVA, 400/220kV Pooling Station near Bijapur (Vijayapura) area, Karnataka
- Bijapur PS – Raichur New 400kV (Quad ACSR moose) D/c line with 80 MVAr SLR at Bijapur end on both circuits (~150 km)
- 2x125MVAr 420 kV bus reactors at Bijapur PS

Annexure-IV

Transmission System for Integration of Anantapur-II (Near Rayadurgam) REZs (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 kV & 10x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station 765/400 along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

Phase-I (4 GW)

- Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (1.5 GW injection at 220 kV level and 2.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits

Phase-II (3.5 GW)

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2.5 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

Annexure-V

Transmission Scheme for Solar Energy Zone in Bidar (2500 MW), Karnataka

- Establishment of 3x1500MVA (765/400kV), 5x500MVA (400/220kV)
- Bidar PS with 765kV (1x240 MVAR) and 400kV (1x125 MVAR) Bus Reactor
- Bidar PS – Maheshwaram (PG) 765kV D/C line with 240 MVAr SLR for each circuit at Bidar PS end

Annexure-VI

Transmission System for Integration of Kurnool-IV (Near Aspiri) REZ (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 & 10x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors

- Kurnool-IV – Veltoor-II 765kV D/c line (about 180 kms) with 330 MVAR SLR at Kurnool-IV on both circuits
- Veltoor-II– Bidar 765kV D/c line (about 200 kms) with 330 MVAR SLR at Bidar end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta
- Veltoor-II– Veltoor TS 400 kV (quad) D/c line (about 60 kms)
- Veltoor-II– Udandpur 400 kV (quad) D/c line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

Phase-I (4.5 GW)

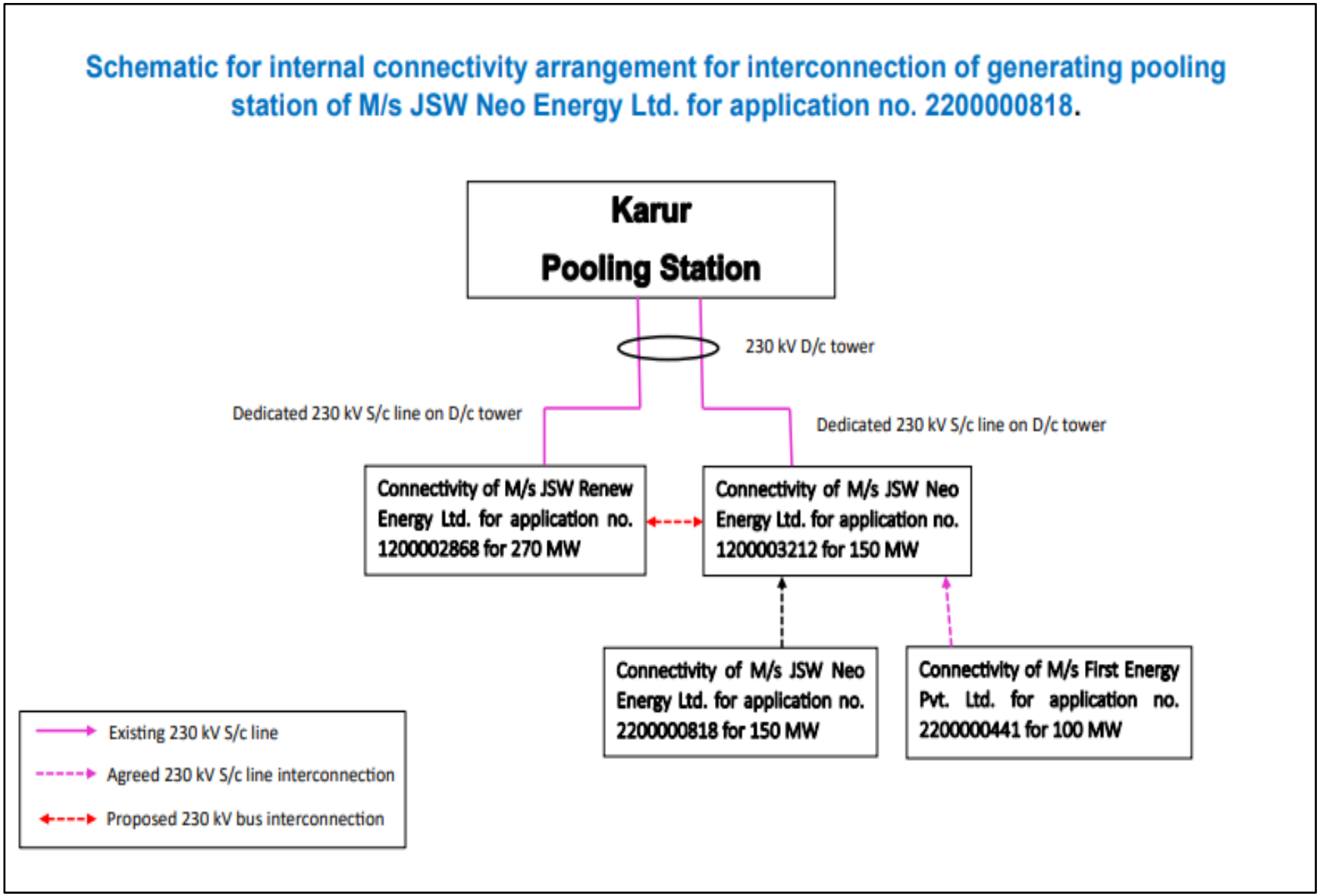
- Establishment of 4x1500 MVA, 765/400 & 4x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (1.5 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Kurnool-IV – Bidar 765kV D/c line (about 330 kms) with 330 MVAR SLR at both end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta

Phase-II (3 GW)

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- LILO of Kurnool-IV – Bidar 765kV D/c line at Veltoor-II (about 60 kms)
- Veltoor-II– Veltoor TS 400 kV D/c (quad) line (about 60 kms)
- Veltoor-II– Udandpur 400 kV D/c (quad) line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

Exhibit-A

Schematic for internal connectivity arrangement for interconnection of generating pooling station of M/s JSW Neo Energy Ltd. for application no. 2200000818.



Annexure-A

List of participants to 32nd Consultation Meeting for Evolving Transmission Scheme in SR held on 28.06.2024.

SRPC

1.	Shri Asit Singh	MS

GRID-INDIA

1.	Shri S P Kumar	ED, SRLDC
2.	Shri T Mutukumar	Sr. DGM, SRLDC
3.	Shri A Janardhan	Ch. Mgr, SRLDC

POWERGRID

1.	Shri G Dhananjaya	Sr. GM, SRTS-II

STU

1.	Shri T. Jagath Reddy	Director/Transmission, TRTRANSCO
2.	Shri R Jayakumar	Director (Transmission), KPTCL
3.	Shri B. Narsinga Rao	Director/Grid Operations, TRTRANSCO
4.	Shri P. Suresh Babu	CE /Power Systems, TRTRANSCO
5.	Shri M. Sudarsan	SE /SYSTEM STDUIES, TANTRANSCO
6.	Shri G. Ramesh Kumar	EE /SYSTEM STUDIES, TANTRANSCO
7.	Ms. J. Kalaiselvi	AEE /System Studies, TANTRANSCO
8.	Shri M. Suthuraman	SE /CERC, TANGEDCO
9.	Dr. R. Kathiravan	EE /CERC, TANGEDCO
10.	Shri R. Kumutha	AEE /CERC, TANGEDCO
11.	Shri Vishwanath Naik	Chief Engineer (P&C), KPTCL
12.	Ms. Gayatri Kulkarni	EE, KPTCL
13.	Ms. Divya Prabha H	AEE, KPTCL

SECI

1.	Shri R. K. Agarwal	Consultant

CTUIL

1.	Shri V Thiagrajan	CGM
2.	Shri Anil Kumar Meena	GM
3.	Shri Ajay Dahiya	DGM
4.	Shri Ankush Patel	Chief Manager
5.	Shri Venkatesh Gorli	Chief Manager
6.	Ms. Himanshi	Manager
7.	Shri Umesh Dhanuk	Engineer

Connectivity Applicants

1.	Shri Abhilash Yadav	AMPIN Energy Utility Private Limited
2.	Shri Rohit Kumar Sharma	AMPIN Energy Utility Private Limited
3.	Shri Sachin Jindal	Enfinity Global
4.	Dr. Vasundhara Sen	First Energy Private Limited
5.	Ms. Madhu Rejeti	Fourth Partner Energy Pvt Ltd
6.	Shri Ayush Jain	Ganeko Four Energy Private Limited (Solarpack)
7.	Shri Ayush Jain	Ganeko Three Energy Private Limited (Solarpack)
8.	Shri Deepak Consul	Gentari Renewables India
9.	Shri Vivek Hooda	Green Infra Wind Energy Private Limited
10.	Shri Ankur Pathak	Jade Hybren Private Limited
11.	Shri Pritpal Singh	JSW Group, Mumbai
12.	Shri Abhilash Yadav	AMPIN Energy Utility Private Limited
13.	Shri Animesh Manna	NTPC Renewable Energy Limited
14.	Shri Sushanta Basumatary	Purvah Green Power Private Limited

15.	Shri Farrukh Aamir	Purvah Green Power Private Limited
16.	Shri Adrit Palchoudhury	Purvah Green Power Pvt. Ltd.
17.	Shri Mohit Jain	Renew Solar Power Private Limited
18.	Shri Ajay Tiwari	SAEL Industries
19.	Shri Pankaj Kumar Sharma	SAEL Industries Limited
20.	Ms. Aakanksha Bhisikar	Serentica Renewables India Private Limited
21.	Shri Vishnu Pad Saha	Shirdi Sai Electricals Limited
22.	Shri Chinmay Sirdeshmukh	Sprng Energy
23.	Shri Gaurav Kumar	Sunsure Energy
24.	Shri Georgie Thomas	UPC Renewables
25.	Shri Ashish Sontakke	UPC Renewables India
26.	Shri Georgie Thomas	Vismaya Renewables

*** * * * ***

Annexure-B

KARNATAKA POWER TRANSMISSION CORPORATION LTD

Telephone : 091-080-22210416
Fax : 091-080-22292204

Office Of The
Chief Engineer, Elecy.,
Planning & Co-ordination
Kaveri Bhavan
Bangalore-560 009.

No: CEE(P&C)/SEE(PLG)/EE(PSS-S)/KCO-97/53439 Date : 18.03.2024

18825-28 28 MAR 2024

The Chief Operator Officer,
Central Transmission Utility of India Ltd
Saudamini, 1st Floor, plot No.2,
Sector-29, Gurugram-122001,(Haryana)

Sub: Utilization of 220kV terminal bay at 400/220kV Yelahanka (Singanayakanahalli) PGCIL sub-station for proposed/upcoming residential load of 250MW at Dr. Shivaram Karanth BDA layout between Dobballapura & Hesarghatta road near Ganigarahalli in Bengaluru - reg.

Ref: CEE/TZB/SEE(O)/AE-1/F-1480(303)/2023-24/19902-05 dated on 06.02.2024.

Anent to the above subject, it is informed that residential load to an extent of about 250MW is coming up at Dr. Shivaram Karanth BDA layout between Dobballapura & Hesarghatta road near Ganigarahalli in Bengaluru. In this regard it is proposed to establish new 220kV sub-station by drawing 1200sqmm, 220kV UG Cable from 400220kV Yelahanka (Singanayakanahalll) PGCIL sub-station.

As per Conditions of Supply of Electricity of Distribution Licensees in the State of Karnataka "*In case of layouts/buildings/cluster of buildings/building blocks situated in a common site requiring power supply and the total requisitioned load in such cases is more than 7500 KVA, the developer/Applicant shall provide the space for erection of sub-station and also bear the entire charges of such a sub-station and associated lines/equipments*".

Accordingly the developer/consumer will construct sub-station with appropriate capacity at their own cost and hand over the land along with sub-station to KPTCL for future maintenance.

Further, in view of the upcoming 250MW load which is proposed to be fed from 400/220kV Yelahanka (Singanayakanahalli) PGCIL station, it is opined that additional

1x500MVA, 400/220kV power transformer is required keeping in view n-1 outage of 2X500MVA transformers at 400kV Yelahanka.

Hence it is hereby requested to provide additional 500MVA Power Transformer at 400/220kV Yelahanka (Singanayakanahalli) PGCIL sub-station and consent for utilization of 220kV terminal bay at 400kV Yelahanka sub-station duly placing the proposal in the ensuing Consultation meeting for Evolving Transmission Scheme in Southern Region

Yours faithfully,

Chief Engineer, Electricity,
(Planning & Co-ordination)

Annexure-C

ಕರ್ನಾಟಕ ಸೌರಶಕ್ತಿ ಅಭಿವೃದ್ಧಿ ನಿಗಮ ನಿಯಮಿತ
KARNATAKA SOLAR POWER DEVELOPMENT CORPORATION LIMITED
(JV Company of SECI, GOI & KREDL, GOK)

No. KSPDCL/F-219/2024-25/202-04 **Date:31/05/24**

To,

The Chief Operating Officer,
CTUIL, Saudamini, 1st Floor,
Plot No– 2, Sector– 29,
Gurugram – 122 001, Haryana.

Sir,

Sub: Expansion of Tumkur (Pavagada) Pooling station with additional 500MVA ICT's – additional land requirement – regarding granting connectivity approval from existing 400/220kV Pavagada Substation – Reg.

Ref:
1. Minutes dated: 16-01-2024 of 26th CMETS-SR meeting held on 29-12-2023.
2. CTU Letter no. CTU/S/5/Conn/INT-aA-2200000339 dated 31.01.2024.
3. T.O. Letter No. KSPDCL/2023-24/1140 dated 02-01-2024 addressed to DC, Tumakuru for fixation of land price.
4. Minutes of the meeting Dtd.21.02.2024 under the Chairmanship of Deputy Commissioner, Tumakuru for fixation of land price.
5. T.O. Letter No. KSPDCL/F-219/2024-25/35 dated 03-04-2024 addressed to PGCIL.
6. Proceedings of the Meeting Dtd.29.05.2024 held by KSPDCL & PGCIL with Land owners.
7. T.O. Letter No. KSPDCL/F-219/2024-25/35 dated 31.05.2024 addressed to PGCIL.

In continuation to the 26th CMETS-SR meeting held on 29.12.2023, GNA connectivity for 300MW to KSPDCL has been granted from the Tumkur-II PS by CTU vide letter cited under ref (2). CTU has further clarified that after getting confirmation towards land acquisition and possibility of Tumkur (Pavagada) PS augmentation, grant of connectivity at existing 400/220kV Pavagada PS shall be considered. In this regard, following actions have been initiated by KSPDCL;

1) The Deputy Commissioner, Tumkur was requested vide letter cited under ref (3) for fixing the rate for purchase of land required for expansion of existing 400/220kV Pavagada PS.

2) The Deputy Commissioner, Tumakuru in the meeting Dtd.21.02.2024 has fixed the price at **Rs.2,62,30,632/-** (i.e. Rs.19,35,840/- per Acre) as per the "Right to Transparency and Adequate Redress in Land Acquisition Process Resettlement and Reconstruction Act 2013" for the earmarked lands (Lease lands of KSPDCL) totalling to an extent of 13Acres 22Guntas of Kyathaganacherlu village for proposed expansion of 400/220kV PGCIL Tumkur (Pavagada) Pooling station.
3) As per the minutes of the above meeting, KSPDCL requested the concerned Depts. to verify and furnish the compensation assessments for trees & others assets existing in the above said additional lands. KSPDCL have received the compensation assessments from the concerned Depts. on 23.05.2024.
4) A meeting was held between KSPDCL, PGCIL and land owners of Sy.No.93, 97 & 100/2 of Kyathaganacherlu village on 29.05.2024 in the office of 400kV Pavagada PGCIL Station and after deliberations, CEO, KSPDCL and Senior DGM, 400kV Pavagada PGCIL station had requested the land owners to give their consent duly agreeing for land rate fixed by Deputy Commissioner, Tumakuru in the meeting dtd.21.02.2024 and compensation assessments as received from concerned depts. which are fair & firm. The Copy of the minutes is enclosed as Anneexure-1.
5) The land owners have consented to the land rate fixed by Deputy Commissioner, Tumakuru in the meeting dtd.21.02.2024 and compensation assessments as received from the concerned Depts. The Copy of the consent is enclosed as Anneexure-2.
6) The CGM, PGCIL vide letter cited under ref (7) is requested to arrange for registration of the said additional lands required for expansion of the existing 400/22kV Pavagada substation along with payment of compensation.

In the light of the above, it is herewith requested to consider granting of connectivity approval to KSPDCL for additional 300MW from the existing 400/220kV Pavagada (Tumkur) PGCIL Substation only to expedite commissioning of the same as the tenders for 300MW decentralized Solar project in Pavagada Solar Park are being finalized.

Thanking you,

Yours faithfully,

31/5

(N. Amaranath)
Chief Executive Officer
KSPDCL, Bengaluru.

Copy for information to:

1) The Chief General Manager (Projects), PGCIL, Southern Region Transmission System-II RHQ, Near RTO Driving Test Track, Singanayakanahalli, Yelahanka Hobli, Bengaluru- 560 064.
2) The Senior Deputy General Manager, PGCIL, 400/220kV Pavagada Pooling sub-station, Kyathaganacherlu Village, Pavagada Tq, Tumkur Dist.

Copy to:

3) GM/DGM(O)/DGM(F)/DGM(W)/DGM(C)/OC/MF.

ಕರ್ನಾಟಕ ಸೌರಶಕ್ತಿ ಅಭಿವೃದ್ಧಿ ನಿಗಮ ನಿಯಮಿತ

KSPDCL
Promote Solar Power

KARNATAKA SOLAR POWER DEVELOPMENT CORPORATION LIMITED

(JV Company of SECI, GOI & KREDL, GOK)

Minutes of the meeting held by KSPDCL, PGCIL with land owners of Sy.No.93, 97 & 100/2 of Kyathaganacherlu village on 29.05.2024 at 12.30PM in the office of 400kV Pavagada PGCIL Station pertaining to providing additional land for expansion of 400/220kV Tumkur (Pavagada) Pooling station, PGCIL, Pavagada Taluk, Tumkur Dist.

List of Members present is annexed as Annexure-1:

At the outset, the Chief Executive Officer, KSPDCL welcomed all the officers from PGCIL, KSPDCL and the land owners of Sy.No.93, 97 & 100/2 of Kyathaganacherlu village present for the meeting. CEO, KSPDCL briefed the following points w.r.t proposed development of 300MW solar generation in around 1200Acres of land which are in possession of KSPDCL.

- KSPDCL had filed an application on 27-10-2023 before CTU for granting connectivity at 220kV level of existing 400/220kV Tumkur (Pavagada) PGCIL sub-station for the proposed development of 300MW solar generation in around 1200Acres of available lease lands.
- A meeting was held on 30-11-2023 between CTU, SECI & KSPDCL, wherein apprehension was expressed regarding space constraint for expansion of existing 400/220kV Pavagada sub-station.
- KSPDCL was informed that land of around 39Acres which is in possession of KSPDCL can be considered for substation expansion, as it is adjacent area and upon receipt of confirmation, action can be initiated to expand the existing sub-station duly vesting the land facilitation responsibility to KSPDCL.
- A joint meeting was held on 19-12-2023 between KSPDCL, PGCIL and land owners of Kyathaganacherlu village in the premises of earmarked leased land of KSPDCL for proposed expansion. The land owners consented to sell their land to an extent of 13Acres 22Guntas (after Survey) based on the land price to be fixed by the Deputy Commissioner, Tumakuru.
- In the 26th CMETS-SR Meeting held on 29.12.2023, GNA connectivity for 300MW to KSPDCL has been granted from the Tumkur-II PS. However, CTU has clarified that after getting confirmation towards land acquisition and possibility of Tumkur

(Pavagada) PS augmentation, grant of connectivity at existing Pavagada PS shall be considered.

- Accordingly, meeting with land owners under the Chairmanship of Deputy Commissioner, Tumakuru was held on 21.02.2024 for fixation of land price for the lands to an extent of 13Acres 22Guntas under Sy.Nos.93,97 & 100 of Kyathaganacherlu village.
- In the meeting Dtd.21.02.2024, the Deputy Commissioner, Tumakuru informed the land owners that as per the "Right to Transparency and Adequate Redress in Land Acquisition Process Resettlement and Reconstruction Act 2013" the price for the lands totaling to an extent of **13Acres 22Guntas** under Sy.Nos.93,97 & 100 of Kyathaganacherlu village is fixed at **Rs.2,62,30,632/-** (i.e. Rs.19,35,840/- per Acre which is 4 times the market rate of Rs.4,83,960/- per Acre).
- KSPDCL agrees for the price fixed for the said lands whereas the land owners disagrees demanding the price of Rs.30.00 lakhs to be fixed per one Acre and also demanded to pay the compensations for trees, drip systems, pipe lines, well, House, motor room, stone wall, fish pond, stone pitching, check dam existing their lands.
- The Deputy Commissioner, Tumakuru informed the land owners that the price fixed as per the "Right to Transparency and Adequate Redress in Land Acquisition Process Resettlement and Reconstruction Act 2013" is a fair & firm price and informed KSPDCL to make arrangements to pay the compensations for trees, drip systems, pipe lines, well, House etc., from the concerned assessment Depts.
- The concerned Depts. have verified & furnished the compensation assessments as under.

Sl. No.	Particulars	Compensation Payable in Rs.	Assessment dept.
I.	Name of the Property. Sy. Nos. 93 and 97/1, 97/2, 97/3 (Total 10A-32G) village of Kythaganacherlu (Sh. P. Venkatavanappa S/o P. Venkataiah & 3 others in Joint).		
1.	Compensation for Horticulture plants/trees	47,56,100.00	Dy. Director, Horticulture Dept., Tumakuru Dist.
2.	Compensation for Forest trees	25,34,565.00	Asst. Conservator of Forest, Madhugiri Division, Tumakuru Dist.
3.	Compensation for Civil structures	45,21,963.00	Executive Engineer (C), PWD, Madhugiri Division, Tumakuru Dist.
	Total	**1,18,12,628.00**	

Sl. No.	Particulars	Compensation Payable in Rs.	Assessment dept.
II.	Name of the Property. Sy.No. 100/2 (Total 2A-30G) village of Kythaganacherlu (Muthyalappa S/o Narasappa).		
1.	Compensation for Forest plants	11,332.00	Asst. Conservator of Forest, Madhugiri Division, Tumakuru Dist
	Total	**11,332.00**	

After deliberations on the above points, CEO, KSPDCL and Senior DGM, 400kV Pavagada PGCIL station requested the land owners to give their consent duly agreeing for land rate fixed by Deputy Commissioner, Tumakuru in the meeting dtd.21.02.2024 and compensation assessments as stated above which are fair & firm.

The land owners were convinced and agreed to give their consent duly agreeing for the land rate fixed by Deputy Commissioner, Tumakuru in the meeting dtd.21.02.2024 and compensation assessments as stated above.

Further, as consented by land owners CEO, KSPDCL requested Senior DGM, PGCIL to arrange for expansion of existing 400/220kV Pavagada PGCIL sub- station. The Senior DGM, PGCIL informed to provide the final proceedings of DC, Tumakuru duly mentioning the land rates fixed and compensation assessments to be payable for obtaining approval from their competent for arranging payments to land owners and execute the sale deed of the above said extents.

The meeting ended cordially with vote of thanks by CEO, KSPDCL to all the Officers of PGCIL, KSPDCL and the land owners of Sy.No.93, 97 & 100/2 of Kyathaganacherlu village for their co-operation in sharing their lands for expansion of 400/220kV Pavagada sub-station.

29/5

(N Amaranath)
Chief Executive Officer
KSPDCL, Bengaluru.

MEMO No: KSPDCL/F-219/2024-25/188 Dtd: 29/05/2024.

Copies to all the members present.

Copy for information to:

1) The Chief General Manager (Projects), PGCIL, Southern Region Transmission System-II RHQ, Near RTO Driving Test Track, Singanayakanahalli, Yelahanka Hobli, Bengaluru-560 064.

Annexure-01:

List of the Members present in the meeting held on 29-05-2024 at 400kV Pavagada PGCIL Station.

Sl. No.	Name	Designation	Organization	Signature
1	N. Amaranath	Chief Executive Officer	KSPDCL	
2.	V. Sai Reddy	Senior Deputy General Manager	PGCIL, 400/220kV Pavagada station	
3.	Prakash. M	DGM (Field)	KSPDCL	
4.	Mahesha. C	AGM(F)	KSPDCL	
5.	Venkatesh S/o Venkatalakshappa	Land owner	93, 97/1, 97/2	
6.	Muthyalappa S/o Narasappa	Land owner	100/2	
7.				
8.				
9.				
10.				
11.				
12.				

ANNEXURE-2

Name of the property:- Sy.Nos. 97/1,97/2, 97/3 and 93 village of Kythaganacherlu (Sh. P. Venkatavanappa S/o P. Venkataiah & 3 others in Joint)		
Sl. No.	**Particulars**	**Compensation Payable**
1	Land Rate for 10A-32G (12099/gunta x 432G x 4)	20907072.00
	Total	**20907072.00**
Note:	Compensation paid earlier towards Borewell (4Nos) & Drip irrigation (19A-23G) by KSPDCL	931936.45

Name of the property:- Sy.No. 100/2 village of Kythaganacherlu (Muthyalappa S/o Narasappa)		
Sl. No.	**Particulars**	**Compensation Payable**
1	Land Rate for 2A-30G (12099/gunta x 110G x 4)	5323560.00
	Total	**5323560.00**
Note:	Compensation paid earlier towards Borewell (1No) by KSPDCL	39173.00

కథగానచెర్లు
(Kyathaganacherlu
Sy - 100/2)

Venkatesh. P X.
S/o Venkatavanappa P X
Sy No. 93, 97/1, 97/2
97/3

Annexure-D

System Studies for Bijapur and Tumkur expansion system

1. Assumptions and important Considerations for the study:

- Study time frame: 2026-27
- Scenarios: Scenario 4 - June solar max (SR Export)
- Major Assumptions for Scenario 4 - June solar max (SR Export)
  - SR Demand **:** 74 GW
  - SR Generation : 92 GW
  - SR Surplus(+) / Deficit(-) : (+) 18 GW
  - State wise demand considered as per inputs from the STUs are as below:

State	Demand as per 20th EPS (MW)	Peak Demand provided by STUs as per Joint Study meeting held on 2-5 May 24 (MW)	Total Demand considered in study (MW)
Andhra Pradesh	17758	17758	17461
Telangana	19529	19529	11124
Karnataka	17810	18410	16807
Kerala	5549	6800	4425
Tamil Nadu	21736	23313	23199
Puducherry	567	567	949
Total	**82949**	**86377**	**73965**

  - The demand factors for the SR entities has been derived based on the factors considered in Sc-4 of the Rolling Plan report.
  - Following Dispatch factors has been considered as per the profiling and LGB :
    - Solar – 90%
    - Wind – 55%
    - Thermal – 55% as per the variable cost of the generators
    - Nuclear – 80%
    - Hydro – 40%
    - ESS / PSPs – ESS in charging mode, PSP - no injection or absorption

- Details of connectivity granted/ received and capacities considered at various RE PS (all units in MW)

Substation	Connectivity granted/ agreed	Connectivity under process	BESS	PSP	Total Connectivity	Solar IC	Wind IC	Total IC	Solar IC considered in file	Wind IC considered in file	Net Dispatch
Koppal PS	2753	0	0	0	**2753**	1352	1477	**2829**	1352	1477	**2029.15**
Gadag PS	2383	0	0	0	**2383**	917	1466	**2383**	917	1466	**1631.6**
Tuticorin-II GIS	2370	0	0	0	**2370**	530	1840	**2370**	530	1840	**1489**
Koppal-II PS	3905	0	57.5	0	**3905**	870	2977	**3847**	870	2977	**2420.35**
Gadag-II PS	5276	0	0	900	**5276**	1858	3817	**5675**	1858	3817	**3771.55**
Hiriyur	538	0	0	0	**538**	100	438	**538**	100	438	**330.9**
Pugalur	655	0	0	0	**655**	0	655	**655**	0	655	**360.25**
Pavagada/ Tumkur *	3850	0	0	0	**3850**	3500	350	**3850**	4150	350	**4500**
Ananthapuram	4255	0	0	0	**4255**	850	3835	**4685**	850	3835	**2874.25**
Kurnool New	2714	0	0	1680	**2714**	2175	314	**2489**	2175	314	**2130.2**
Kurnool-III PS	7600	0	247	1850	**7600**	5727	738	**6465**	5727	738	**5560.2**
Bijapur PS*	1914	1655	0	0	**3569**	295	3329	**3624**	295	4205	**4500**
NP Kunta	1700	0	0	0	**1700**	1710	40	**1750**	1710	40	**1750**
Karur PS	1493	475	0	0	**1968**	65	1640	**1705**	65	1640	**960.5**
Tumkur-II PS*	0	0	0	0	**0**	0	0	**0**	1500	0	**1500**
Bidar PS	1650	850	55	0	**2500**	1175	1900	**3075**	1175	1900	**2102.5**
Davangere PS*	1400	1340	0	0	**2740**	1370	1790	**3160**	2000	2000	**3000**
Bellary PS*	0	0	0	0	**0**	0	0	**0**	1500	0	**1500**
Ananthapuram-II*	0	2280	0	0	**2280**	555	789	**1344**	4500	0	**4500**
Kurnool-IV*	0	3820	0	3220	**3820**	600	0	**600**	4500	0	**4500**

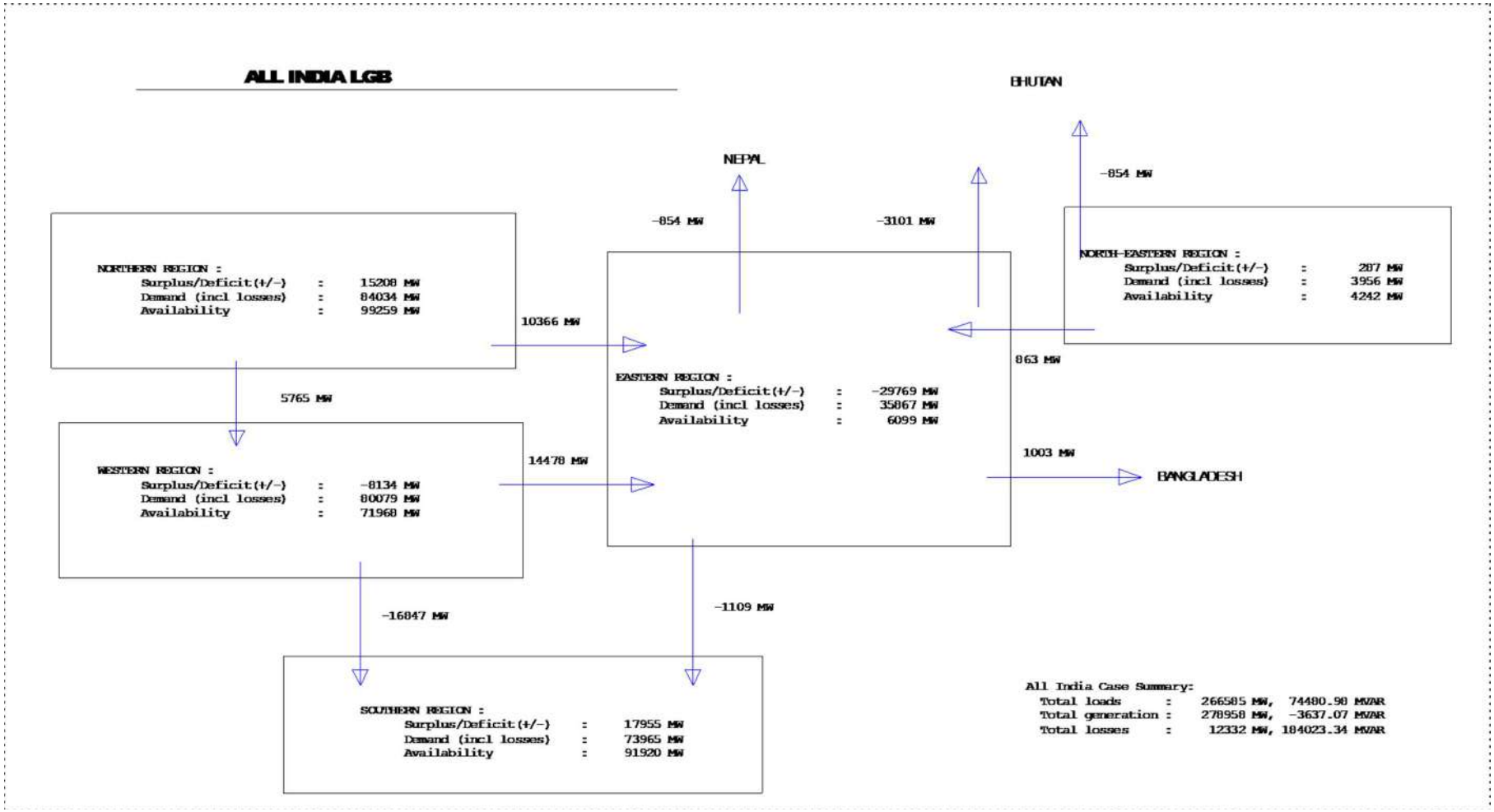
**Note – Maximum dispatch corresponding to potential to be integrated as per planned substation capacity considered.*

- HVDC power orders considered:
  - Raigarh – Pugalur HVDC (3000 MW from SR to WR)
  - Bhadrawati BtB HVDC (500 MW from SR to WR)
  - Gazuwaka BtB HVDC (600 MW from SR to ER)
  - Talcher – Kolar HVDC (1150 MW from ER to SR)

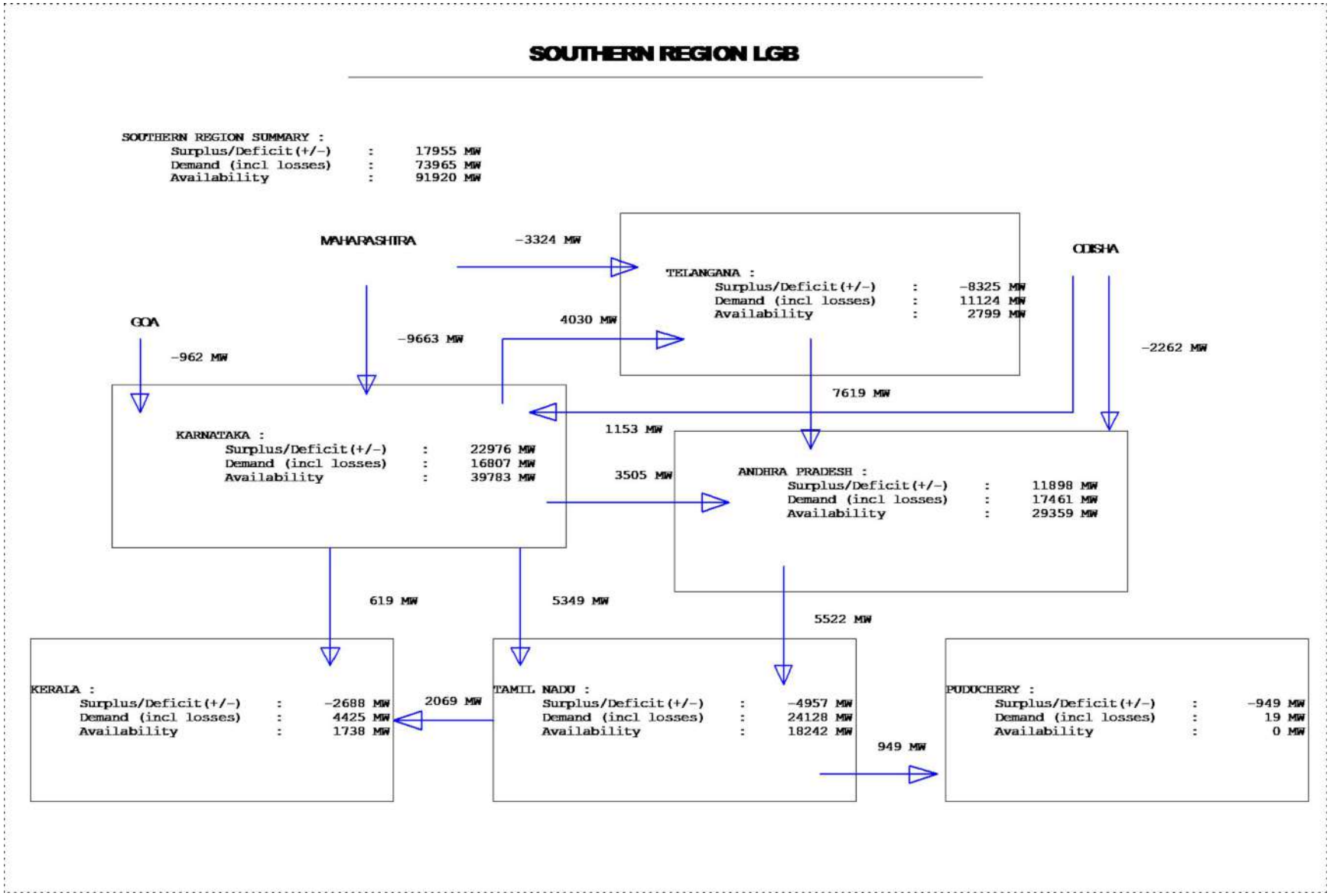
2. Load generation balance

Scenario 4 - June solar max (SR Export)

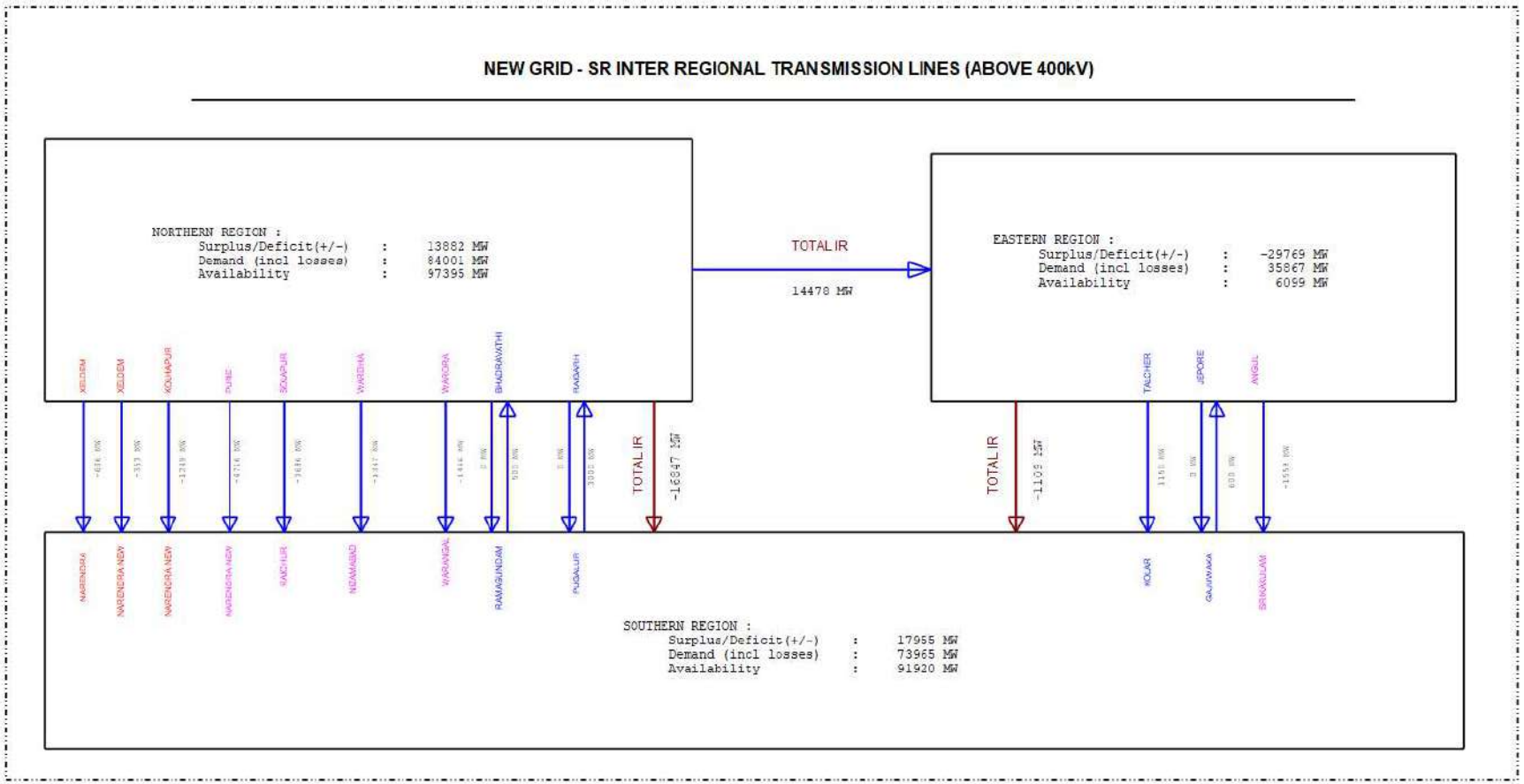
All India LGB snapshot



State wise LGB Summary



SR Inter-regional Tie line flows



3. System Studies

Case details	Exhibit No.
Base case	I
N-1 of Bijapur-Raichur 400 kV 2xD/c line	II
N-1 of Raichur 765/400 kV ICT	III
N-1 of Raichur-Gooty 400 kV D/c line	IV
N-1 of Raichur-Sholapur 765 kV D/c line	V
N-1 of Raichur-Koppal-II 765 kV D/c line	VI
N-1 of Tumkur-Gooty 400 kV D/c line	VII
N-1 of Tumkur-Madhugiri 400 kV D/c line	VIII
N-1 of Tumkur-Davanhalli 400 kV D/c line	IX

Exhibit-I

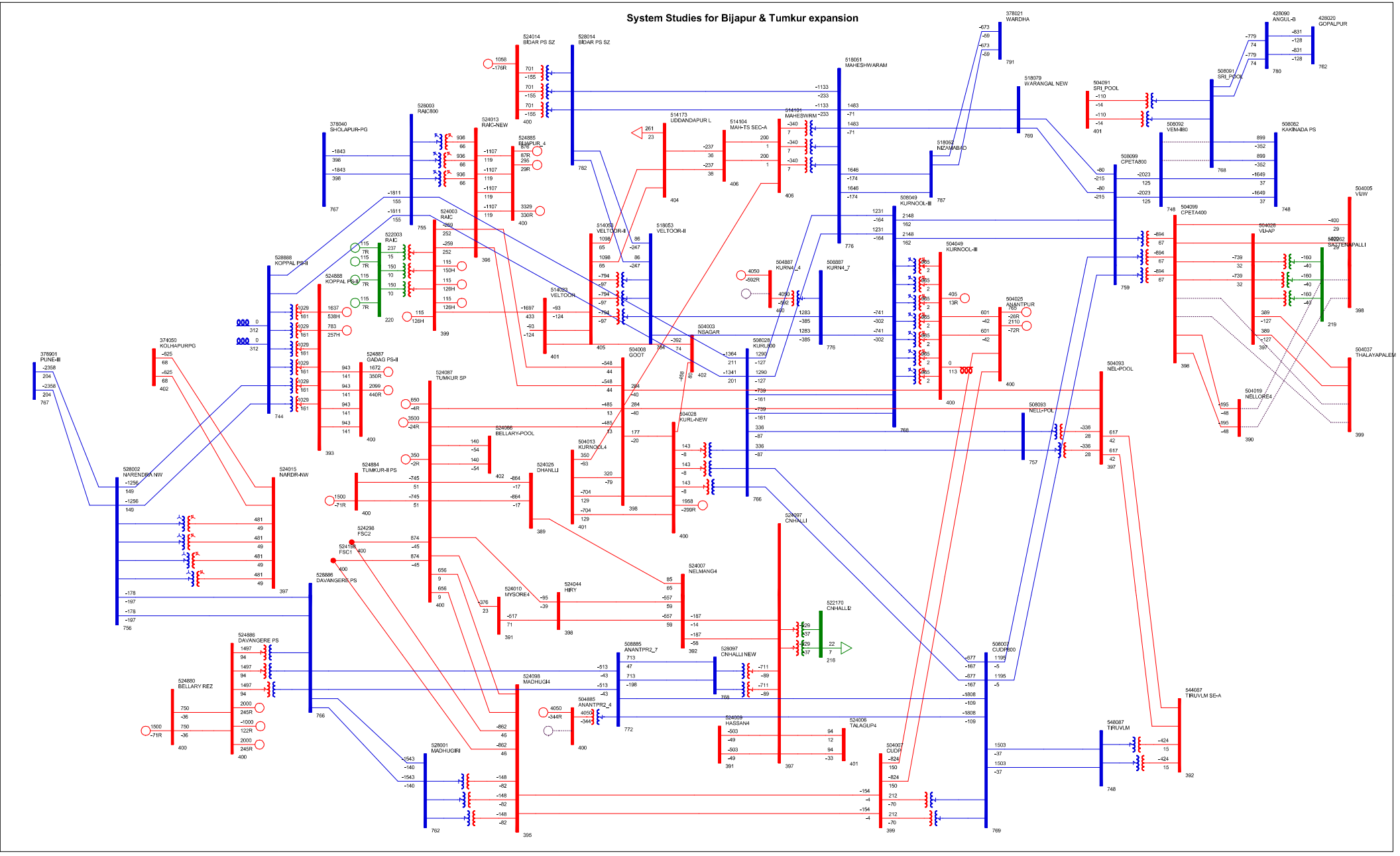

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Exhibit-II

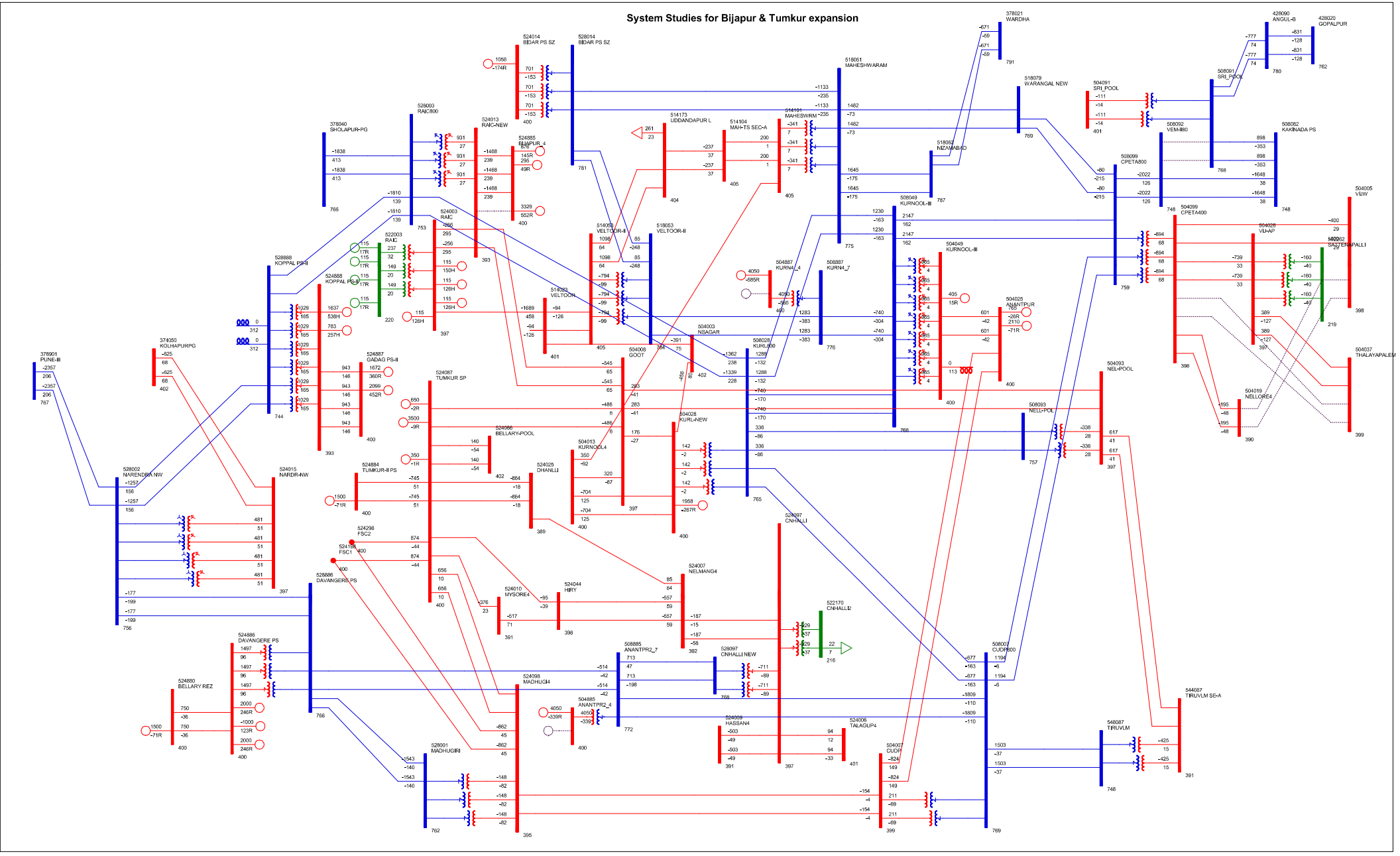
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Exhibit-III

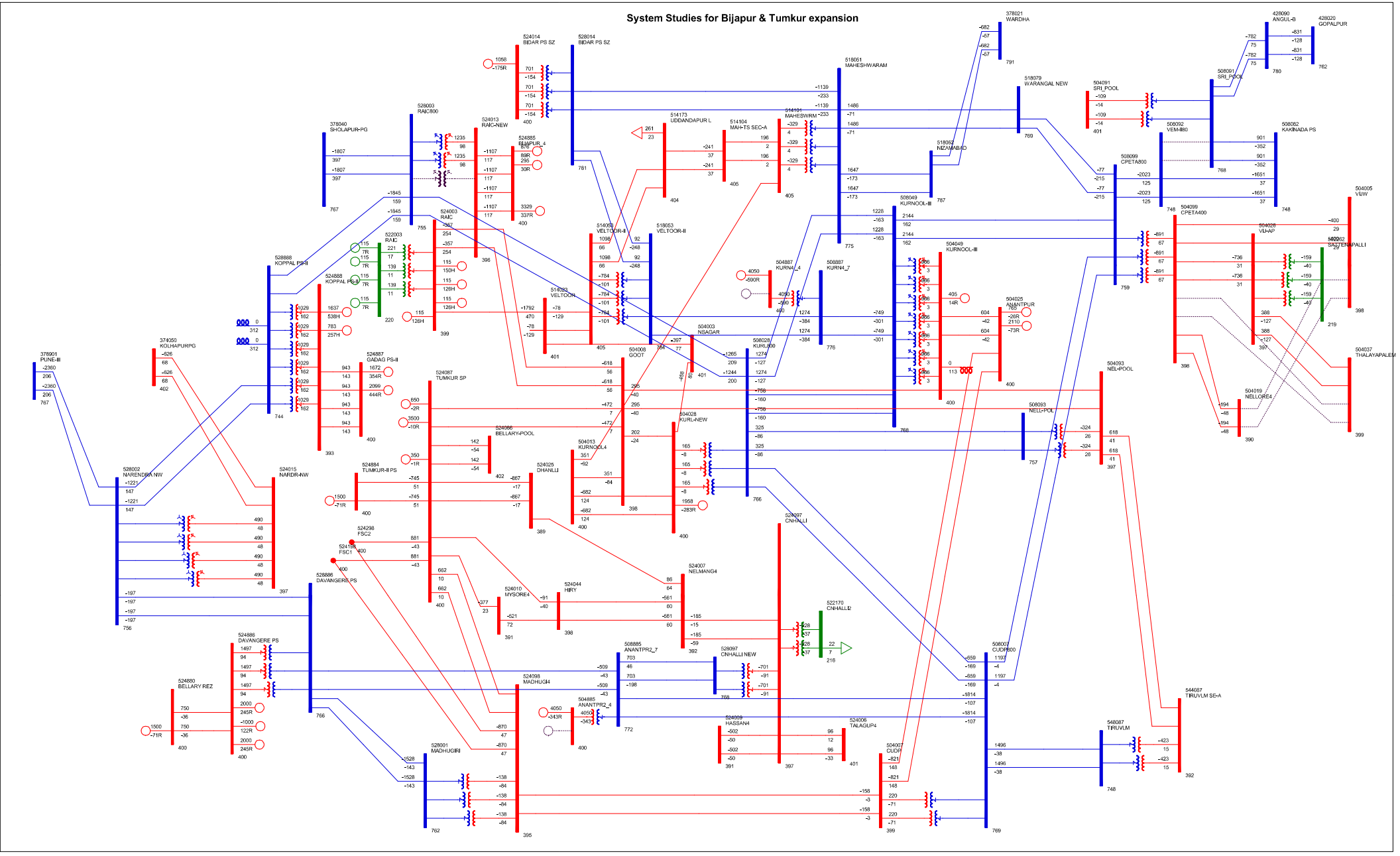
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Exhibit-IV

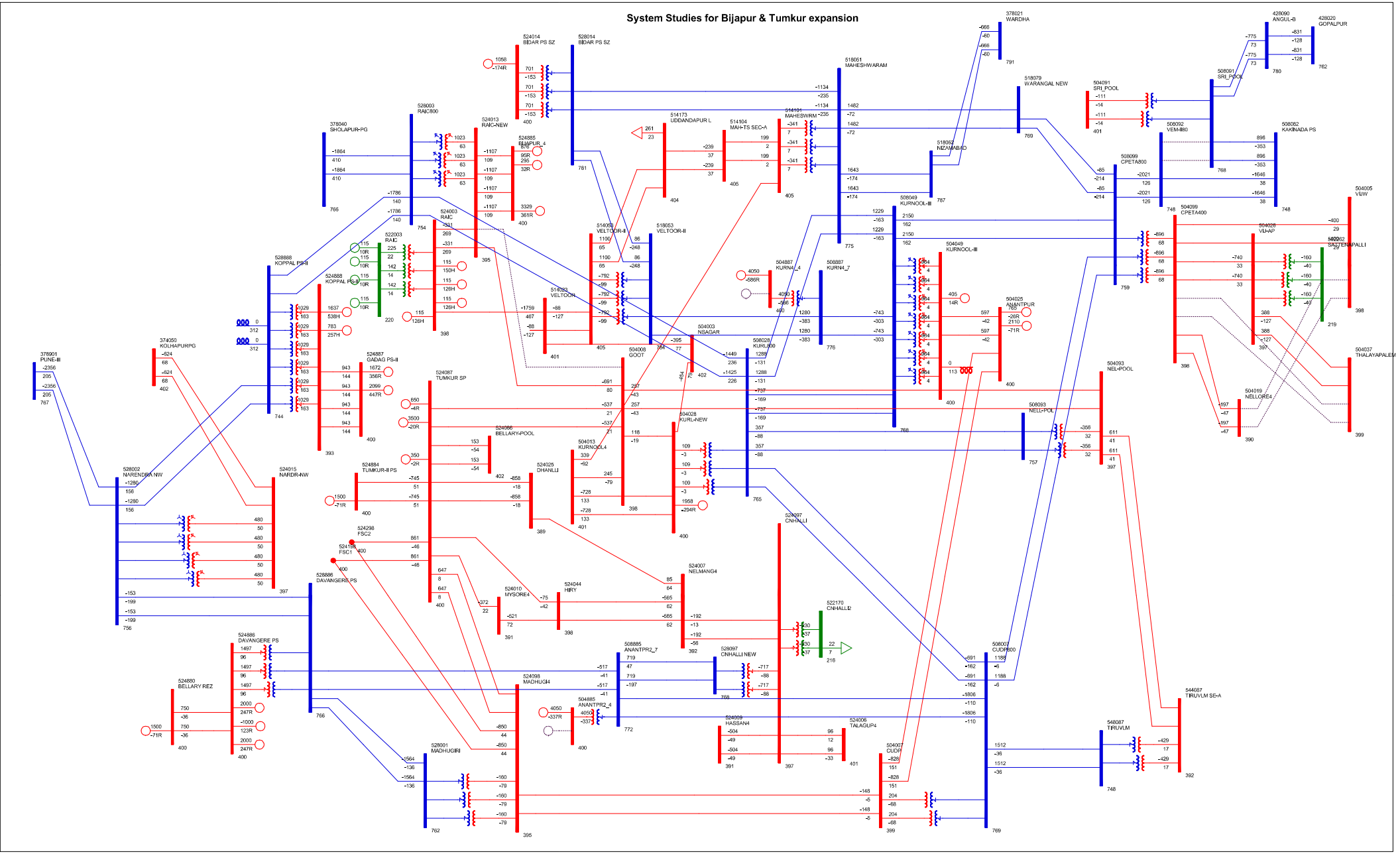
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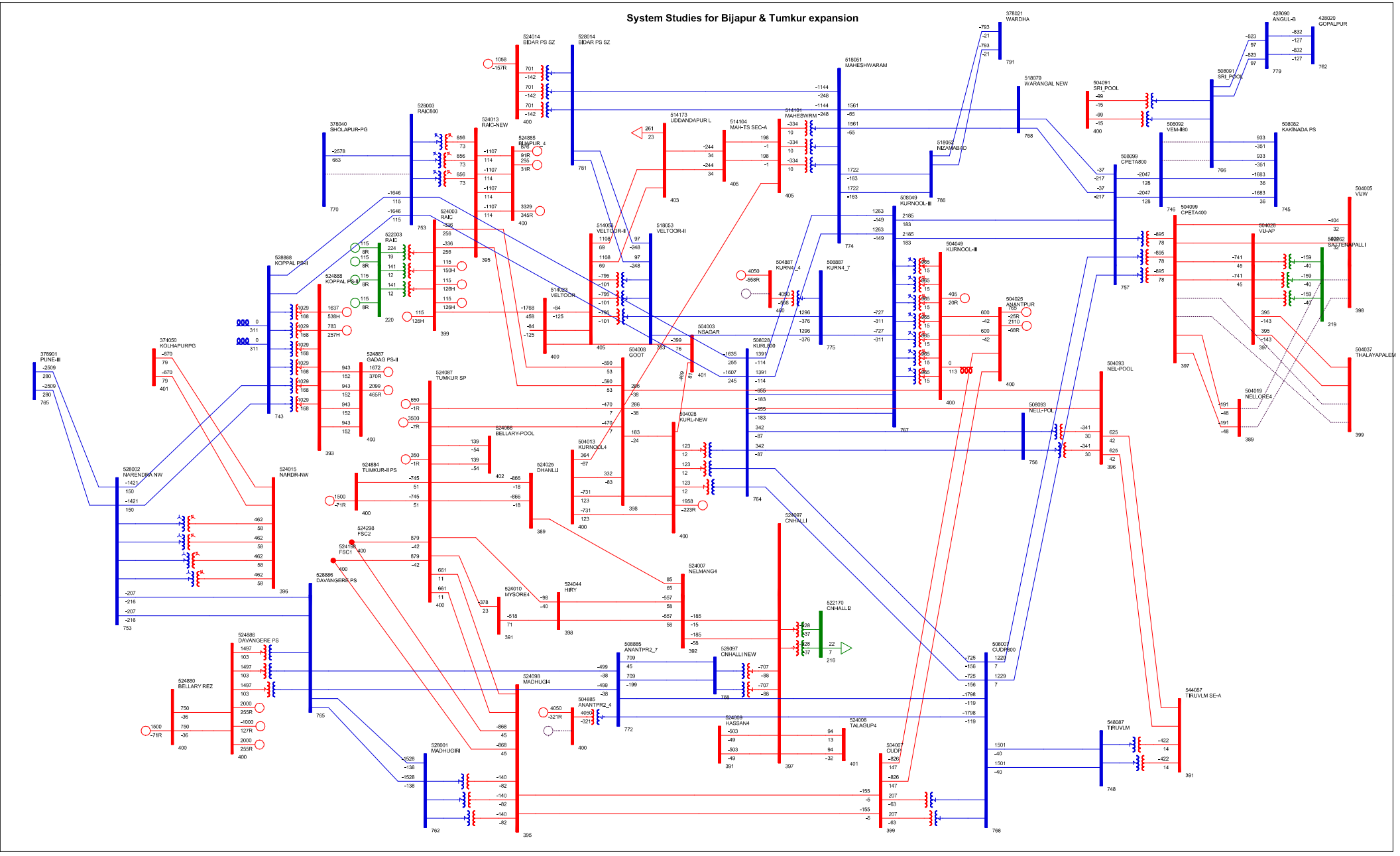
Exhibit-V



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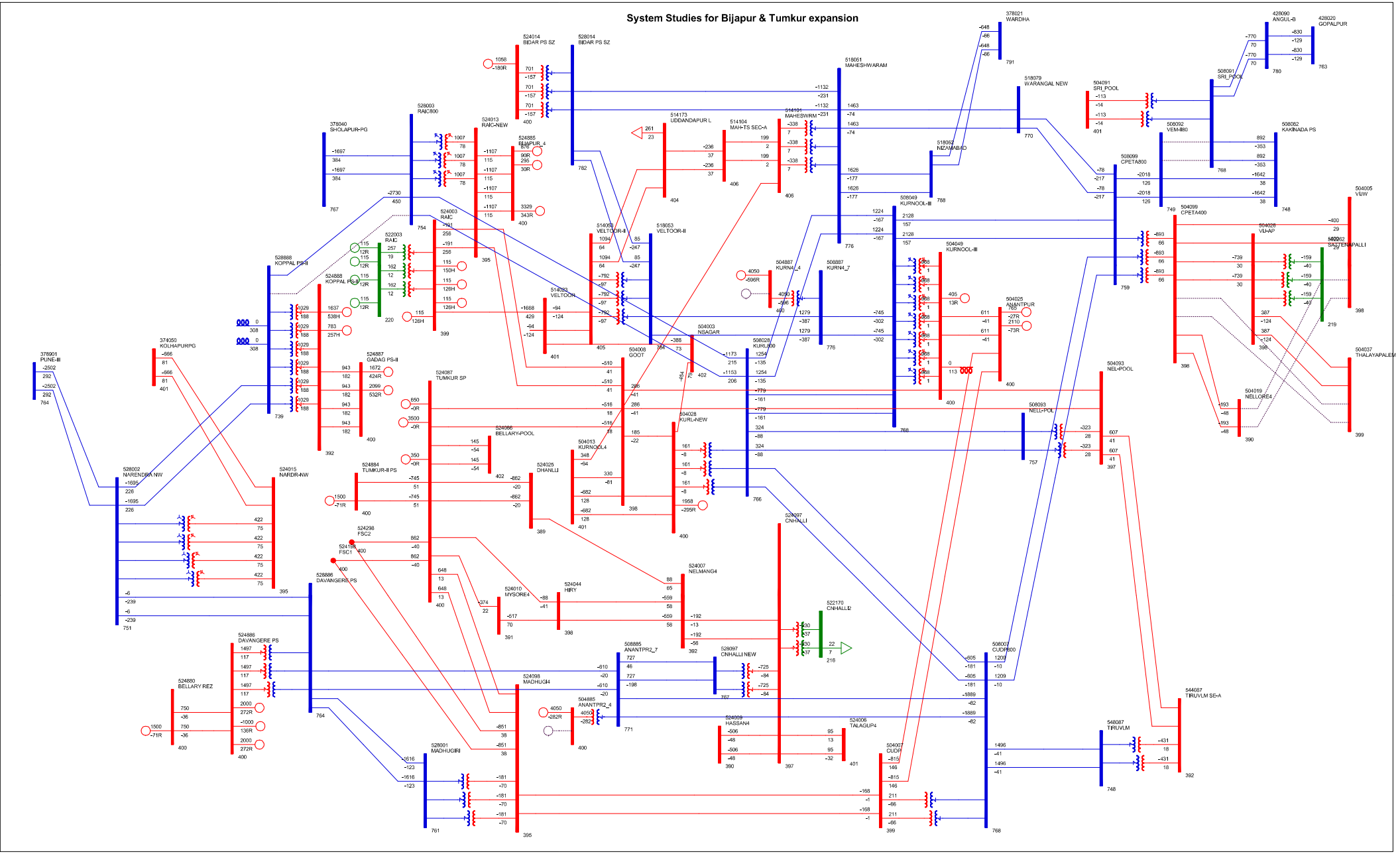

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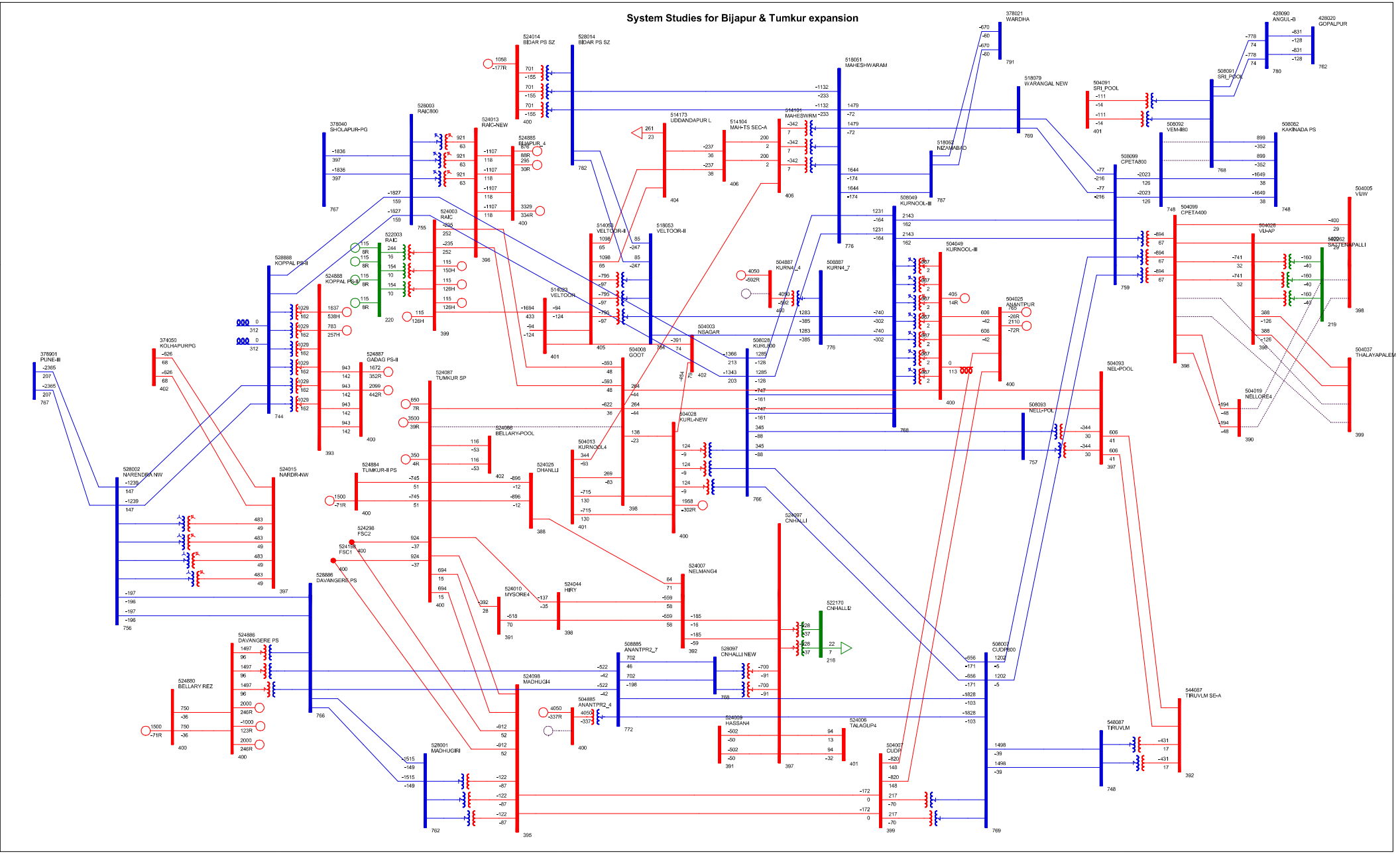

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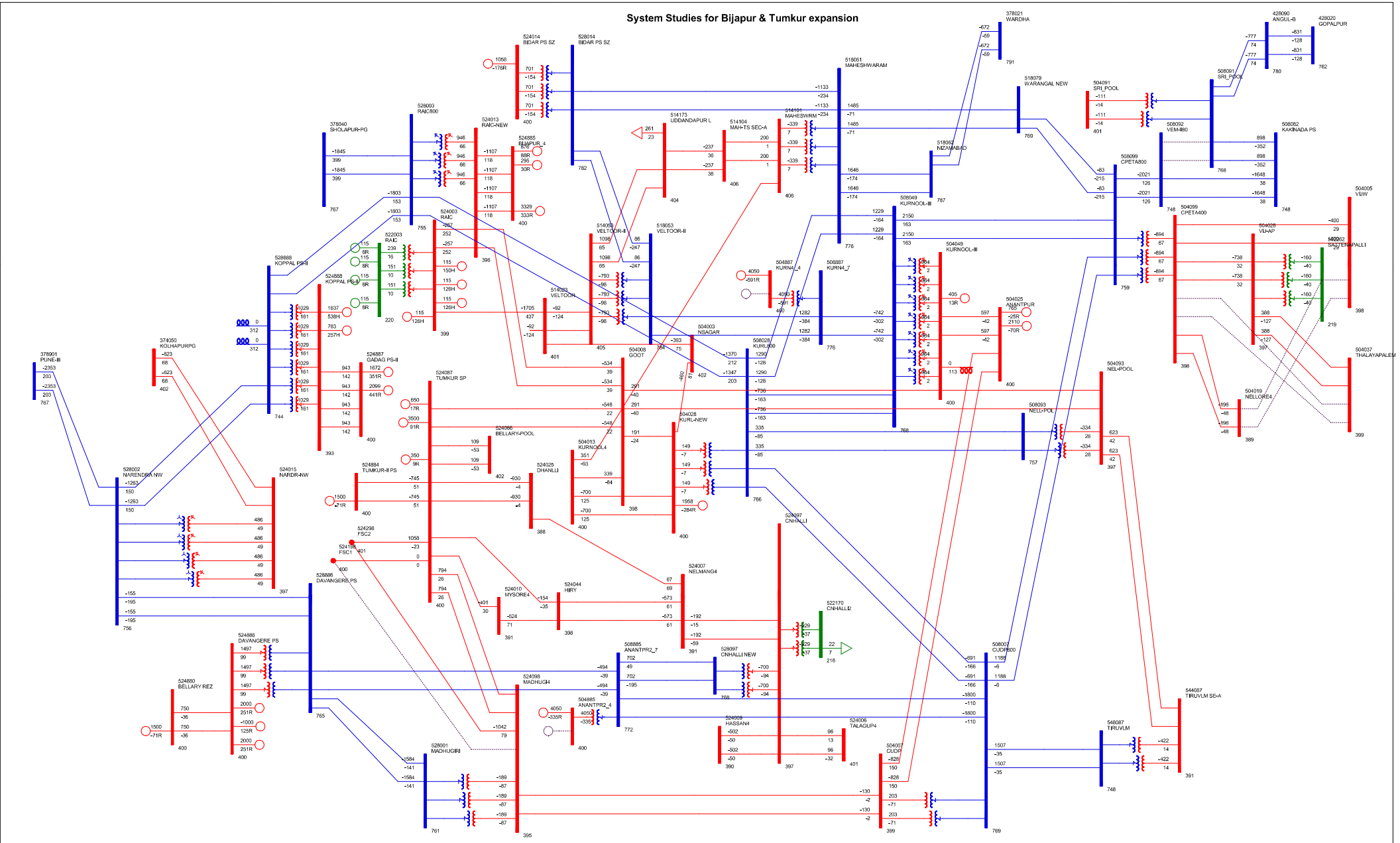

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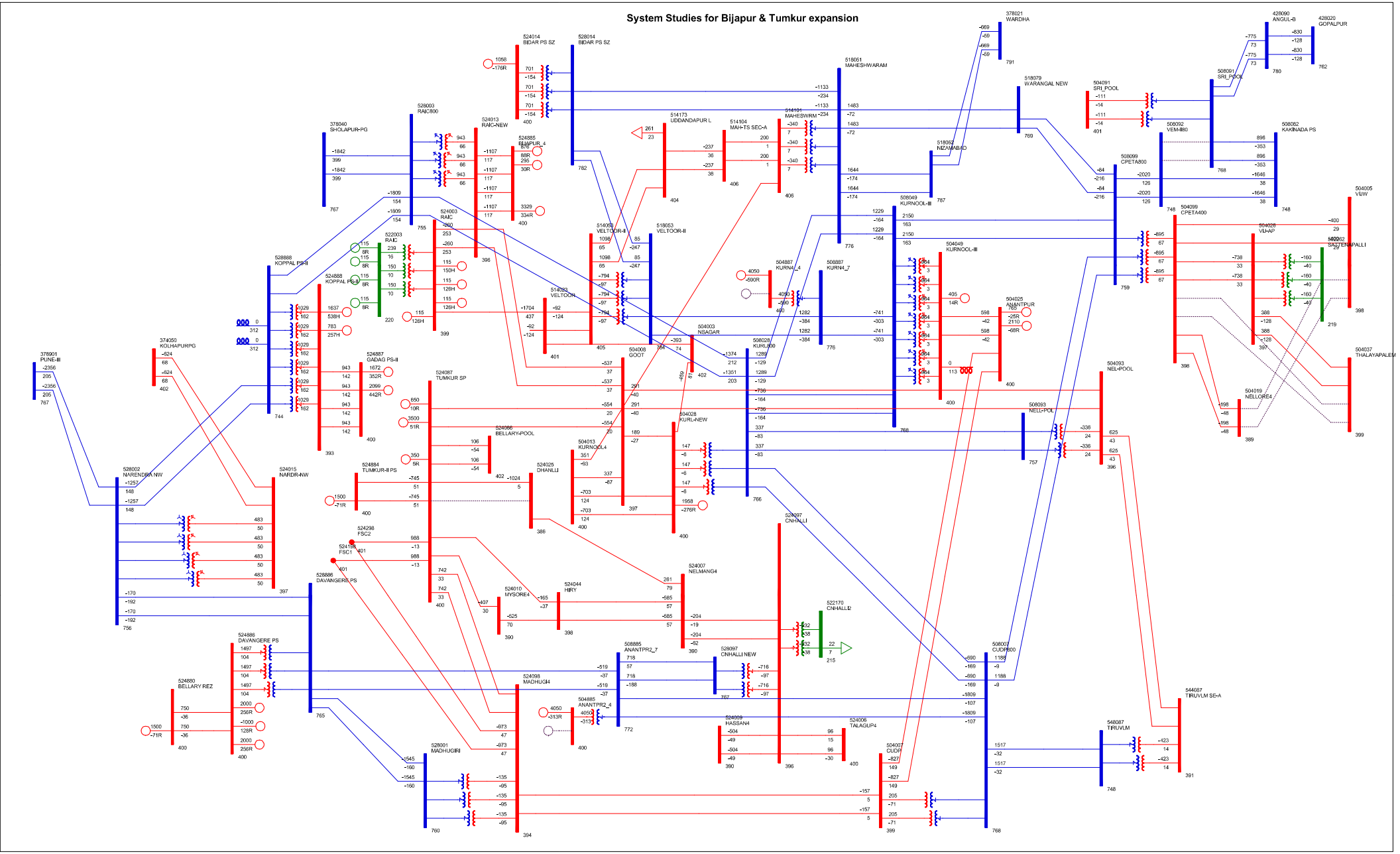
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Annexure-E

सेंट्रल ट्रांसमिशन यूटिलिटी ऑफ इंडिया लिमिटेड
(पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड के स्वामित्व में)
(भारत सरकार का उद्यम)
CENTRAL TRANSMISSION UTILITY OF INDIA LTD.
(A wholly owned subsidiary of Power Grid Corporation of India Limited)
(A Government of India Enterprise)

Ref. No.: CTU/S/00/Joint Study MoM **Date:** 28.05.2024

As per distribution list

Subject: Minutes of the Joint Study meeting of Southern Region Constituents held from 2nd to 4th May, 2024 at Hyderabad.

Dear Sir / Madam,

The Joint Study meeting of Southern Region Constituents was held from 2nd to 4th May, 2024 at Hyderabad regarding Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of power for meeting demand by 2029-30 time frame and various ISTS proposals.

Kindly find attached the Minutes of the meeting.

Thanking you,

Yours faithfully,

Anil 28/5/24

(Anil Kr. Meena)
General Manager

Distribution List:

1. Chief Engineer (PSP&A – I) Central Electricity Authority Sewa Bhawan, R.K.Puram, New Delhi – 110 066.	**2. Member Secretary** Southern Regional Power Committee 29, Race Course Cross Road Bangalore – 560 009.
3. Director (Transmission) Transmission Corp. of Andhra Pradesh Ltd. (APTRANSCO) Vidyut Soudha, Gunadala, Eluru Rd, Vijayawada, Andhra Pradesh – 520 004	**4. Director Transmission)** Transmission Corp. of Telangana Ltd. Vidyut Soudha Hyderabad – 500 082 Fax: 040-23321751
5. Director (Transmission) Karnataka State Power Transmission Corp. Ltd., Cauvery Bhawan Bangalore – 560 009 Fax: 080-22228367	**6. Director (Trans. & System Op.),** Kerala State Electricity Board Ltd. Vidyuthi Bhawanam, Pattom, P.B. No. 1028 Thiruvananthapuram – 695 004. Fax: 0471-2444738
7. Director (Transmission Projects) Tamil Nadu Transmission Corporation Ltd (TANTRANSCO) 6th Floor, Eastern Wing, 800 Anna Salai, Chennai – 600 002 Fax: 044-28516362	**8. Superintending Engineer –I** First Floor, Electricity Department Gingy Salai, Puducherry – 605 001.
9. Executive Director SRLDC, GRID-INDIA 29, Race Course Cross Road, Bangalore – 560 009	

Minutes of the Joint Study meeting of Southern Region Constituents held from 2nd to 4th May, 2024 at Hyderabad

In the 50th SRPC meeting held on 16.03.2024 and 29th CMETS-SR held on 28.03.2024, it was decided to hold physical Joint Study meeting for Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of power for meeting demand by 2029-30 time frame and various ISTS proposals. Accordingly, Joint Study meeting was conducted from 2nd to 4th May, 2024 at POWERGRID SRTS-I RHQ Hyderabad with participation from SRPC, CTUIL, SRLDC, KPTCL, KSEBL, APTRANSCO, TSTRANSCO, TANTRANSCO and TANGEDCO. List of participants is attached at **Annexure-I**.

As host for the Joint Study meeting, ED, SRTS-I, POWERGRID welcomed all the participants and expressed gratitude for providing the opportunity for hosting the meeting towards identification / strengthening of SR Grid. He wished the participants all the very best for fruitful deliberations and planning of optimal transmission system for SR Grid. He requested SRPC and CTU to proceed with the agenda for the meeting.

Superintendent Engineer, SRPC, welcomed the participants and stated that Joint Studies would be conducted as per the decision in the 50th SRPC meeting held on 16.03.2024 for identification of Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of power for meeting demand by 2029-30 time frame. Further based on the decision in the meeting, the schemes shall be deliberated in the next SRPC meeting. He requested CTU to take up the agenda for the meeting.

CTU stated that tentative proposal along with the system study files have already been circulated vide email dated 29.04.2024. Demand projections have been sought for 2029-30 timeframe from STUs for carrying out the system studies, as per the decision in the various SRPC meetings. Inputs have been received from SR STUs except from KPTCL and Puducherry. KPTCL informed that they would require one month for providing the requisite inputs. It was opined that, in case of non-availability of inputs, demand may be considered as per 20th EPS.

A. Transmission System for integration of Kurnool-IV and Anantapur-II REZs in Andhra Pradesh

1. CTU informed that Transmission System for integration of Kurnool-IV and Ananthapuram-II REZs were discussed in the 28th CMETS-SR held on 29.02.2024 wherein it was informed that Govt. of India has set a target of 500 GW generation capacity from non-fossil fuel resources by 2030. In this direction, MNRE has identified addition of 86 GW RE Potential is identified in the State of Andhra Pradesh, Telangana, Karnataka and Tamil Nadu (Offshore) in Southern Region. Out of the identified (86 GW) RE Potential in Southern Region, 51 GW has been identified in the State of Andhra Pradesh (Ananthapur– 20 GW, Kurnool – 23 GW & Kadapa – 8 GW).

A comprehensive transmission system for integration of 51 GW RE Potential in Andhra Pradesh have been identified by CEA and a report on Transmission System for Integration of over 500 GW RE Capacity has been published by CEA on 07.12.2022. The details of district wise potential is as below.

District	Pooling Station	Potential (GW)		Total (GW)	Maximum Dispatch (GW)	BESS (GW)	Evacuation System (GW)
		Wind	Solar				
Anantapur	Anantapur, Anantapur-II	10	10	20	15	5	10
Kurnool	Kurnool-IV, Kurnool-V	8	15	23	18	6	12
Kadapa	Kadapa-II	0	8	8	8	3	5
Total		**18**	**33**	**51**	**41**	**14**	**27**

2. As per the CEA 500 GW RE report, following transmission system has been identified for integration of Kurnool-IV, Anantapur-II, Kurnool-V & Kadapa-II :

a. Transmission System for integration of Kurnool REZ-I (7.5 GW Solar, 4 GW Wind, 3 GW BESS)

- Establishment of 5x1500 MVA, 765/400 & 7x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Kurnool-IV PS (3 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (~100 km)
- Kurnool-IV – Bidar PS 765 kV D/c line with 240 MVAr SLR at both ends (~280 km)

b. Transmission System for integration of Kurnool REZ-II (7.5 GW Solar, 4 GW Wind, 3 GW BESS)

- Establishment of 5x1500 MVA, 765/400 kV & 7x500 MVA, 400/220 kV Kurnool-V Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Kurnool-V PS (3 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- Kurnool-V – Chilakaluripeta 765 kV D/c line with 330 MVAr SLR at Kurnool-V PS end (~210 km)
- Kurnool-V – Kurnool-IV 765 kV D/c line (~100 km)
- Chilakaluripeta – Podili 400 kV (quad) D/c line (~100 km)
- Augmentation by 2x1500 MVA, 765/400 kV ICTs at Chilakaluripeta 765/400 kV substation
- Augmentation by 2x1500 MVA, 765/400 kV ICTs at Maheshwaram 765/400 kV substation

c. Transmission System for integration of Anantapur-II REZ (7.5 GW Solar, 4 GW Wind, 3 GW BESS)

- Establishment of 6x1500 MVA, 765/400 kV & 9x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 4 GW injection at 400 kV level)
- Anantapur-II – Cuddapah 765 kV D/c line with 240 MVAr SLR at Anantapur-II PS (~250 km)
- Anantapur-II – Kurnool-V PS 765 kV D/c line (~100 km)

d. Transmission System for integration of Kadapa REZ (8 GW Solar, 3 GW BESS)

- Establishment of 4x1500 MVA, 765/400 kV & 6x500 MVA, 400/220 kV Pooling Station near Kadapa (Kadapa II PS), Andhra Pradesh along with 2x330 MVAr (765 kV) & 2x125 MVAr (400 kV) bus reactors at Kadapa-II PS (2.5 GW injection at 220 kV level and 2.5 GW injection at 400 kV level)
- LILO of both circuits of Anantapur-II – Cuddapah 765 kV D/c line at Kadapa-II PS (~10 km)
- Kadapa-II PS – Thiruvalam 765 kV D/c line with 240 MVAr SLR at both ends (~250 km)

3. Matter was discussed in the 28th CMETS-SR held on 29.02.2024 wherein it was informed that Connectivity of about 7740 MW (2390 MW at 220kV level & 5350 MW at 400kV level) has been granted / agreed for grant at Kurnool-III PS. Similarly, Connectivity of about 3765 MW (1055 MW at 220kV level & 2710 MW at 400kV level) has been granted / agreed for grant at Ananthapuram PS. Keeping above in view, it is prudent to take up the implementation of Kurnool-IV PS and Anantapur-II PS for integration of RE generation projects in Kurnool and Anantapur areas. It was also informed that NREDCAP had requested for establishment of new 765kV substation near Aspiri, Kurnool district, accordingly, same may be established at suitable location near Aspiri in Kurnool district. Further, as requested by NREDCAP Ananthapuram-II PS may be established at suitable location near Raydurg in Ananthapuram district. After detailed deliberations, it was decided that a physical joint study may be carried out for finalization of the transmission system for Kurnool-IV and Ananthapuram-II.

4. During the Joint Study meeting, CTU informed that presently Connectivity of about 5300 MW (2390 MW at 220kV level & 5350 MW at 400kV level) has been granted / agreed for grant at Kurnool-III PS. Similarly, Connectivity of about 3905 MW (1195 MW at 220kV level & 2710 MW at 400kV level) has been granted / agreed for grant at Ananthapuram PS. Accordingly, for further grant of connectivity in Kurnool/Ananthpur area, timely implementation of transmission schemes identified in Kurnool/Ananthpur as a part of above identified potential may be taken-up in phases.

   It was stated that transmission may be taken-up in phased manner in order to ensure proper utilization of the transmission system. CTU proposed that in the initial phase, Kurnool-IV and Ananthpur-II PS may be taken-up for implementation to facilitate integration of RE.

Further, the transmission system as finalized in the joint Study meeting may be taken-up in phases.

5. CTU informed that as per the 500 GW report, a huge quantum of RE power is being integrated at planned Kurnool-IV, Kurnool-V, Anantapur-II and Kadapa-II PS together with existing/under implementation Kurnool (new), Kurnool-III and Anantapur PS. Further for optimal utilization of the existing/under construction transmission system, additional 3.5 GW power is being integrated at Kurnool-III PS through augmentation of 3x1500 MVA, 765/400 kV ICTs and Kurnool-III- C'Peta 765 kV D/c line. All these Pooling stations are interconnected through 765 kV or 400 kV transmission network. This may lead to overloading of immediate transmission system and may lead to outage of huge quantum of power due to proximity and huge pooling of RE generation as well as common evacuation corridors. In view of the above, it is prudent to review the transmission system in consultation with the regional constituents.

   It was informed that as per the proposed transmission system, Kurnool-IV and Anantapur-II PS which were earlier being integrated through Kurnool-V are proposed to be disintegrated and connected to different ISTS points for further dispersal of power. Kurnool-IV PS is being integrated to Kurnool-III, Bidar and Veltoor-II (proposed new substation) through 765 kV high capacity corridors along with 400 kV interconnections to STU substations for meeting load requirements. Further, Anantapur-II PS is proposed to be interconnected to Davangere, Cuddapah and CN'Halli (proposed new substation) through 765 kV high capacity corridors along with 400 kV interconnections to STU substations for meeting load requirements.

   It was stated that implementation of transmission system may be taken-up in phased manner in order to utilization of the transmission system. It was proposed that in the initial phase, Kurnool-IV and Ananthpur-II PS may be taken-up for implementation to facilitate integration of RE. Further, the transmission system as finalized in the joint Study meeting may be taken-up in phases.

6. CTU informed that the considering the implementation schedule of 36 months [24 months of implementation and 6 months of approval] transmission scheme for integration of potential REZ at Kurnool-IV and Ananthpur-II PS is likely to be commissioned by Dec'26. Accordingly, system studies have been conducted in 2026-27 timeframe. CTU informed that considering the methodology for preparation of Load generation balance of the Rolling Plan, demand of 61 GW is considered in Scenario-4 (June Solar max), whereas demand of 73 GW is considered in Scenario-7 (February evening peak). In this regard, it was opined that Southern Region has already recorded demand of 64 GW and the same is expected to rise to 80 GW as per the EPS by 2026-27 timeframe. Accordingly, demand considered for system studies may be finalized as per the inputs received from the STUs. Based on the observations received from STUs, load-generation and network updation was carried out and detailed system studies were conducted. As per the revised LGB, export of about 16000 MW was observed in Scenario-4 with the consideration of various RE pooling stations

in Southern Region and proposed Kurnool-IV & Ananthpur-II PS and Davanagere/Chitradurga, Bellary and Bijapur REZ potential. Further, import of about 11000 MW was observed in Scenario-7. The load-generation balance, study results and assumptions considered are enclosed at **Annexure-II**.

7. During the meeting, following comprehensive transmission system was proposed for integration of RE generation projects at Kurnool-IV and Anantapur-II in Andhra Pradesh :

a. Transmission System for Integration of Kurnool-IV (Near Aspiri) REZ (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 & 10x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- Kurnool-IV – Veltoor-II 765kV D/c line (about 180 kms)
- Veltoor-II– Bidar 765kV D/c line (about 200 kms)
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms)
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta
- Veltoor-II– Veltoor TS 400 kV (quad) D/c line (about 60 kms)
- Veltoor-II– Udandpur 400 kV (quad) D/c line (about 30 kms)
- C'Peta – Thalapaleyam 400 kV (quad) D/c line (about 30 kms)

b. Transmission System for Integration of Anantapur-II (Near Rayadurgam) REZs (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 kV & 10x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station 765/400 along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – Davangere 765kV D/c line (about 150km)
- Anantapur-II – Cuddapah 765kV D/c line (about 200km)
- Anantapur-II – CN'Halli 765kV D/c line (about 180km)
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

8. During the meeting, TANGEDGO and APTRANSCO stated that as per the proposal, Kurnool-IV & Ananthpur-II PS are planned with transformation capacity of 7.5 GW each. In this context, how much RE capacity and connectivity shall be integrated/granted at these

Pooling Stations. Towards this, CTU stated that as per the CEA Transmission Planning Criteria, maximum 9 GW of transformation capacity has been stipulated for generation stations. Accordingly, considering 'N-1' criteria, maximum 7.5 GW of RE capacity injection shall be allowed at these proposed substations and the same has been considered in the studies. Further, with respect to quantum of connectivity, it was informed that connectivity for injecting entities shall be limited to 7.5 GW at 400kV/220kV level.

TANGEDGO stated that as per CEA 500 GW report, for optimal utilization of transmission system, dispatch factors were considered against the envisaged RE potential for each RE zone. Further, BESS was also considered at a number of RE Pooling stations for further optimization of the transmission system. In this regard, it was requested to clarify whether the same is being considered in the studies. Towards this, CTU stated that connectivity application being received at RE Pooling Stations have variation from the earlier envisaged configurations. For example, Koppal-II & Gadag-II PS were envisaged with 4 GW potential (Solar-2 GW, Wind-2 GW), however connectivity has been granted for 9181 MW out of which total installed capacity of Solar is 2728 MW and wind is 6794 MW. Further, no application was received from BESS in Koppal-II or Gadag-II. Accordingly, REZ capacity to be integrated at Koppal-II and Gadag-II has surpassed the earlier projections in the report. Accordingly, injections has been considered based on the actual data of the applications.

TANGEDGO stated that in case the dispatch factors and BESS as envisaged in the 500 GW report are not considered, it may lead to excessive transmission system planning and the transmission system may be stranded. In this regard, CTU clarified that connectivity grantees are installing more capacity at the RE Pooling stations in order to meet requisite contracts especially RTC contracts commensurate to the connectivity quantum. Further, there are provisions in the Regulations which allows connectivity grantees to add more generation keeping the connectivity quantum same in order to meet their contract requirements. In such a case, if transmission system is planned considering the dispatch factors, it may lead to sub-optimal planning of transmission system and generation projects may not be able to evacuate power commensurate to the connectivity granted. This may lead to bottle-up of RE generations. Further, in-case BESS apply for connectivity at proposed RE Pooling Stations, it shall further facilitate accommodation of more RE potential without any additional investment in transmission system.

9. APTRANSCO informed that it is understood that connectivity has been granted to PSPs at various RE Pooling stations. PSP are expected to run in motoring mode and draw power from grid under high RE scenario and accordingly the capacity of PSP may be reduced for arriving at net injection at such RE PS. In this regard, CTU informed that there is no mandate/regulation wherein PSP may be restricted to operate in motoring mode in high RE scenarios. Accordingly, no injection or drawl has been considered from PSPs while calculation of margins for grant of Connectivity to RE generations.

After detailed deliberations, it was agreed that CTU may refer the matter to CEA seeking necessary clarification and may request CEA to conduct a meeting with participation from

SR stake holders regarding consideration of PSP in various scenarios. Further dispatch factors from RE generations for consideration for immediate evacuation under various studies may also be discussed and recorded for the purpose of standardization among regions and stakeholders.

10. APTRANSCO stated that Kurnool-III and Anantapur PS is under implementation with 3x1500 MVA 765/400 kV ICTs, 7x500 MVA, 400/220 kV ICTs at Kurnool-III and 7x500 MVA, 400/220 kV ICTs at Anantapur PS. It is understood that connectivity of 5350 MW has been granted at 400 kV and 2650 MW at 220 kV at Kurnool-III. Similarly connectivity of 2710 MW has been granted at 400 kV and 1195 MW at 220 kV at Anatapur PS. Accordingly, 5 nos. of 400/220 kV ICTs are not getting utilized at Kurnool-III / Anantpur PS. It was requested that proper planning must be done to ensure utilization of transmission system.

    In this regard, CTU clarified that Kurnool-III and Anantapur PS were planned earlier as part of 66.5 GW of REZ schemes wherein entire power has envisaged at 220 kV level and accordingly all the ICTs were planned and awarded for implementation for accommodating connectivity at 220 kV level. However, looking into the quantum of connectivity being received, connectivity have been granted at 400 kV level also. Options are being explored for utilization of above ICTs at Kurnool-III and Anantapur PS.

    CTU further informed that under the 500 GW report, all the RE PS are being planned optimally with about 50% injection at 400 kV and balance at 220 kV level thereby deferring the requirement of additional 400/220 kV ICTs. Same has also been considered in the present proposal wherein 4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level has been considered at Kurnool-IV and Anantapur-II PS.

11. During the meeting, TSTRANSCO enquired about the requirement of STATCOMs at Kurnool-IV and Anantapur-II PS, wherein it was clarified that STATCOMs are being proposed at these RE Pooling stations as a huge quantum of RE power is being pooled at Kurnool (new), Kurnool-III, Anantapur, Kurnool-IV and Anantapur-II. Further, Kurnool-V and Cuddapah-II shall also be integrated in these complex. Looking into the variable and intermittent nature of RE power and huge quantum of RE power being pooled in the Kurnool & Anantapur area, STATCOMs are being proposed to provide dynamic reactive support as well as grid stability in the area. Further, since high voltages are primarily observed in the area, only 2x125 MVAR MSR are being proposed along with the STATCOMs for providing static voltage support.

    SRLDC, Grid-India stated that they are not able to utilize the full range of reactive support from the STATCOM due to LV bus voltage. The issue could be addressed by providing online tap change in the coupling transformer of STATCOM. CTU clarified that based on the feedback from Grid-India, the matter is being addressed in the RfP documents for all the upcoming schemes.

12. During the meeting TANTRANSCO, TSTRANSCO and APTRANSCO stated that in case, transmission system is implemented under ISTS for dispersal of RE power from the proposed Pooling Stations whether the same shall be considered under national component or not. Towards this, CTU clarified that as per the Sharing Regulations, *National Component-Renewable Energy shall comprise of the Yearly Transmission Charges for transmission systems developed for renewable energy projects as identified by the Central Transmission Utility*. Further, *Transformer Component for a State shall comprise of Yearly Transmission Charges for inter-connecting transformers (ICTs) planned for drawl of power by the concerned State*.

13. With respect to the proposal of Kurnool-IV, TANGEDGO stated that option may be explored for phasing of the transmission system commensurate with the quantum of connectivity applications received at Kurnool-IV. Further, Kurnool-IV- Bidar 765 kV D/c line may initially be charged at 400 kV and depending on the visibility of generation, same may be upgraded to 765 kV.

    In this regard, CTU informed that Bidar PS is implemented as 765/400/220 kV pooling station and only marginal investment may be deferred by initially charging Kurnool-IV- Bidar 765 kV D/c at 400 kV level. Further, as per the applications being received at Kurnool-III/Kurnool-IV, upgradation shall be required in a very short period of time. This may lead to delay in implementation of transmission system and bottling-up of RE power in case the upgradation is taken-up at a later stage. According, it is proposed that Kurnool-IV- Bidar 765 kV D/c may be implemented in the initial phase itself and 765/400 kV & 400/220 kV ICTs may be taken-up in phases for optimization of investment in the transmission system.

14. TSTRANSCO stated that though the proposal of integration of Kurnool-IV REZ with Velttor (TSTRANSCO) through LILO of Kurnool-IV – Bidar 765kV D/c line at Veltoor-II and Veltoor-II– Veltoor TS 400 kV (quad) D/c line Veltoor-II – Udandpur 400 kV (quad) D/c line primarily seems to be in order, they shall communicate regarding availability of space for termination of proposed transmission lines at Veltoor TS. Further, they would discuss the proposal with senior management.

15. APTRANSCO stated that Vijayawada-Nellore 400 kV D/c line is passing in the vicinity of C'Peta substation and accordingly option may be explored for LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta. Same was studied and it was agreed that LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta may be considered in place of C'Peta – Thalapaleyam 400 kV (quad) D/c line.

16. During the meeting, APTRANSCO also raised the issue of high short circuits at Kurnool. In this regard, CTU informed that the issue has also been reported as a part of Rolling Plan report of CTU and detailed studies shall be carried out for mitigation of high short circuit at all substations reported in the report in consultation with the constituents.

It was noted that prima-facie, with the introduction of 15 ohm series limiting reactor between Kurnool & Kurnool (new) 400 kV D/c line, there is a reduction of 6-7 kA in short circuit current. Further, SC currents at Kurnool are observed excessively high which needs detailed analysis along with the detailed system modelling of the generation projects pooled at Kurnool (new) including hydro PSP generations. Detailed studies and analysis shall be done in due course of time and same shall be deliberated in the CMETS meeting.

17. After detailed deliberation, it was agreed that transmission system for Kurnool-IV may be phased out with Kurnool-IV – Bidar 765kV D/c line and Kurnool-IV – Kurnool-III PS 765 kV D/c line in the first phase and balance transmission system in second phase. It was also agreed that the transmission system may taken-up for further approval in the upcoming CMETS meeting of SR and subsequently with SRPC and NCT.

18. With respect to the proposal of Anatapur-II, SRPC stated that as per the proposed transmission system, Anathpur-II is being integrated with CN'Halli 400/220 kV susbstation of KPTCL through Anantapur-II – CN'Halli 765kV D/c line and CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line. In such a case, in case CN'Halli (KPTCL) is delayed, there shall be no evacuation path from CN'Halli 765/400 kV substation. CTU stated that proposed CN'Halli 765/400 kV substation may be implemented under ISTS as 765/400/220 kV substation in case KPTCL is not taking up the CN'Halli (KPTCL) 400/200 kV substation. Towards a query regarding status of implementation of the CN'Halli (KPTCL) substation, KPTCL informed that land acquisition is under process. CTU stated that the CN'Halli substation and associated transmission system was finalized in the 2015, however there has been substantial delay in the implementation of the transmission system. There have been several instance of network overloading particularly Mysore ICTs on account of such delays in implementation of STU transmission system. SRLDC stated that on account of above, SPS was implemented and has already been operated number of times. Accordingly, KPTCL is requested to expedite the implementation of approved STU schemes at the earliest. It was also suggested that KPTCL may explore options for implementation of the transmission scheme under ISTS through various routes. It was also informed that as per the studies Anantapur-II – Davangere 765kV D/c line and Anantapur-II – Cuddapah 765kV D/c line shall be sufficient for evacuation of about 4-4.5 GW of RE, a third outlet shall in any case be required for evacuation of entire power of 7.5 GW from Anantapur-II PS. Looking into the load proximity and based on optimal power flow, integration with CN'Halli has been proposed after exploring all the available alternatives.

19. After detailed deliberation, it was agreed that transmission system of Anantpur-II may be phased out with Anantapur-II – Davangere 765kV D/c line and Anantapur-II – Cuddapah 765kV D/c line in the first phase and balance transmission system in second phase. Further, based on communication received from KPTCL, shall communicate regarding the decision of implementation CN'Halli substation may be implemented as 765/400/220 KV or may be integrated with CN'Halli (KPTCL) through CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line. It was also agreed that the transmission system may taken-up for further approval in the upcoming CMETS meeting of SR and subsequently with SRPC and NCT.

20. After detailed deliberations, following transmission system was finalized for integration of RE generation projects at Kurnool-IV and Anantapur-II in Andhra Pradesh :

a. <u>Transmission System for Integration of Kurnool-IV (Near Aspiri) REZ (for 7.5 GW)</u>

- Establishment of 6x1500 MVA, 765/400 & 10x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- <u>+</u> 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- Kurnool-IV – Veltoor-II 765kV D/c line (about 180 kms) with 330 MVAR SLR at Kurnool-IV on both circuits
- Veltoor-II– Bidar 765kV D/c line (about 200 kms) with 330 MVAR SLR at Bidar end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta
- Veltoor-II– Veltoor TS 400 kV (quad) D/c line (about 60 kms)
- Veltoor-II– Udandpur 400 kV (quad) D/c line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

<u>Phase-I (4.5 GW)</u>

- Establishment of 4x1500 MVA, 765/400 & 4x500 MVA, 400/220 kV Kurnool-IV Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Kurnool-IV PS (1.5 GW injection at 220 kV level and 3 GW injection at 400 kV level)
- <u>+</u> 300 MVAR STATCOM at Kurnool-IV, 2x125 MVAr MSR
- Kurnool-IV – Bidar 765kV D/c line (about 330 kms) with 330 MVAR SLR at both end on both circuits
- Kurnool-IV – Kurnool-III PS 765 kV D/c line (about 150 kms) with 240 MVAR SLR at Kurnool-IV end on both circuits
- Augmentation of 1x1500 MVA, 765/400 kV ICT at C'Peta

<u>Phase-II (3 GW)</u>

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV Veltoor-II Station with 2x330 MVAr (765 kV) bus reactors
- LILO of Kurnool-IV – Bidar 765kV D/c line at Veltoor-II (about 60 kms)

- Veltoor-II– Veltoor TS 400 kV D/c (quad) line (about 60 kms)
- Veltoor-II– Udandpur 400 kV D/c (quad) line (about 30 kms)
- LILO of Vijayawada-Nellore 400 kV D/c line at C'Peta (about 20 kms)

b. Transmission System for Integration of Anantapur-II (Near Rayadurgam) REZs (for 7.5 GW)

- Establishment of 6x1500 MVA, 765/400 kV & 10x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (4 GW injection at 220 kV level and 3.5 GW injection at 400 kV level)
- ± 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station 765/400 along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits
- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

Phase-I (4 GW)

- Establishment of 4x1500 MVA, 765/400 kV & 4x500 MVA, 400/220 kV Anantapur-II Pooling Station near Kurnool, Andhra Pradesh along with 2x330 MVAr (765 kV) bus reactors at Anantapur-II PS (1.5 GW injection at 220 kV level and 2.5 GW injection at 400 kV level)
- + 300 MVAR STATCOM at Ananthpur-II, 2x125 MVAr MSR
- Anantapur-II – Davangere 765kV D/c line (about 150km) with 240 MVAR SLR at Anatpur-II end on both circuits
- Anantapur-II – Cuddapah 765kV D/c line (about 200km) with 330 MVAR SLR at Anatpur-II end on both circuits

Phase-II (3.5 GW)

- Augmentation of 2x1500 MVA, 765/400 & 6x500 MVA, 400/220 kV Kurnool-IV Pooling Station (2.5 GW injection at 220 kV level and 2 GW injection at 400 kV level)
- Establishment of 3x1500 MVA, 765/400 kV CN'Halli Station along with 2x330 MVAr (765 kV) bus reactors
- Anantapur-II – CN'Halli 765kV D/c line (about 180km) with 330 MVAR SLR at Anatpur-II end on both circuits

- CN'Halli - CN'Halli (KPTCL) 400 kV (quad) D/c line (about 10km)

21. It was agreed that the above finalized transmission system for Integration of Kurnool-IV and Anantapur-II REZ (for 7.5 GW each) and shall be taken-up in the upcoming CMETS meeting and SRPC meeting for further approval and implementation.

B. Transmission system strengthening at Kurnool-III PS for integration of additional RE generation projects.

1. CTU informed that "*System strengthening at Kurnool-III PS for integration of additional RE generation projects*" was discussed in the 28th CMETS-SR held on 29.02.2024 wherein following transmission system was agreed for integration of additional RE generation projects at Kurnool-III PS which is under implementation under the transmission scheme "*Transmission scheme for evacuation of power from RE sources in Kurnool Wind Energy Zone (3000MW)/Solar Energy Zone (AP) (1500MW) - Part-A and Part-B*" by POWERGRID under RTM and is expected to be commissioned by Nov'24 :

   - Augmentation of transformation capacity of 3x1500 MVA, 765/400kV ICTs at Kurnool-III PS
   - Kurnool-III PS – Chilakaluripeta 765 kV D/c line (about 260 km) with 240 MVAr switchable line reactors at both ends

2. CTU informed that vide letter dated 08.04.2024, scheme was forwarded for SRPC views. MS, SRPC vide email dated 17.04.2024 has requested to include the transmission scheme in the Joint Study meeting to look into the scheme in comprehensive manner for optimisation of the Transmission system requirements.

3. In view of the above, the transmission scheme was considered in the system studies for integration of RE generation projects at Kurnool-IV and Anantapur-II in Andhra Pradesh (as discussed above) wherein, it was observed that proposed transmission system strengthening at Kurnool-III PS is required for immediate integration & evacuation of power for grant of Connectivity to additional RE generation projects.

4. During the meeting, utilisation of the under implementation of 9x500 MVA 400/220kV ICTs were also deliberated wherein CTU informed that on receipt of large number of applications at 400kV level, matter was discussed with POWERGRID and it has been agreed to modify the SLD for optimum utilization of the ICTs. In this modification there is an additional requirement of bus sectionalization arrangement at 400 kV bus which may be included in the Transmission system strengthening at Kurnool-III PS.

C. Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of power for meeting demand by 2029-30 time frame

1. CTU informed that present peak demand of SR as on March, 2024 is 68,094 MW and expected peak demand of SR as per the 20th EPS during 2029-30 timeframe is about 97.5

GW. The present TTC for import of power from NEW grid to SR Grid is about 24,500 MW and it is expected to be enhanced to 25,000 MW with the commissioning of Narendra-Pune 765kV D/c line. The present limiting constraint for import of power from ER to SR is Angul-Srikakulam 765kV D/c line and from WR to SR is Nizamabad 765/400kV, 1500MVA ICT under contingency. Southern Region has already imported about 22 GW from NEW grid during the peak demand period in March, 2024. Further, the import requirements is expected to increase further during 2029-30 timeframe.

Further, as per MNRE OM dated 01.11.2023, Green Hydrogen / Ammonia demand (by 2030) in Southern Region is about 23,450 MW. The demand for production of Green Hydrogen / Green Ammonia has not been considered under the CEA report on Transmission System for Integration of over 500 GW RE Capacity. This demand is expected to be over and above the peak demand projections of 97.5 GW as per 20th EPS in 2029-30 timeframe. Therefore, total demand is expected to be over 120 GW. The existing / under implementation Inter Regional links between NEW Grid and SR Grid shall not be adequate to meet the above demand. Therefore, the ISTS / STU transmission requirements need to be identified including additional Inter-regional links for meeting the demand including Green Hydrogen / Green Ammonia manufacturing alongwith additional RE potential sites in SR, if any.

2. CTU further informed that considering the drawl GNA (within and outside region) of the SR States, the existing IR links are adequate for meeting the drawl GNA and no additional Inter-Regional link(s) is required between NEW Grid & SR Grid. However, the present study is being conducted as per the decision during the 50th SRPC meeting held on 16.03.2024 to hold physical Joint Study meeting for Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of additional power for meeting demand by 2029-30 time frame.

   In order to enhance the TTC/ATC under the 2029-30 timeframe, following probable Inter-Regional links between NEW Grid and SR Grid were studied/deliberated :

   Scheme-1:

   a) Gopalpur – Srikakulam 765 kV D/c line (about 100 km)

   or

   b) Angul – Srikakulam 765 kV D/c line (about 275 km) (in case bays are available at Angul)

   Scheme-2:

   a) Parli New – Bidar 765kV D/c line (about 150 km)

   Scheme-3:

a) Nagpur – Adilabad 765kV D/c line (about 200 km)
b) Establishment of 765/400kV Adilabad substation and its 400kV interconnections
c) Adilabad – Warangal New 765kV D/c line (about 200 km)
d) Establishment of 765/400kV Khammam-II substation and its 400kV interconnections with existing Khammam
e) Warangal New – Khammam-II 765kV D/c line (about 110 km)
f) Khammam-II – Vemagiri 765kV D/c line (about 215 km)
g) Establishment of 765/400kV Vizag-II substation and its 400kV interconnections with existing Vizag pool / Gazuwaka
h) Srikakulam – Vizag-II 765kV D/c line (about 230 km)
i) Vizag-II – Vemagiri 765kV D/c line (about 150 km)

or

a) Establishment of 765/400kV Jagdalpur-II substation and its 400kV interconnections with existing Jagdalpur
b) Raipur PS – Jagdalpur-II 765kV D/c line (about 300 km)
c) Jagdalpur-II – Vizag-II 765kV D/c line (about 200 km)
d) Establishment of 765/400kV Vizag-II substation and its 400kV interconnections with existing Vizag pool / Gazuwaka
e) Srikakulam – Vizag-II 765kV D/c line (about 230 km)
f) Vizag-II – Vemagiri 765kV D/c line (about 150 km)
g) Establishment of 765/400kV Khammam-II substation and its 400kV interconnections with existing Khammam
h) Warangal New – Khammam-II 765kV D/c line (about 110 km)
i) Khammam-II – Vemagiri 765kV D/c line (about 215 km)

3. System studies were conducted in 2029-30 timeframe. Initially for system studies, Load Generation Balance was deliberated in detail and the modifications as suggested by the STU's (i.e., State peak demand, Generation, Intra-State network, Demand Factors etc.) were incorporated. The demand factors for the SR entities have been derived from actual demand factors met during FY 2023-24.

4. CTU informed that as per 20th EPS, the demand of SR for 2029-30 timeframe is 97.5 GW. Based on the observations received from STUs, demand of about 110 GW have been considered in Scenario-8 (February evening peak) and about 84 GW have been considered in Scenario-4 (June Solar max) for 2029-30 timeframe. The above demand also includes Green Hydrogen demand of about 9.75 GW in both the scenarios. As per the revised LGB, SR import of about 30 GW have been arrived in Scenario-8 and SR export of 14 GW have

been arrived in Scenario-4. The study results and assumptions considered are enclosed at **Annexure-III**.

5. To enhance the ER-SR import limit, a parallel corridor to existing IR link of Angul-Srikakulam 765kV D/c line has been identified as Gopalpur-Srikakulam 765kV D/c line (Scheme-1) from the under bidding Gopalpur GIS 765/400kV S/s. Gopalpur GIS S/s is planned to meet the Green Ammonia/Hydrogen demand with interconnection to Angul 765kV S/s through 765kV D/c line and ±800kV, 6000MW HVDC emanating from Bikaner, Rajasthan.

   Further, additional inter-regional corridor between WR-SR as Bidar - Parli 765kV D/c line (Scheme-2) has been proposed to further enhance the import capability of SR region. Bidar S/s is further interconnected with Veltoor-II 765/400kV S/s (proposed under the Kurnool-IV REZ scheme)

   Further, additional link from Nagpur-Adilabad-Warangal New 765kV D/c link (Scheme-3) was identified for further enhancement of import capabilities and to remove the limiting constraint on Wardha - Nizamabad 765kV D/c line. The distance between Nagpur and Warangal New is about 500 km and hence an intermediate S/s near Adilabad needs to be established for optimal utilization of the link. Under this alternative, establishment of Adilabad new 765/400kV S/s along with its 400kV interconnections with nearby STU network are required.

6. During the meeting, APTRANSCO also suggested an alternative to WR-SR link (Scheme-3) for consideration for studies for enhancement in import capabilities and drawal from Chhattisgarh area especially from Raipur 765/400kV PS to meet the growing demand of Visakhapatnam city. Distance between Raipur PS and Vizag new S/s is about 500km and hence an intermediate S/s near Jagdalpur needs to be established for optimal utilization of the link. Under this alternative, establishment of Jagdalpur new 765/400kV S/s along with its interconnection with existing Jagdalpur 400kV (STU) through 400kV D/c line was considered.

7. The last TTC declared on CTU website for import of power from NEW grid to SR Grid is about 25,000 MW with the commissioning of Narendra-Pune 765kV D/c line. Subsequently, significant augmentation in the ISTS network has been identified and under implementation viz Koppal-II – Narendra New 765kV D/c line, Koppal-II – Raichur New 765kV D/c line, LILO of Narendra New – Madhugiri 765kV D/c line at Davanagere PS etc. due to which the SR import TTC is expected to be enhanced to about 26700 MW. It is also observed that SR export TTC has also been enhanced due to displacement of power flow and revised load generation balance. Further, considering the above proposed IR schemes, the overall TTC of SR is envisaged to be enhanced as below:

Sl. No.	Case under study	SR TTC (MW)	Limiting Constraint (N-1 Contingency)
1	Base case	26700	Wardha - Nizamabad 765kV D/c Line

2	Base case + Scheme-1 (Gopalpur-Srikakulam 765kV D/c line)	27600	Wardha - Nizamabad 765kV D/c Line
3	Base Case + Scheme-2 (Parli - Bidar 765kV D/c line)	28770	Angul – Srikakulam 765kV D/c Line
4	Base Case + Scheme-1 + Scheme-2 (Parli - Bidar 765kV D/c line)	31200	Wardha - Nizamabad 765kV D/c Line
5	Base Case + Scheme-1 + Scheme-2 + Scheme-3_Alt-1 (Raipur PS – Jagdalpur new- Vizag new 765kV D/c line)	35150	Wardha - Nizamabad 765kV D/c Line
6	Base Case + Scheme-1 + Scheme-2 + Scheme-3_Alt-2 (Nagpur – Adilabad – Warangal New 765kV D/c line)	36150 36600	Warangal New 765/400kV ICTs Wardha - Nizamabad 765kV D/c Line

From the above, it is observed that considering Gopalpur-Srikakulam 765kV D/c line (Scheme-1) alone the incremental TTC is about 900 MW and limiting constraint is Wardha – Nizamabad 765kV D/c line. With Parli - Bidar 765kV D/c line (Scheme-2) alone about 2000 MW increment in TTC is observed and the limiting constraint is Angul – Srikakulam 765kV D/c line. It was observed that with strengthening of ER-SR (Scheme-1) IR corridor alone, the limiting constraint is shifted to WR-SR link i.e. Wardha – Nizamabad 765kV D/c line and vis-à-vis with strengthening of WR-SR (Scheme-2) IR corridor alone, the limiting constraint is shifted to ER-SR link i.e. Angul – Srikakulam 765kV D/c line. Accordingly, to meet the anticipated import requirement of 30 GW by SR, Scheme-1 and Scheme-2 are required to be taken up for implementation simultaneously for effective increment in TTC of about 4500 MW between NEW grid and SR grid.

8. SRPC and STU's enquired about the enhancement of export limit of SR TTC with the proposed IR links. As per the study results, TTC export limit of SR is as below:

Sl. No.	Case under study	SR TTC (MW)	Limiting Constraint (N-1 Contingency)
1	Base case	20700	Narendra – Pune-III 765kV D/c Line
2	Base case + Scheme-1 (Gopalpur-Srikakulam 765kV D/c line)	21100	Narendra – Pune-III 765kV D/c Line
3	Base Case + Scheme-1 + Scheme-2 (Parli - Bidar 765kV D/c line)	22450	Narendra – Pune-III 765kV D/c Line
4	Base Case + Scheme-1 + Scheme-2 + Scheme-3_Alt-1 (Raipur PS-Jagdalpur new- Vizag new 765kV D/c line)	22480	Narendra – Pune-III 765kV D/c Line
5	Base Case + Scheme-1 + Scheme-2 + Scheme-3_Alt-2 (Nagpur – Adilabad – Warangal New 765kV D/c line)	22830	Narendra – Pune-III 765kV D/c Line

From the above, it is observed that there is marginal enhancement in the SR export TTC limits with the above schemes.

9. It was pointed out that as per the LGB worked out for the study timeframe, import of about 30 GW is anticipated. In order to meet this import requirement, Scheme-1 and Scheme-2 as stated above may be taken up for further approval process. However, for Scheme-3, two nos. of alternatives were studied which requires further detailed study analysis and CTU may share the study case files for further analysis and deliberations. CTUIL suggested that after sharing case study files for the above schemes and suggestions / modifications, if any, in the scheme-3 may be submitted for further analysis or studies / deliberations. It was also suggested that if required, a separate joint study can be conducted through VC.

D. Augmentation of transformation capacity with 400/220kV, 1x500 MVA ICT (4th) at Nagarjunasagar 400/220kV substation

1. POWERGRID vide letter dated 16.10.2023 has informed that presently Nagarjunasagar 400/220kV substation is under operation with 3x315 MVA, 400/220 kV ICTs. These ICTs are catering to the loads of Andhra Pradesh and Telangana. CE/SLDC, TSTRANSCO vide letter dated 29.09.2023 expressed that the ICTs at Nagarjunasagar are getting loaded about 90% during the peak agriculture demand period and restricting the running of no. of units in pump mode during the morning hours. It was requested to study and address the issue so that Nagarjunasagar units can operate in pump mode as and when required for subsequent power generation during peak hours. It was also requested to explore the possibility of augmentation of 3x315 MVA ICTs to 2x500 MVA + 1x315 MVA capacity. POWERGRID also informed that one 315 ICT is being replaced with 500 MVA ICT as per the recommendations of 44th SRPC meeting.

2. TSTRANSCO vide letter dated 17.11.2023 has informed that when the Nagarjuna Sagar generation units (7x100.8 MW) are operated in pump mode, power is imported from 3x315 MVA ICTs through 3 nos. of 220kV Nagarjuna Sagar – Tallapally lines. Further, during recent times due to scant rain fall, the 3x315 MVA ICTs are fully loaded due to simultaneous incidence of agricultural demand in Telangana and Andhra Pradesh. The maximum load on the 3x315 MVA ICTs recorded on 10.10.2023 at 12:00 hrs is 304 MW, 314 MW and 273 MW respectively. TSSLDC had requested SRLDC, PGCIL and SRPC to relieve the congestion on Nagarjuna Sagar ICTs at the earliest.

3. Accordingly, the proposal for augmentation of transformation capacity with 400/220kV, 1x500 MVA ICT (4th) at Nagarjunasagar 400/220kV substation was deliberated in the 25th CMETS-SR held on 28.11.2023 based on the inputs from TSTRANSCO and POWERGRID. During the meeting APTRANSCO informed that requirement of 4th ICT may also be studied and downstream 220kV loadings also needs to be checked as it is already highlighted in the operational feedback. After detailed deliberations it was decided that proposal for replacement of 315 MVA ICT-1 with 500 MVA ICT may be deliberated in the next CMETS based on the inputs from POWERGRID. It was also decided that the proposal for augmentation of 4th ICT at Nagarjunasagar along with system studies may be deliberated in the next CMETS.

Keeping above in view, the proposal for augmentation of 4th ICT at Nagarjunasagar is deliberated in the present joint study meeting.

4. During the Joint Study meeting, SRPC opined that as the high loadings are being observed during the real time operation and the studies may be carried out on the present time frame study files. It was requested to SRLDC to present the studies in the present timeframe case files with loading pattern of the ICTs.

   SRLDC informed that at present 400/220kV, 3x315 MVA ICTs are installed at Nagarjunasagar S/s. During peak demand period and pump mode operation of Nagarjunasagar units, the ICTs loading is going beyond N-1 Limits. Under N-1 of one ICT, the loading on remaining ICTs is going up to 118% of the rated MVA. Further, it was informed that ICT-2(315 MVA) is being replaced with 500MVA. Even with the replacement under N-1 the other ICTs loading is 118%. Further, considering the 4th 500 MVA ICT, under N-1 of one ICT, the loading on remaining ICTs is going up to 80% of the rated MVA. Hence additional ICT of 500 MVA is required at Nagarjunasagar. The study results are attached at Annexure-IV.

5. APTRANSCO informed that with proposed augmentation of 4th ICT at Nagarjuna Sagar, loading on the downstream network may also be studied.

   SRLDC informed that, presently there are 3 nos. of 220kV circuits emanating from Talapalli to Nagarjunasagar generating station. Out of three circuits, two circuits are twin moose and one circuit is Zebra conductor. When more than four units are operating in motoring mode at Nagarjunasagar generating station, under N-1 of any twin moose line, the loading on zebra conductor is crossing 213 MVA (thermal limit). Hence strengthening of the third circuit is also required for running more than four units in motoring mode at Nagarjunasagar generating station. Further, SRLDC informed that Talapalli – Rentachintali 220kV S/c line is also getting overloaded and suitable strengthening is required for addressing the same. APTRANSCO informed that Talapalli – VTPS 220kV 2nd circuit is proposed to be LILOed at Rentachintali and with this LILO arrangement, the loading issue shall be addressed. Further, APTRANSCO informed that space for 220kV ICT bay may be a constraint and therefore needs to be looked into.

   TSTRANSCO informed that the strengthening of Talapalli – Nagarjunasagar 220kV third circuit is not required as only four units are operating in motoring mode at Nagarjunasagar generating station.

   SRLDC informed that considering the future demand growth, the strengthening of the Talapalli – Nagarjunasagar 220kV third circuit may be taken up immediately, for which TSTRANSCO informed that in case of operation of more than 4 units in motoring mode at Nagarjunasagar generating station, suitable strengthening shall be carried out by TSTRANSCO and APTRANSCO for their own portions.

6. After detailed deliberations, augmentation of transformation capacity with 400/220kV, 1x500 MVA ICT (4th) at Nagarjunasagar 400/220kV substation was agreed by the SR constituents. It was also agreed that a joint site visit with participation from CTU, SRPC, POWERGRID, APTRANSCO and TSTRANSCO may be planned to explore the space availability for 220kV ICT bay.

E. Utilization of Gazuwaka back-to-back HVDC to its rated capacity of 1000 MW during import / export modes with redressal of low voltage conditions in Gazuwaka ER bus.

SRLDC informed that presently, Gazuwaka back-to-back HVDC is being operated with power order of about 650 MW in both forward and reverse direction due to low voltage issues in Gazuwaka East bus.

CTU informed that with the commissioning of Jeypore – Jagdalpur 400kV twin HTLS D/c line which under implementation and expected to be available by March, 2025, the issue of low voltage in Gazuwaka East bus shall be addressed and Gazuwaka back-to-back HVDC may be operated with power order of 850 MW considering the thermal rating of Jeypore – Gazuwaka 400kV D/c line.

F. Possibility of operation of Talcher – Kolar HVDC in reverse mode

The SR constituents in various forums has requested to explore the possibility of operation of Talcher – Kolar HVDC in reverse mode during high RE scenario of SR for optimal utilization of the IR links.

Accordingly, the issue was deliberated in the joint study meeting wherein CTU informed that when the power order on Talcher – Kolar HVDC is reduced below 1150 MW in forward direction then there are constraints in evacuation of Talcher generation and generation unit(s) are required to be back down. Further, in reverse mode of operation, there shall be severe constraints in both ISTS as well as STU network of Karnataka apart from severe constraints at Talcher end for evacuation of power. For reverse operation of the HVDC, large number of augmentation is required under ISTS for supply of 4000 MW power at Kolar, as no source of power is available near to Kolar and large quantum of load (about 3000 MW) of Bangalore city is required to be met. It is also to be noted that under peak load conditions, Kolar & around substations observes low voltage conditions. Further for reversal of 2000 MW through Talcher-Kolar HVDC and 2000 MW of Talcher generation, transmission system for evacuation of 4000 MW shall required to be identified at Talcher end. Accordingly, the reversal of the HVDC shall require large investment towards augmentation of ISTS at Kolar & Talcher ends which may only be utilized for a very short period of time and that too is RE surplus scenario only.

In view of the above, CTU expressed that reverse mode operation of Talcher – Kolar HVDC may not be beneficial and feasible.

G. Transmission system for supply of power to Green Hydrogen / Green Ammonia consumers.

1. CTU informed that Ministry of Power has issued Hydrogen Policy vide notification dated 17.02.2022 to facilitate the energy transition from fossil fuel / fossil fuel-based feedstock to Green hydrogen / Green ammonia as energy carriers / chemical feedstock for different sectors.

   In this regard, MNRE vide OM dated 01.11.2023 have forwarded the locations of Green Hydrogen/Ammonia capacities expected by 2030 upon discussions with the Green hydrogen / Green ammonia manufacturers and the electricity demand at these locations, the OM is enclosed at **Annexure-V**. As per MNRE OM dated 01.11.2023, Green Hydrogen / Ammonia demand (by 2030) in Southern Region is about 23,450 MW. Further, Tuticorin, Kakinada and Mangalore has been considered as prioritized zones for Green Hydrogen/ Green Ammonia production. The expected total demand from Green Hydrogen / Green Ammonia developers in Tuticorin area, Tamil Nadu, is of order of 7 GW. Year-wise expected demand from Green Hydrogen/ Green Ammonia developers is given below.

Year	Cumulative Electricity Demand at Tuticorin (MW)
by 2027	2900
by 2028	2900
by 2029	5645
by 2030	7015

2. It was also informed that M/s AM Green Ammonia (India) Pvt. Ltd., vide application dated 29.02.2024, has submitted application for GNA-RE, as Bulk Consumer, for 1660 MW (Within Region: 0 MW & Outside Region: 1660 MW) at Tuticorin, Tamil Nadu with start and end date as 01.12.2026 & 31.11.2051 respectively. Further, M/s AM Green Ammonia (India) Pvt. Ltd. has indicated that they are in the process of developing the Green Ammonia Plant in phased manner and total drawl requirements for the entire project capacity shall be 2260 MW. The details provided by M/s AM Green Ammonia (India) Pvt. Ltd. are as below :

Phase	Capacity (MW)
Phase-I	1660
Phase-II	600
Total	**2660**

3. The application was discussed in 29th CMETS-SR, held on 28.03.2024, wherein it was agreed that the subject agenda shall be deliberated in the joint study meeting. CTU further stated that all applications received for grant of Connectivity/ GNA under GNA Regulations 2022 are required to be processed in time bound manner, therefore transmission system required for grant of Connectivity/ GNA to Green Hydrogen / Green Ammonia developers in Tuticorin area is required to be finalized so that connectivity/ GNA applications may be processed in time bound manner.

4. CTU informed that in view of the upcoming demand of about 7 GW from Green Hydrogen/ Green Ammonia plants/ industries in Tuticorin area System studies have been carried out. As per study analysis, following transmission system is required for grant of Connectivity to Green Hydrogen/ Green Ammonia developers in Tuticorin area.
   - Upgradation of 765 kV Tuticorin PS (presently charged at 400 kV) to its rated voltage at 765 kV. for order of about 7 GW
   - Upgradation of 765 kV Dharmapuri (presently charged at 400 kV) to its rated voltage at 765 kV.
   - Upgradation of Tuticorin PS – Dharmapuri 765 kV line (presently charged at 400 kV) to its rated voltage at 765 kV.
   - Upgradation of Dharmapuri – Madhugiri 765 kV line (presently charged at 400 kV) to its rated voltage at 765 kV
   - Establishment of Tuticorin (GH) 765/400 kV, 3x1500 MVA S/s with 1x240 MVAR Bus Reactor.
   - Tuticorin PS – Tuticorin (GH) 765 kV D/c line

5. During the meeting, it was opined that possibility of granting connectivity to Green Hydrogen / Green Ammonia developers through 400 kV at Tuticorin PS may be explored instead of establishing a new 765/400 kV Tuticorin (GH) S/s.

   In this regard, CTU informed that existing Tuticorin PS (presently charged at 400 kV) has limited space provision for implementation of 765/400 kV ICTs and termination of 400 kV lines, therefore, it shall not be possible to accommodate connectivity for identified potential corresponding to 7 GW. Accordingly, establishment of Tuticorin (GH) S/s has been envisaged for grant of Connectivity corresponding to identified potential of about 7 GW.

   SE, SRPC suggested that CTU may further study requirements and may put-up the proposal for further deliberations. Further, possibility of acquisition of additional space contiguous to Tuticorin PS may be explored for grant of GNA/Connectivity to Green Hydrogen / Green Ammonia developers.

H. The balance agenda points could not deliberated during the Joint study meeting due to paucity of time and the same may be taken up in the next Joint Study meeting.
   - Transmission System for integration of Kurnool-V REZ in Andhra Pradesh
   - Transmission System for integration of Kadapa-II REZ in Andhra Pradesh
   - Constraints in Transmission system of Southern Region as per the SRLDC operational feedback
   - Short Circuit analysis at different substations in Southern Region

Meeting ended with the vote of thanks.

* * * * * * * *

Annexure-I

List of participants for Joint Study Meeting with SR constituents held from 2nd -4th May'2024 at SRTS-I RHQ, Hyderabad

SRPC

1.	Shri Asit Singh	MS
2.	Shri Meka Ramakrishna	SE
3.	Ms. Anusha Das	EE

GRID-INDIA

1.	Shri Vivek Pandey	Sr.GM, NLDC
2.	Shri Priyam Jain	Chief Manager, NLDC
3.	Shri Gaurab Dash	Dy. Manager, NLDC
4.	Shri A Janardhan	Chief Manager, SRLDC
5.	Shri G Praveen Kumar	Manager, SRLDC

STU

1.	Ms. Gayatri Kulkarni	EE, KPTCL
2.	Ms. Divya Prabha	AEE, KPTCL
3.	Ms. Resmi S	AEE, KSEBL
4.	Ms. Amritha Sasi	AEE, KSEBL
5.	Shir M. Sudarsan	SE/ SS, TANTRANSCO
6.	Shri G Ramesh Kumar	EE/ SS, TANTRANSCO
7.	Ms. J Kalai Selvi	AEE/ SS, TANTRANSCO
8.	Shir M. Sathuraman	SE/ CERC, TANGEDCO
9.	Dr. R. Kathiravan	EE/ CERC, TANGEDCO
10.	Ms. K Bindu	SE/ SS, TSTRANSCO

11.	Dr. M. Sheshagiri	DE/ SS, TSTRANSCO
12.	Shri P. Srinivasa	ADE, TSTRANSCO
13.	Shri P. Sandeep Reddy	AE, TSTRANSCO
14.	Shri V. Mahender Reddy	AE, TSTRANSCO
15.	Shri S. Sreenivasalu	DEE, APTRANSCO
16.	Shri Ch. Sreenivasa Rao	EE/ SS-I, APTRANSCO
17.	Shri Ch. Anil Kumar	AEE, APTRANSCO
18.	Shri G Ramamohan Rao	AEE-I/ SS-I, APTRANSCO

CTUIL

1.	Shri V Thiagrajan	Sr.GM
2.	Shri Anil Kumar Meena	GM
3.	Shri Ajay Dahiya	DGM
4.	Shri Ankush Patel	Chief Manager
5.	Shri Venkatesh Gorli	Chief Manager
6.	Shri Mahendranath Malla	Chief Manager
7.	Shri Umesh Dhanuk	Engineer

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Annexure-II

Transmission System for integration of Kurnool-IV and Anantapur-II REZs in Andhra Pradesh

1. Assumptions and important Considerations for the study:

- Study time frame: 2026-27
- Scenarios: Scenario 8 - Scenario 4 - June solar max (SR Export) and February Evening peak (SR Import)
- **Major Assumptions for Scenario 4 - June solar max (SR Export)**
  - SR Demand **:** 71.3 GW
  - SR Generation : 89.4 GW
  - SR Surplus(+) / Deficit(-) : (+) 18 GW
  - State wise demand considered as per inputs from the STUs are as below:

State	Demand as per 20th EPS (MW)	Peak Demand provided by STUs (MW)	Total Demand considered in study (MW)
Andhra Pradesh	17758	17758	16701
Telangana	19529	19529	11125
Karnataka	17810	18410	16571
Kerala	5549	6800	4424
Tamil Nadu	21736	23313	21520
Puducherry	567	567	948
Total	**82949**	**86377**	**71289**

  - The demand factors for the SR entities has been derived based on the factors considered in Sc-4 of the Rolling Plan report.
  - Following Dispatch factors has been considered as per the profiling and LGB :
    - Solar – 90%
    - Wind – 55%
    - Thermal – 55% as per the variable cost of the generators

- Nuclear – 80%
- Hydro – 40%
- ESS / PSPs – ESS in charging mode, PSP - no injection or absorption

- HVDC power orders considered:
  - Raigarh – Pugalur HVDC (3000 MW from SR to WR)
  - Bhadrawati BtB HVDC (500 MW from SR to WR)
  - Gazuwaka BtB HVDC (600 MW from SR to ER)
  - Talcher – Kolar HVDC (1150 MW from ER to SR)

- **Major Assumptions for Scenario 8 - February Evening peak (SR Import)**
  - SR Demand **:** 84.7 GW
  - SR Generation : 65.6 GW
  - SR Surplus(+) / Deficit(-) : (-) 19 GW
  - State wise demand considered as per inputs from the STUs are as below:

State	Demand as per 20th EPS (MW)	Peak Demand provided by STUs (MW)	Total Demand considered in study (MW)
Andhra Pradesh	17758	17758	16962
Telangana	19529	19529	18891
Karnataka	17810	18410	17645
Kerala	5549	6800	6452
Tamil Nadu	21736	23313	24167
Puducherry	567	567	596
Total	**82949**	**86377**	84713

  - The demand factors for the SR entities has been derived from actual demand factors met during FY 2023-24.
  - Following Dispatch factors has been considered as per the profiling and LGB :
    - Solar – 0%
    - Wind – 20%

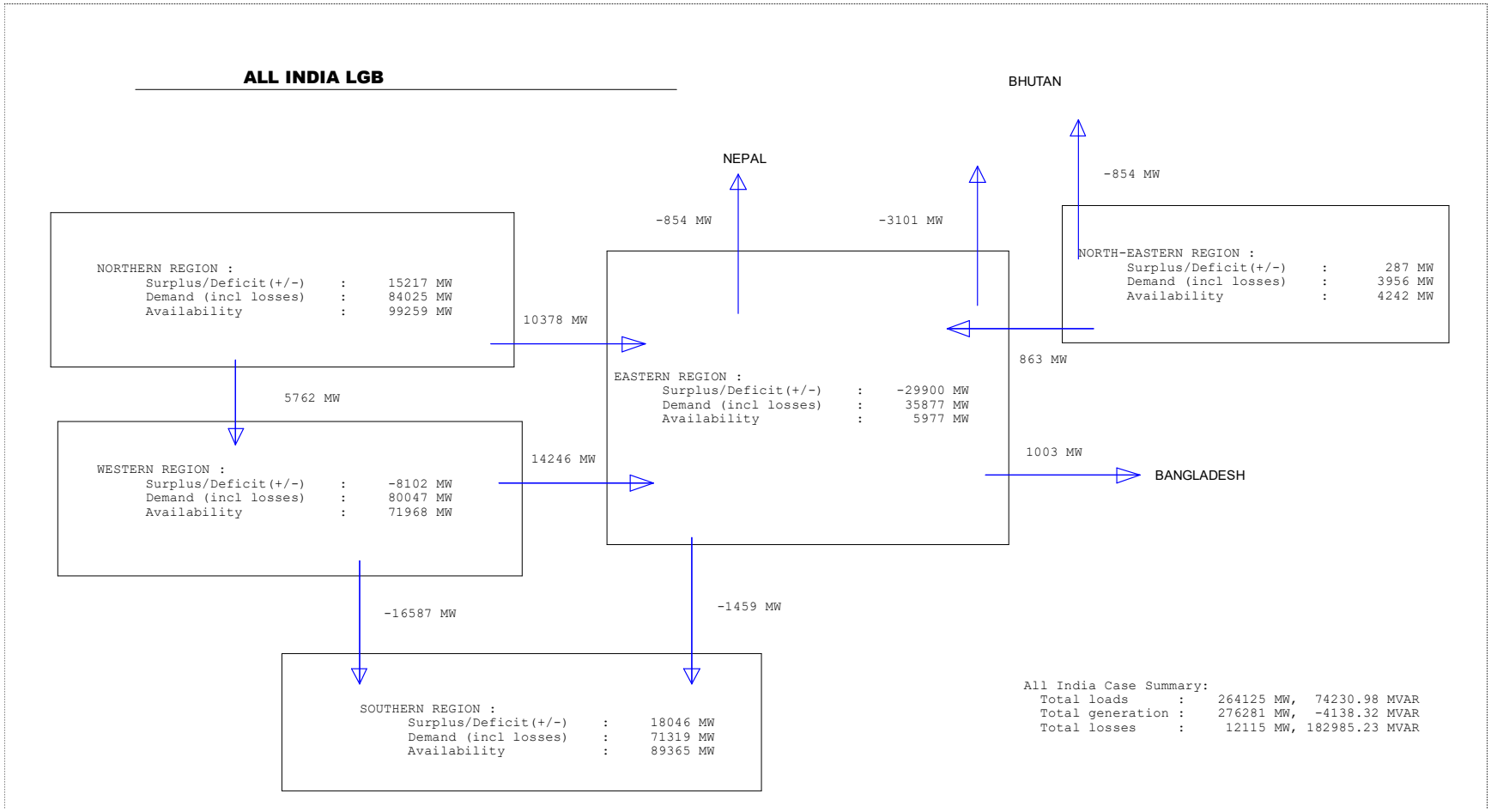
- Thermal – 85% as per the inputs from the respective STUs
- Nuclear – 80%
- Hydro – 40%
- ESS / PSPs – in generation mode

- HVDC power orders considered:
  - Raigarh – Pugalur HVDC (6000 MW from WR to SR)
  - Bhadrawati BtB HVDC (1000 MW from WR to SR)
  - Gazuwaka BtB HVDC (650 MW from ER to SR)
  - Talcher – Kolar HVDC (2000 MW from ER to SR)

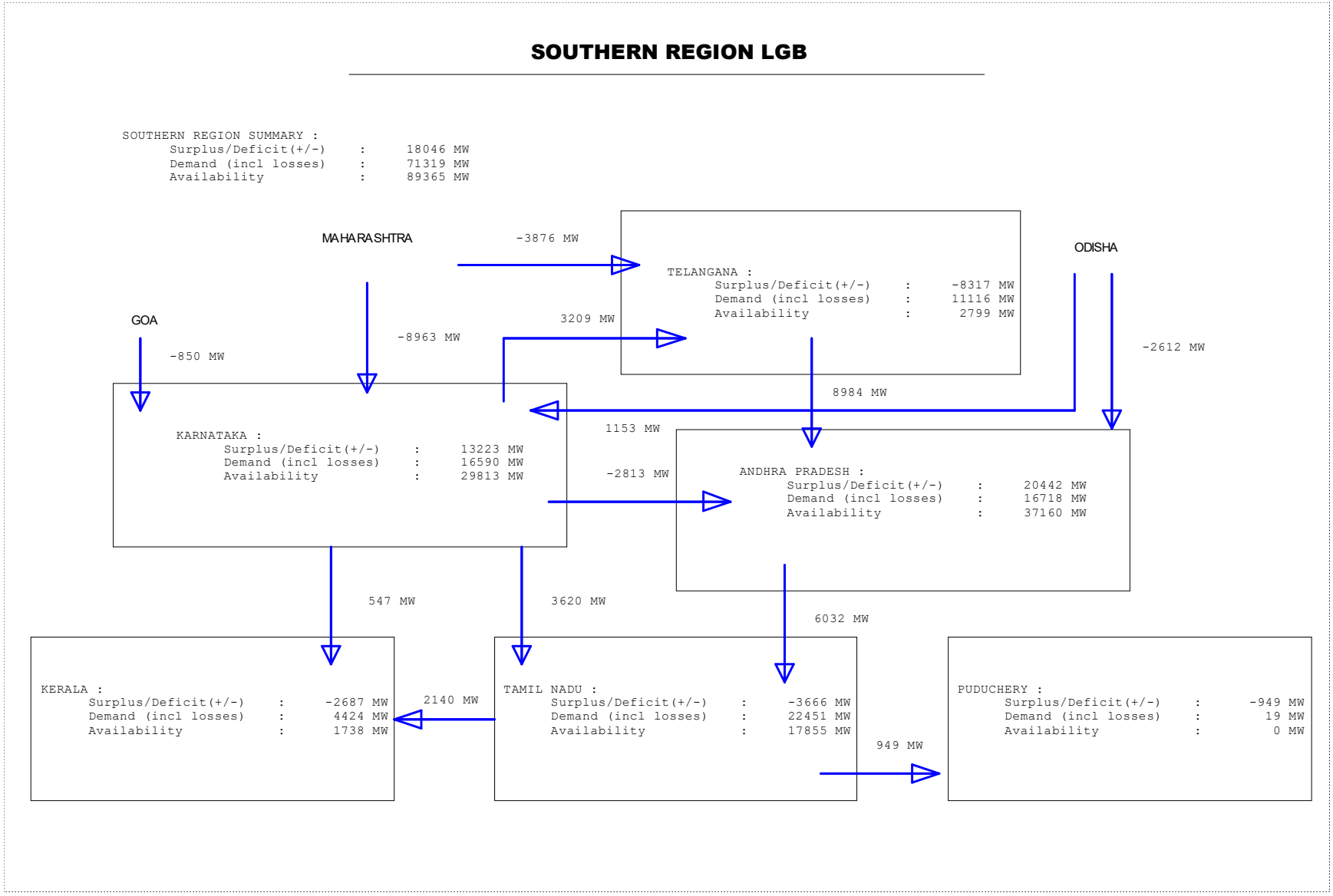
2. Load generation balance

Scenario 4 - June solar max (SR Export)

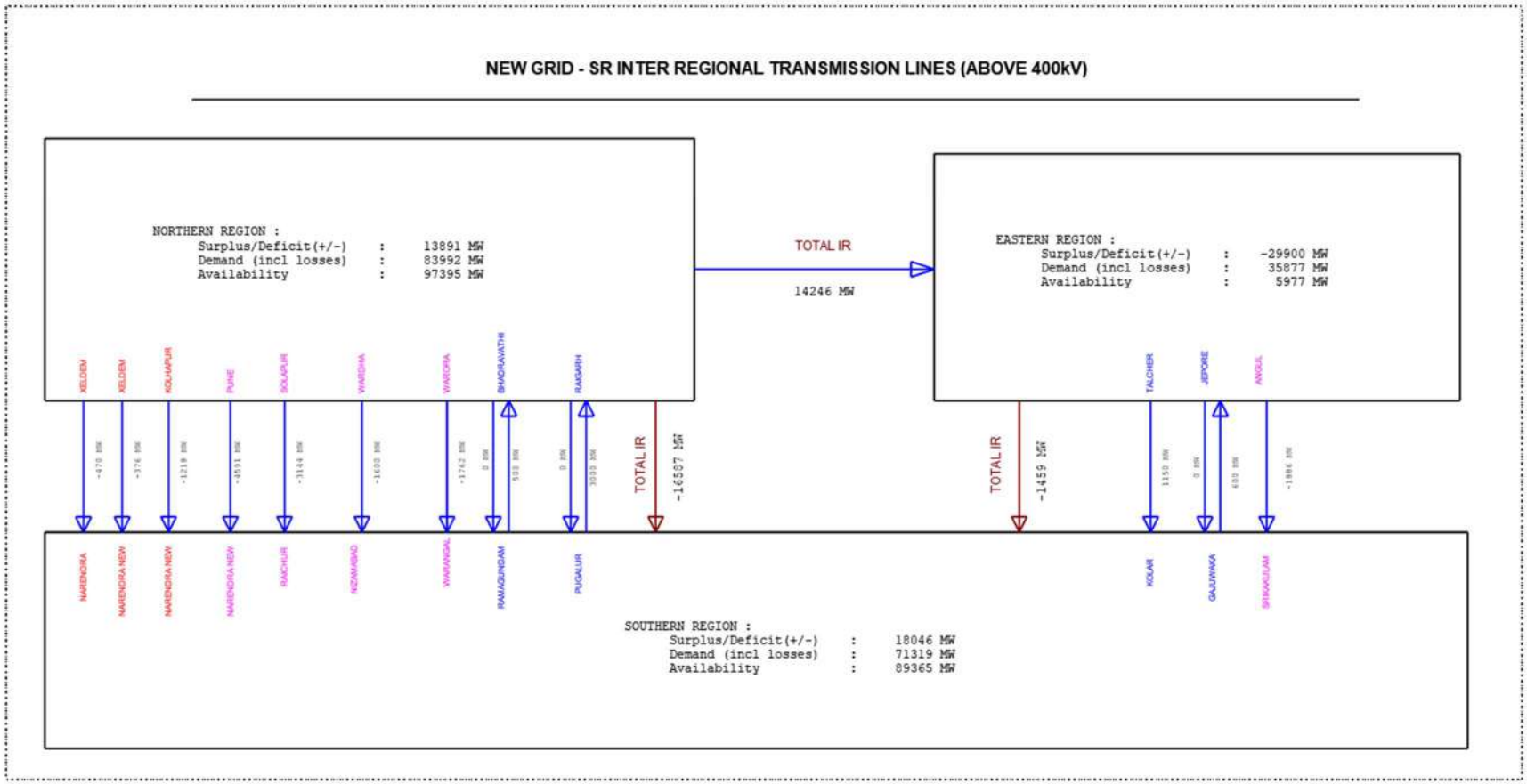
All India LGB snapshot



State wise LGB Summary

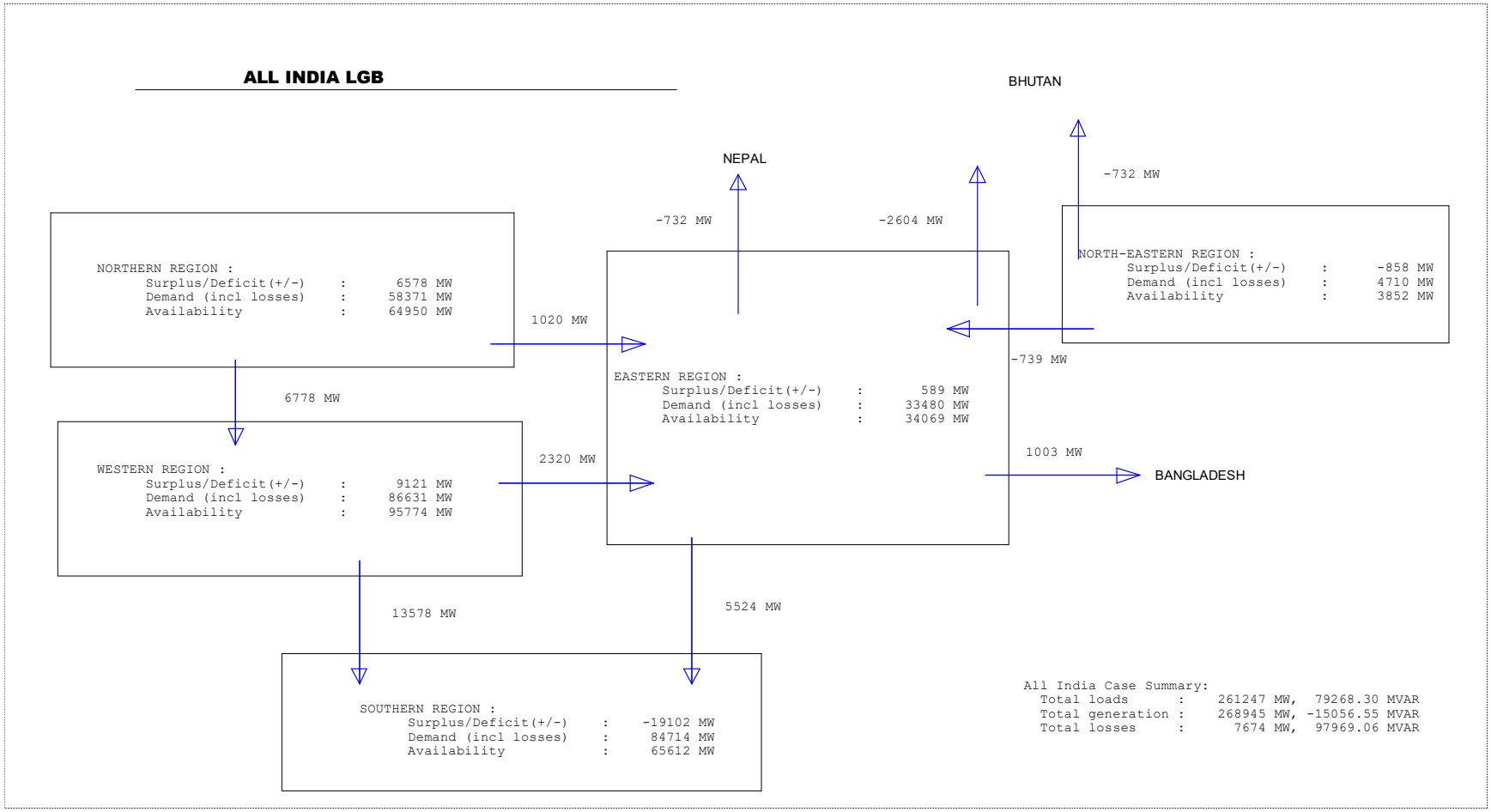


SR Inter-regional Tie line flows

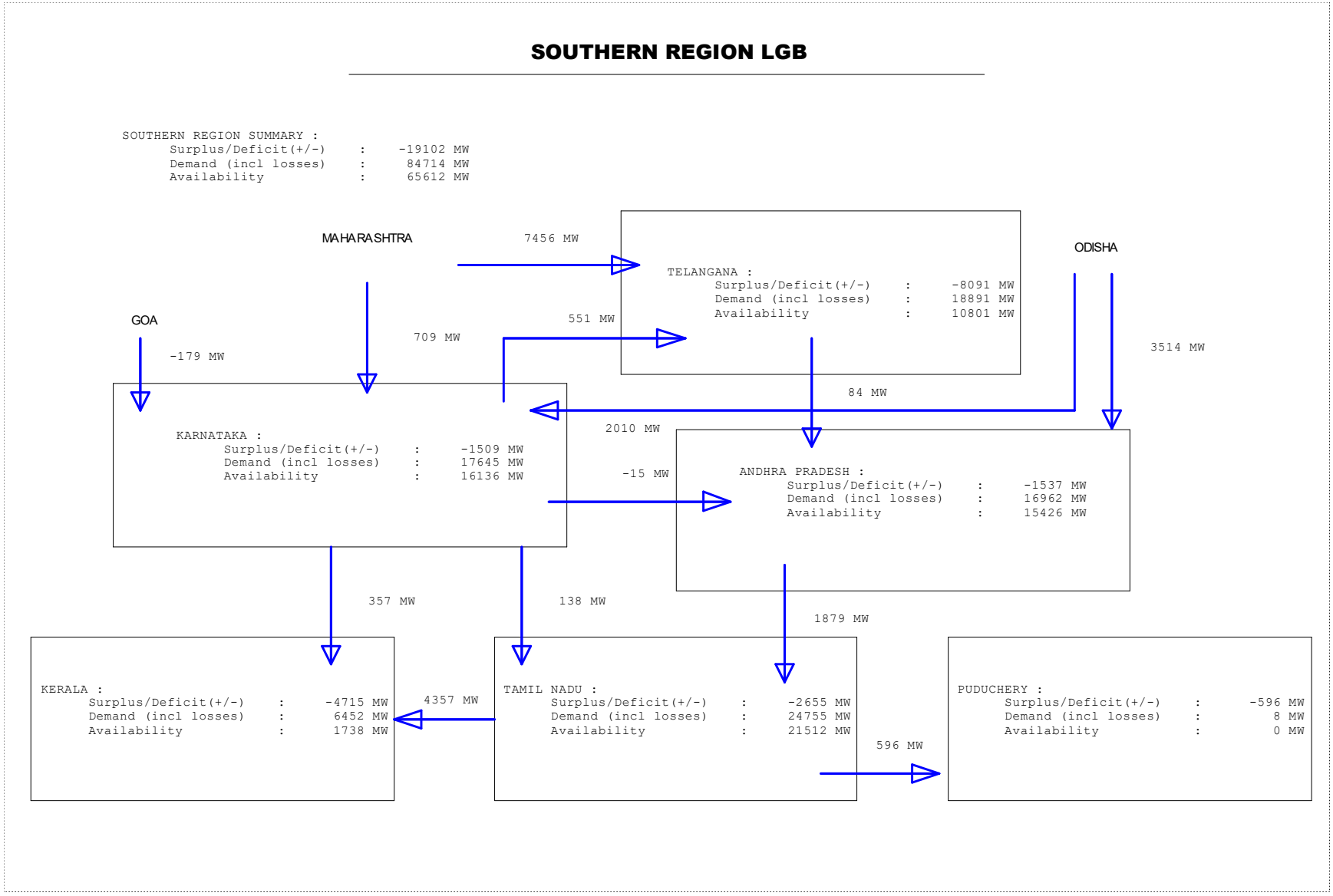


Scenario 8 - February Evening peak (SR Import)

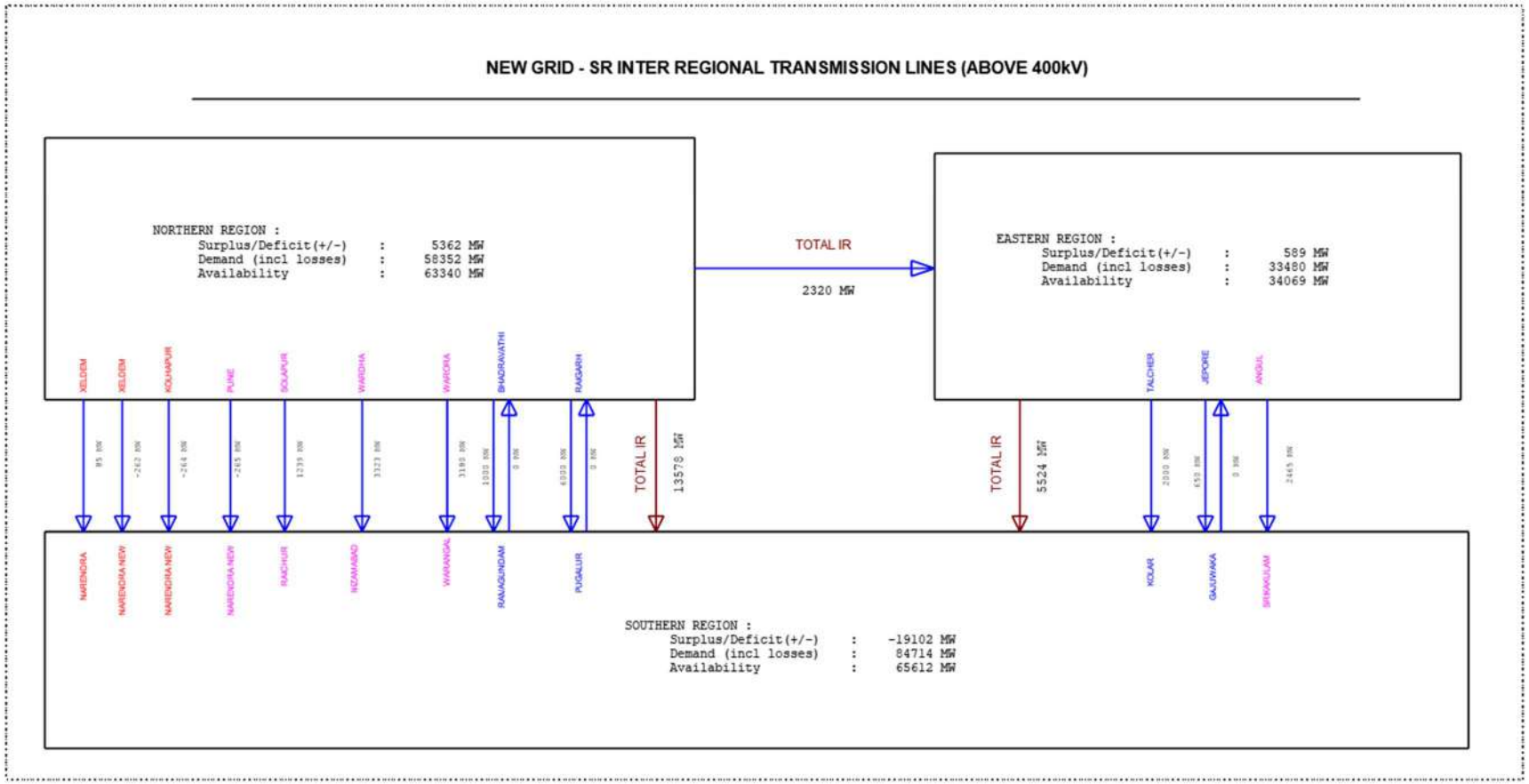
All India LGB snapshot



State wise LGB Summary



SR Inter-regional Tie line flows

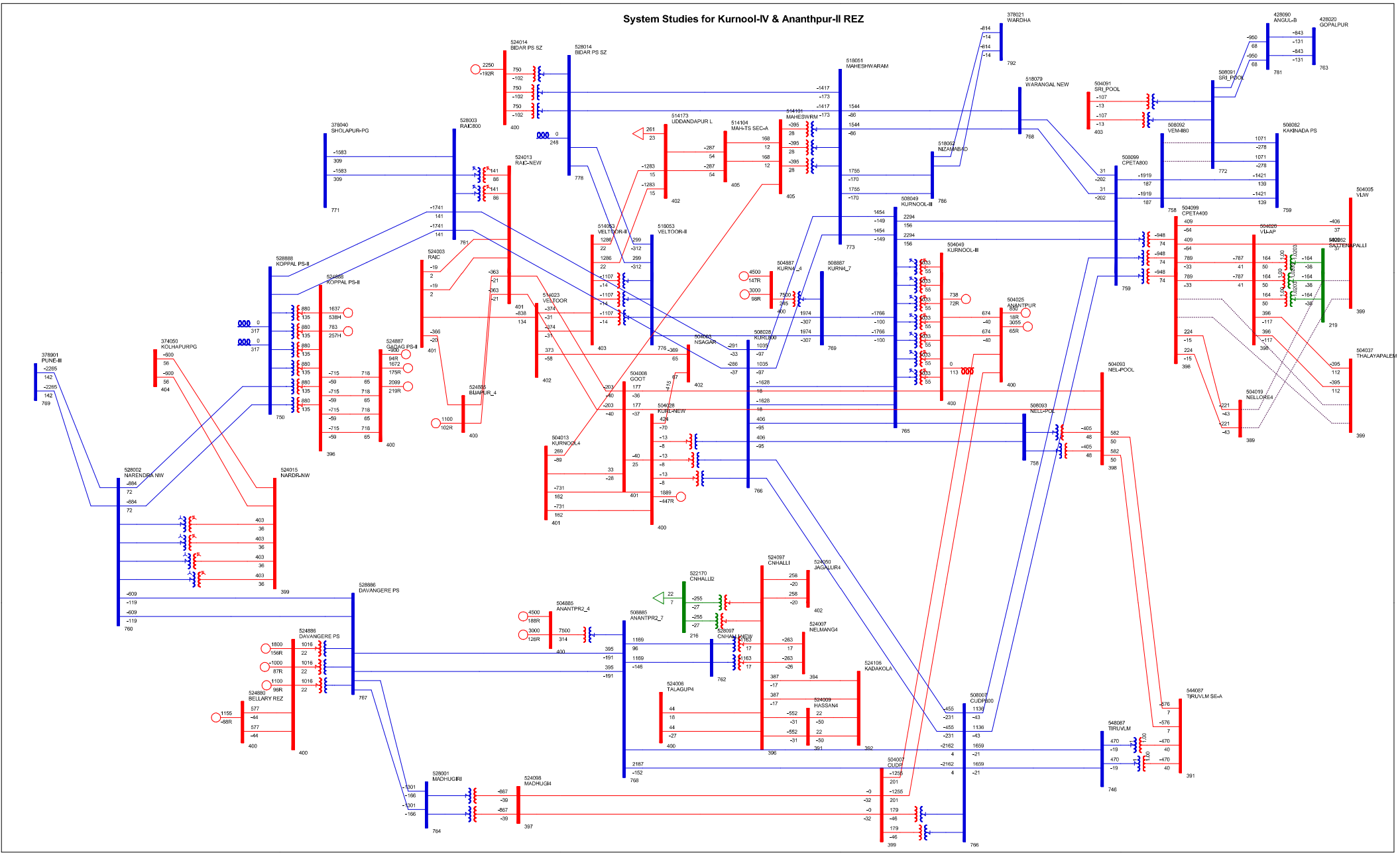


3. System Studies

Scenario	Case details	Exhibit No.
Scenario-4 Scenario 4 - June solar max (SR export)	Base case	I
	N-1 of Kurnool-III – Kurnool-IV PS 765 kV D/c line	I-A
	N-1 of Kurnool-III – Kurnool (new) 765 kV D/c line	I-B
	N-1 of Kurnool-III – Maheshwaram 765 kV D/c line	I-C
	N-1 of Kurnool-III – C'Peta 765 kV D/c line	I-D
	N-1 of Kurnool-IV – Veltoor-II kV D/c line	I-E
	N-1 of Veltoor-II– Bidar 765kV D/c line	I-F
	N-1 of Anantapur-II – Cuddapah 765kV D/c line	I-G
	N-1 of Cuddapah - C'Peta 765kV D/c line	I-H
	N-1 of Cuddapah – Kurnool (new) 765kV D/c line	I-I
	N-1 of Anantapur-II – CN'Halli 765kV D/c	I-J
	N-1 of Cuddapah - Thiruvelam 765kV D/c line	I-K
	N-1 of Anantapur-II – Davangere 765kV D/c line	I-L
	N-1 of Davangere - Narendra 765kV D/c line	I-M
	N-1 of Davangere – Madhugiri 765kV D/c line	I-N

Scenario 8 - February Evening peak (SR Import)	Base case	II
	N-1 of Kurnool-III – Kurnool-IV PS 765 kV D/c line	II-A
	N-1 of Kurnool-III – Kurnool (new) 765 kV D/c line	II-B
	N-1 of Kurnool-III – Maheshwaram 765 kV D/c line	II-C
	N-1 of Kurnool-III – C'Peta 765 kV D/c line	II-D
	N-1 of Kurnool-IV – Veltoor-II kV D/c line	II-E
	N-1 of Veltoor-II– Bidar 765kV D/c line	II-F
	N-1 of Anantapur-II – Cuddapah 765kV D/c line	II-G
	N-1 of Cuddapah - C'Peta 765kV D/c line	II-H
	N-1 of Cuddapah – Kurnool (new) 765kV D/c line	II-I
	N-1 of Anantapur-II – CN'Halli 765kV D/c	II-J
	N-1 of Cuddapah - Thiruvelam 765kV D/c line	II-K
	N-1 of Anantapur-II – Davangere 765kV D/c line	II-L
	N-1 of Davangere - Narendra 765kV D/c line	II-M
	N-1 of Davangere – Madhugiri 765kV D/c line	II-N

Ex-I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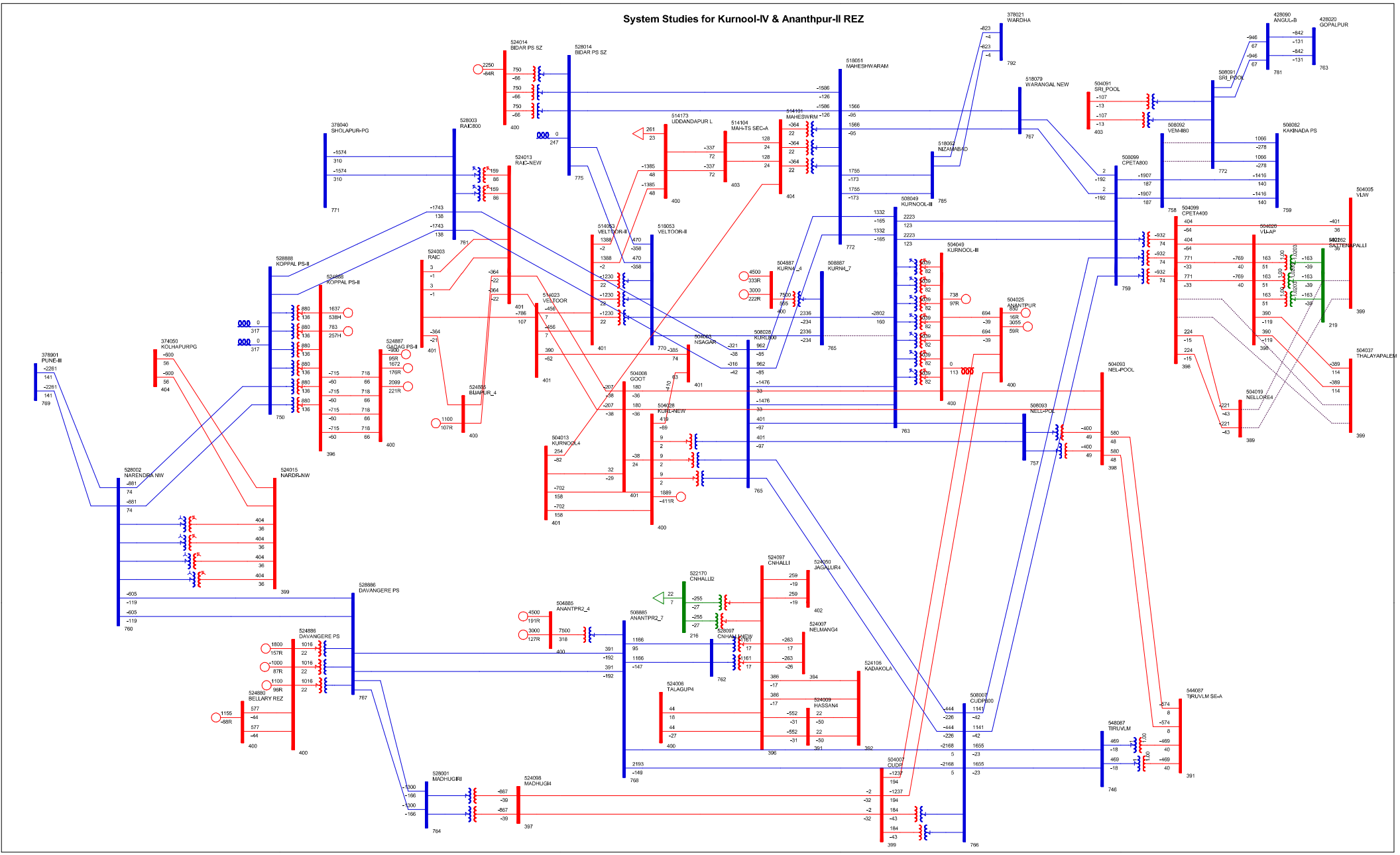
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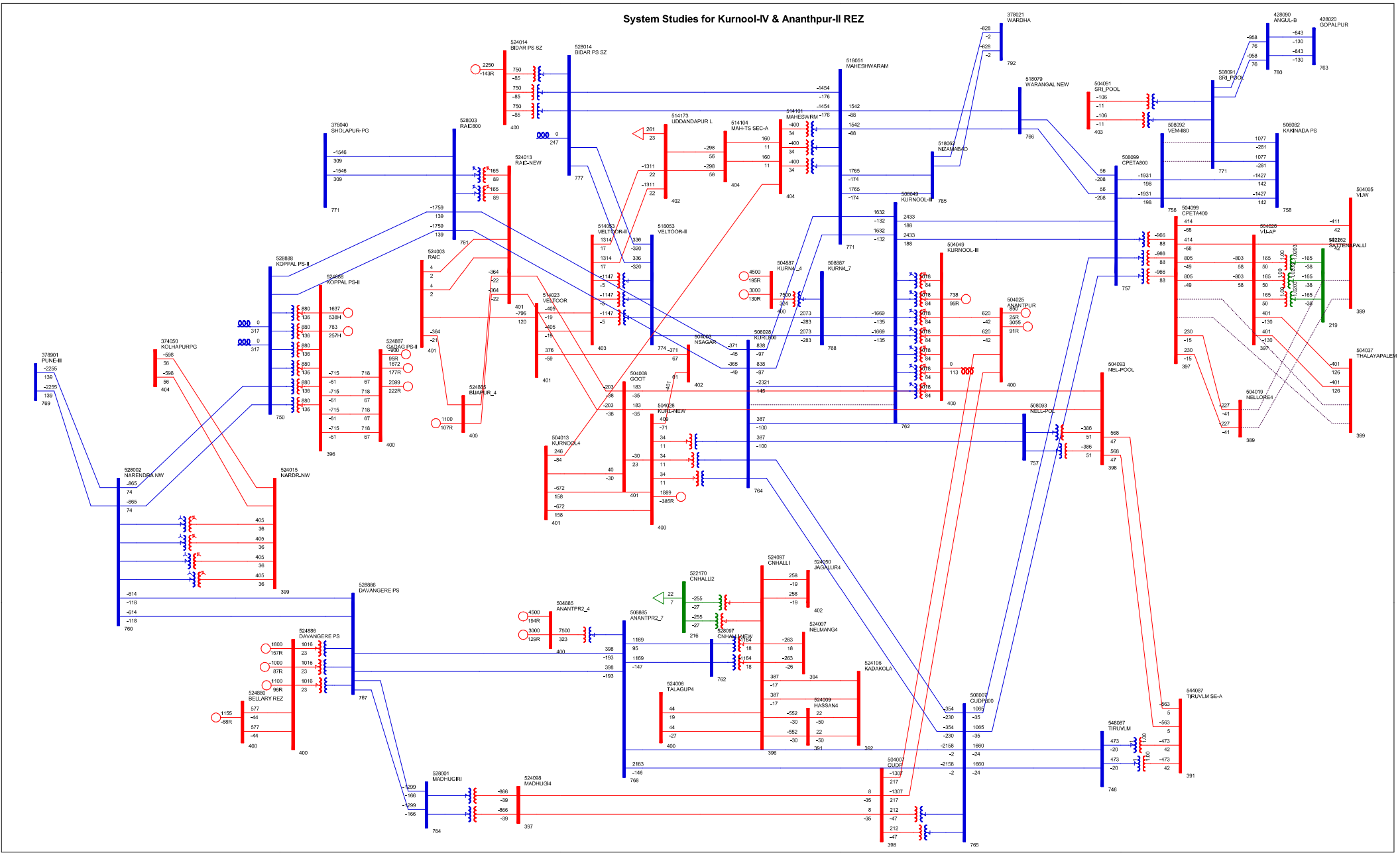
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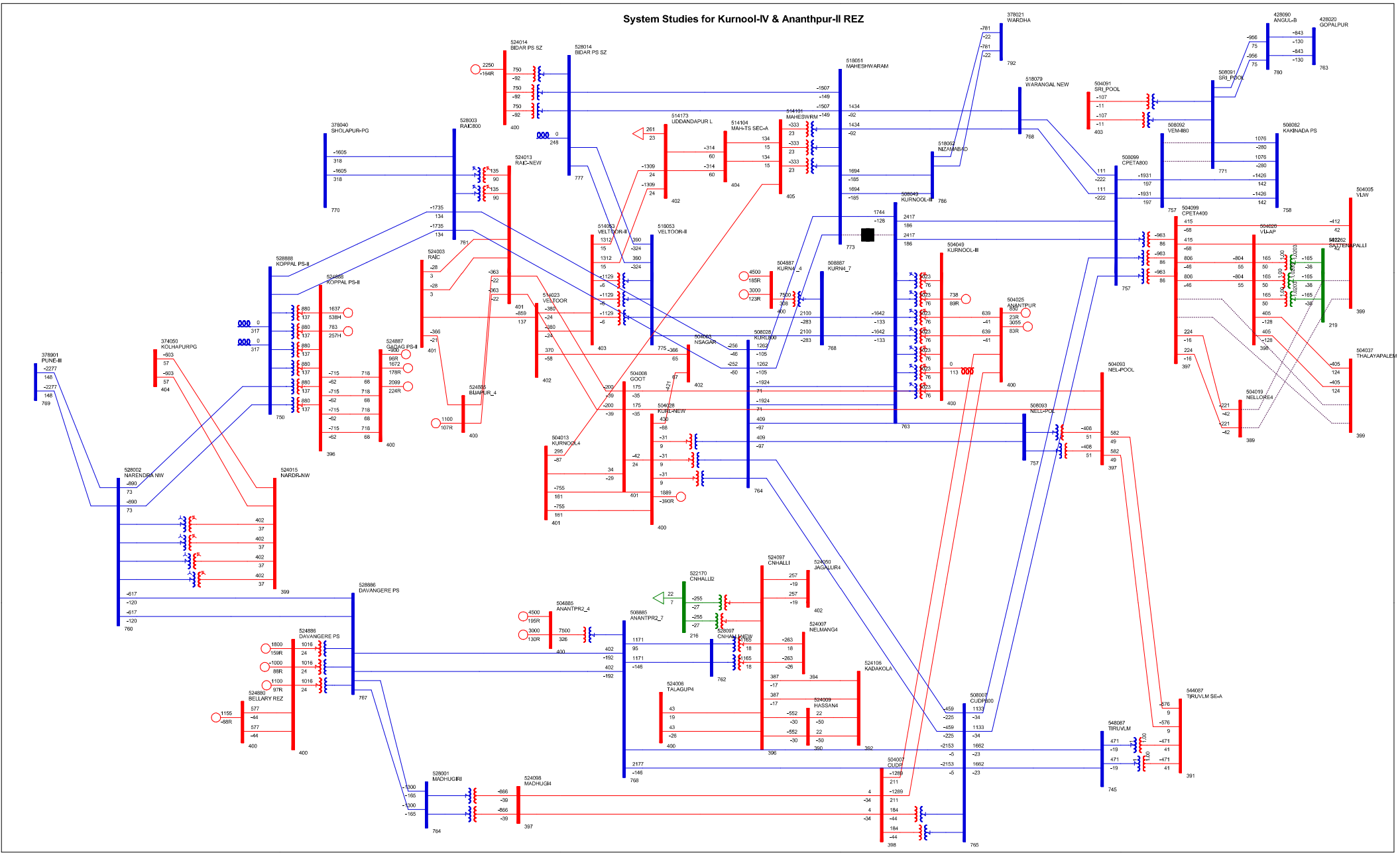
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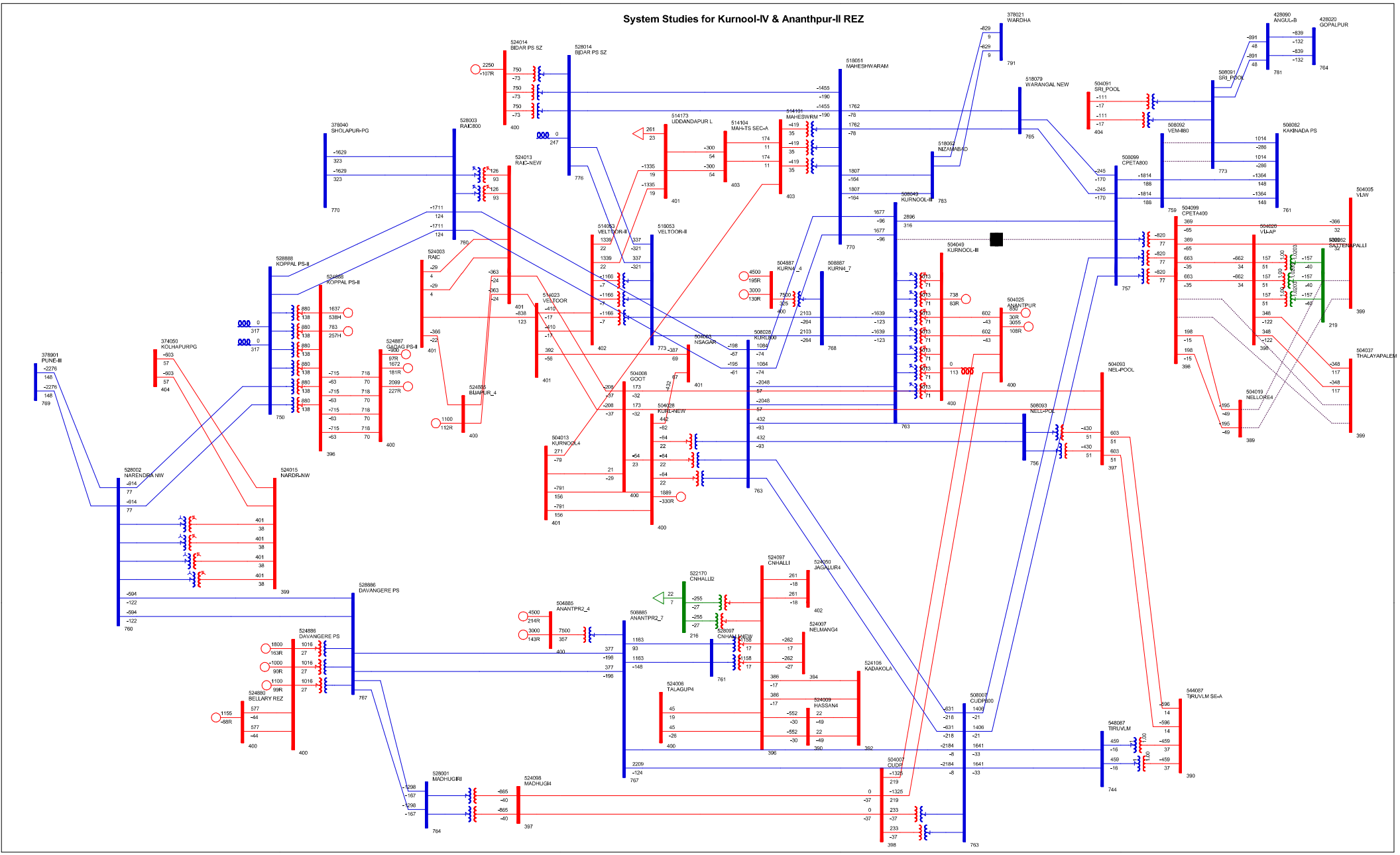
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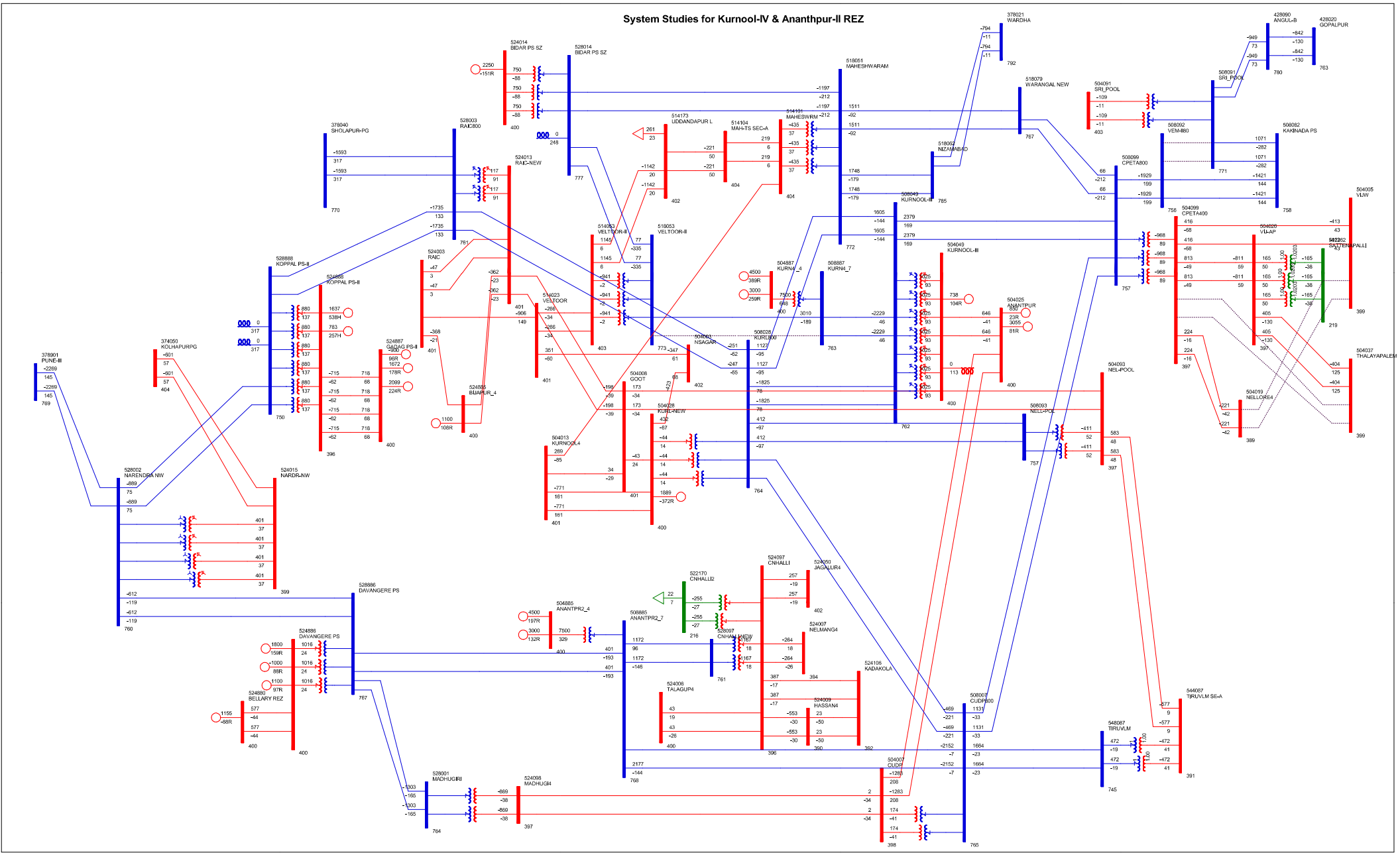
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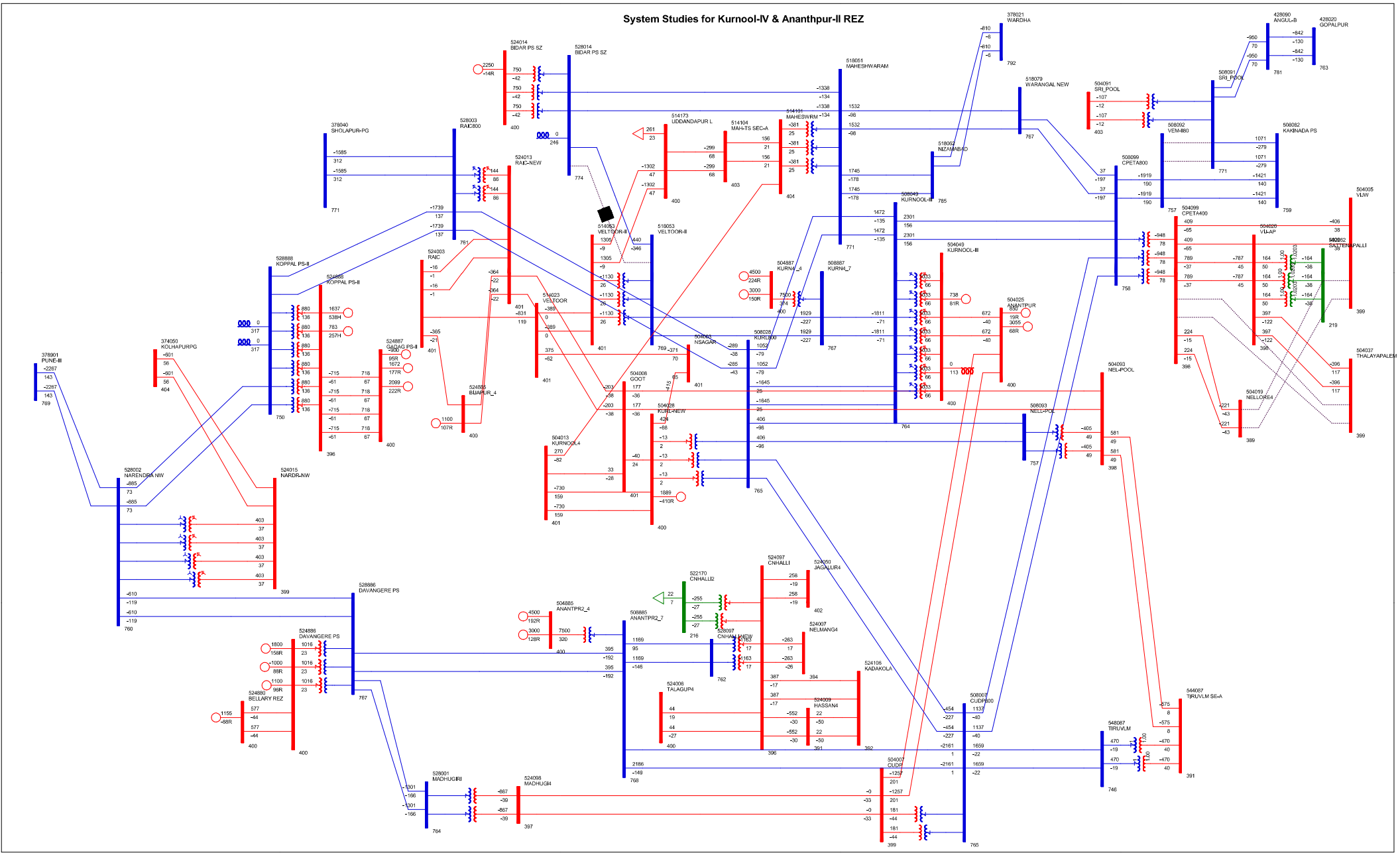

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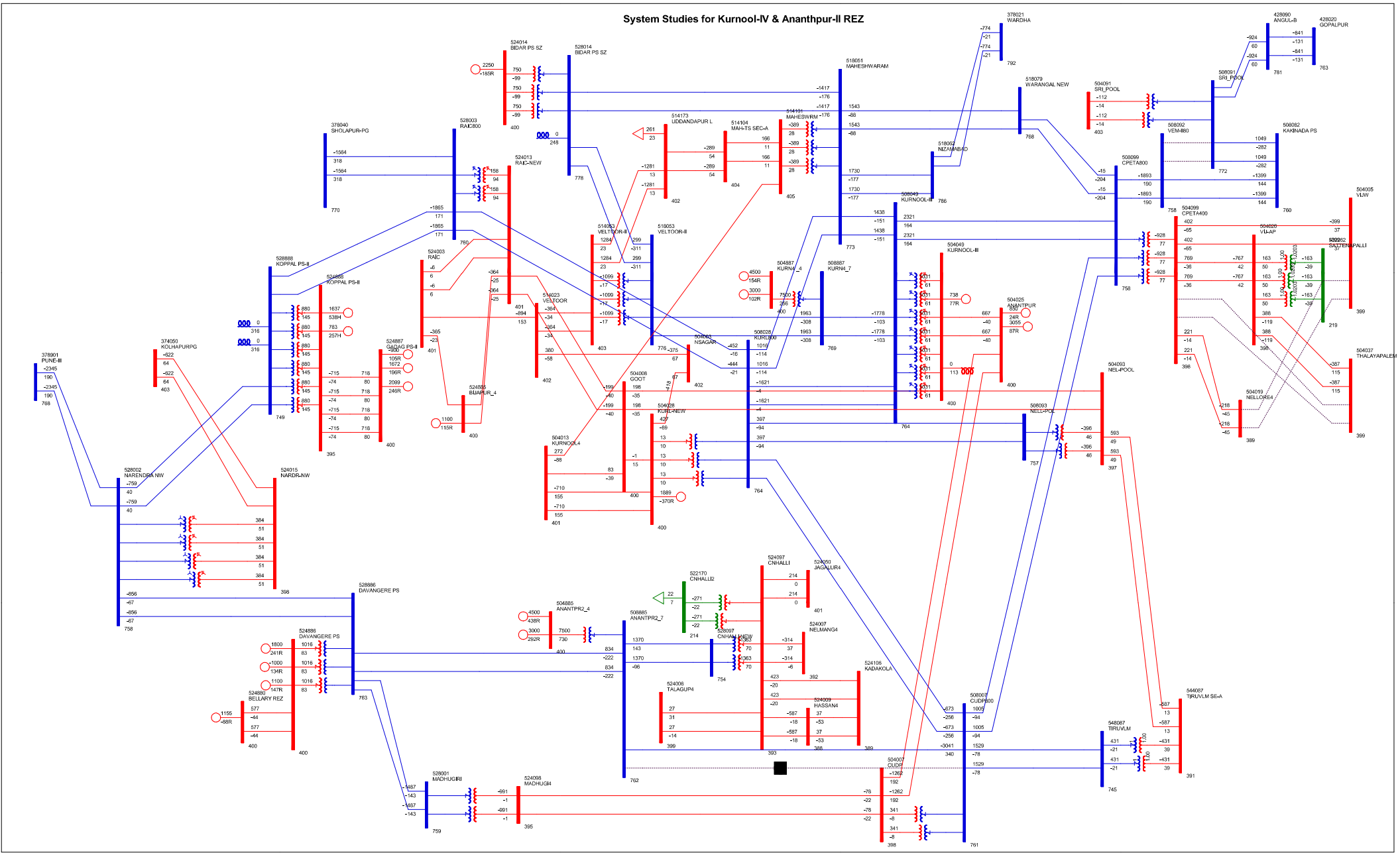
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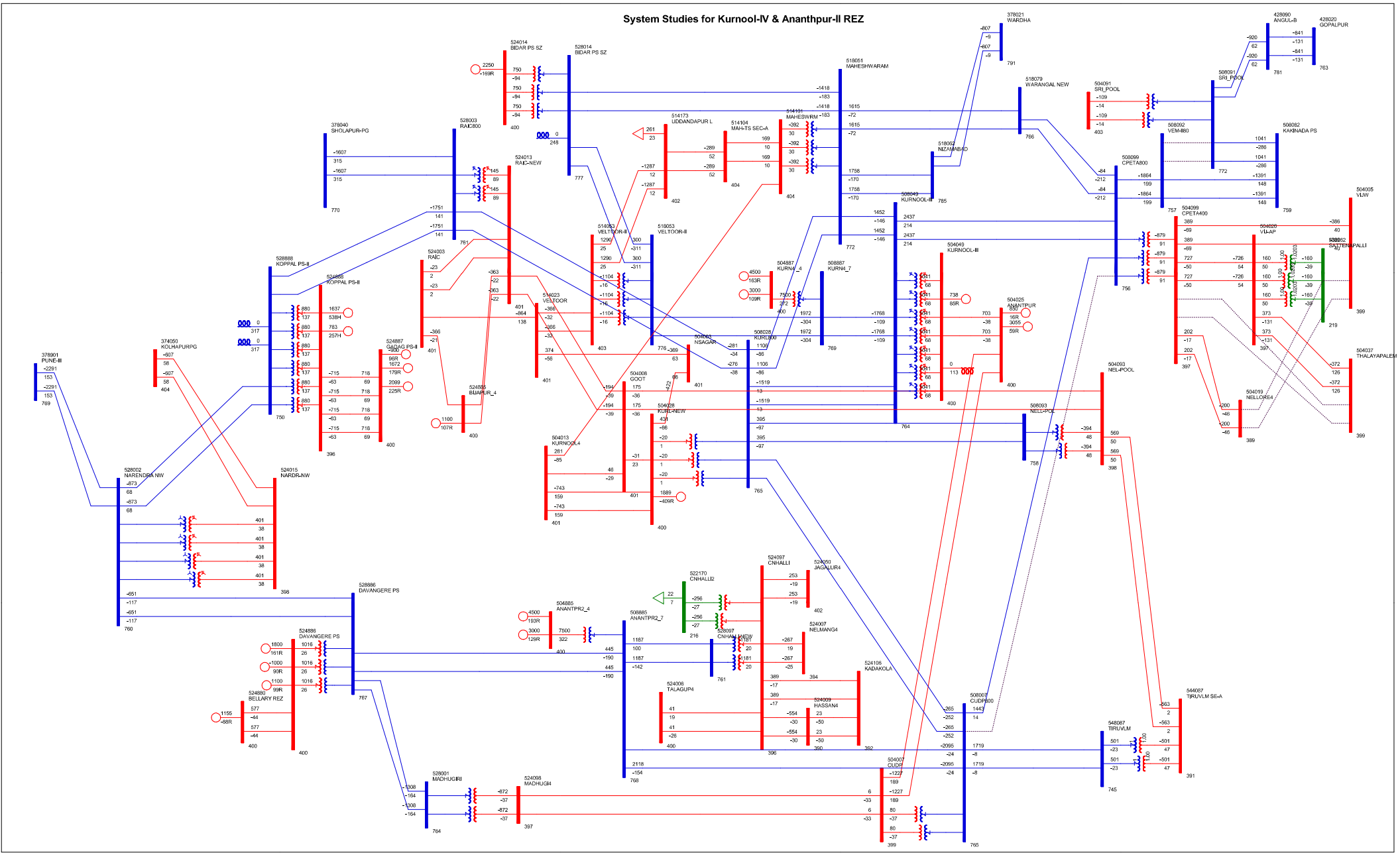
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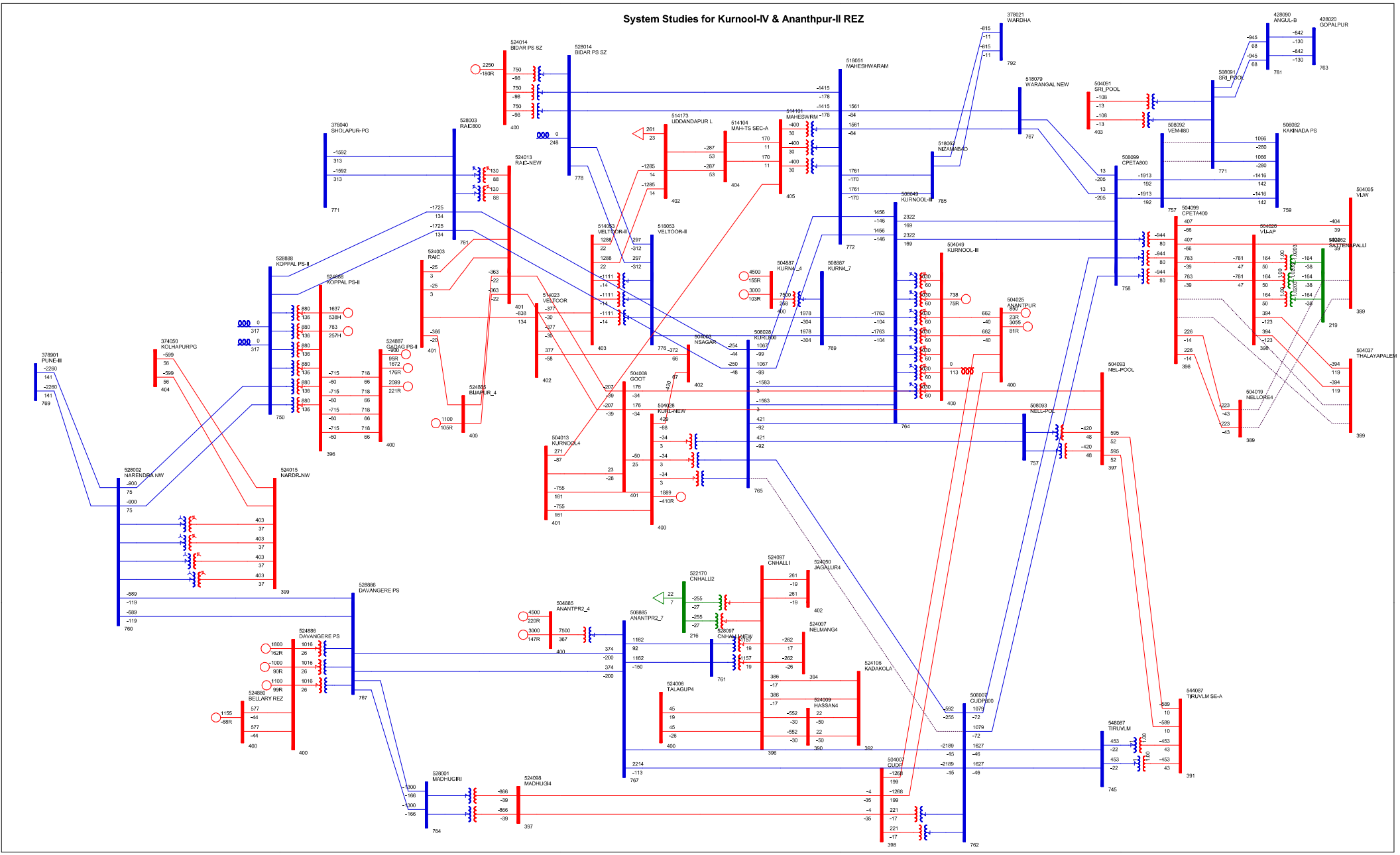
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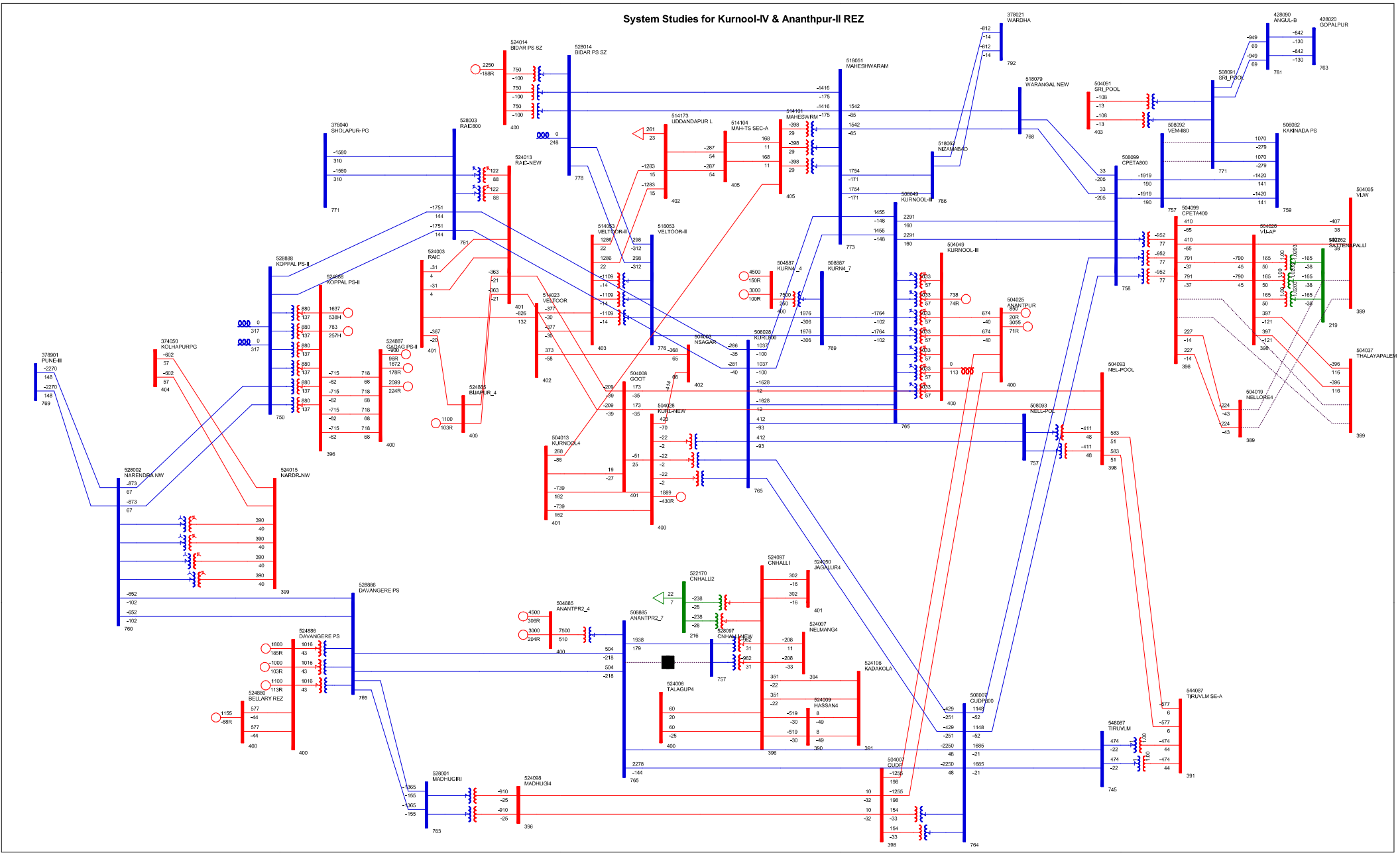
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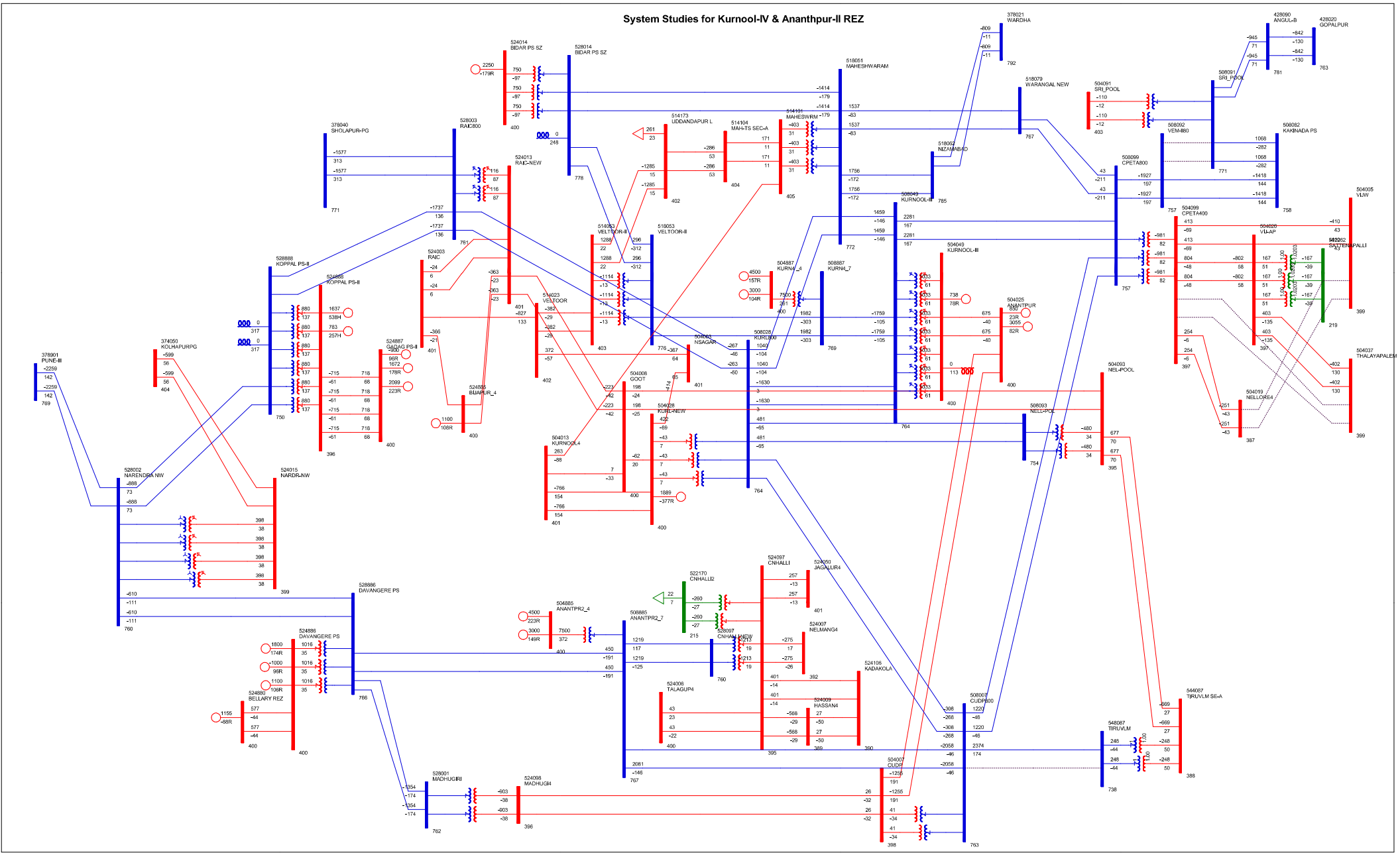

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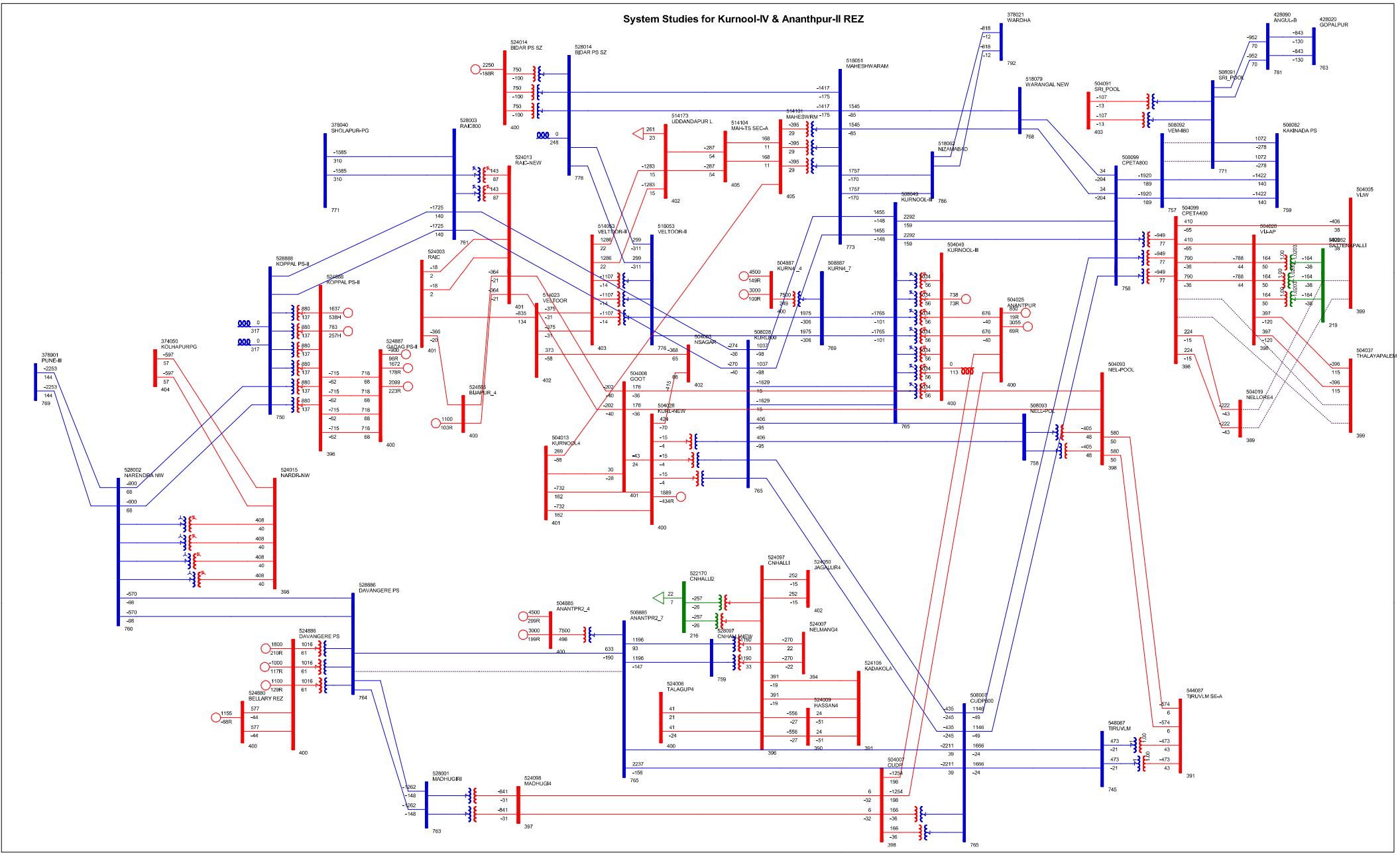
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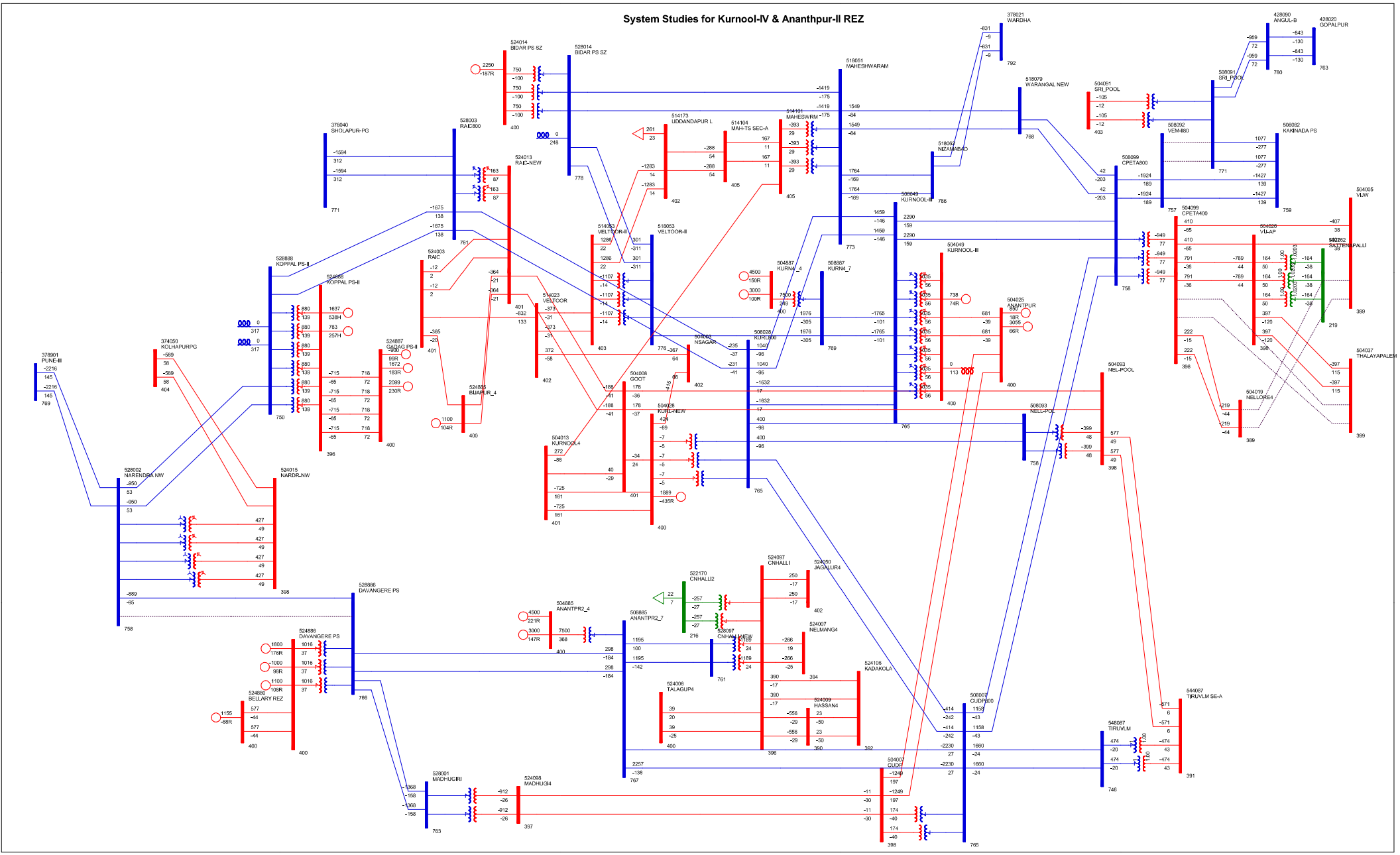
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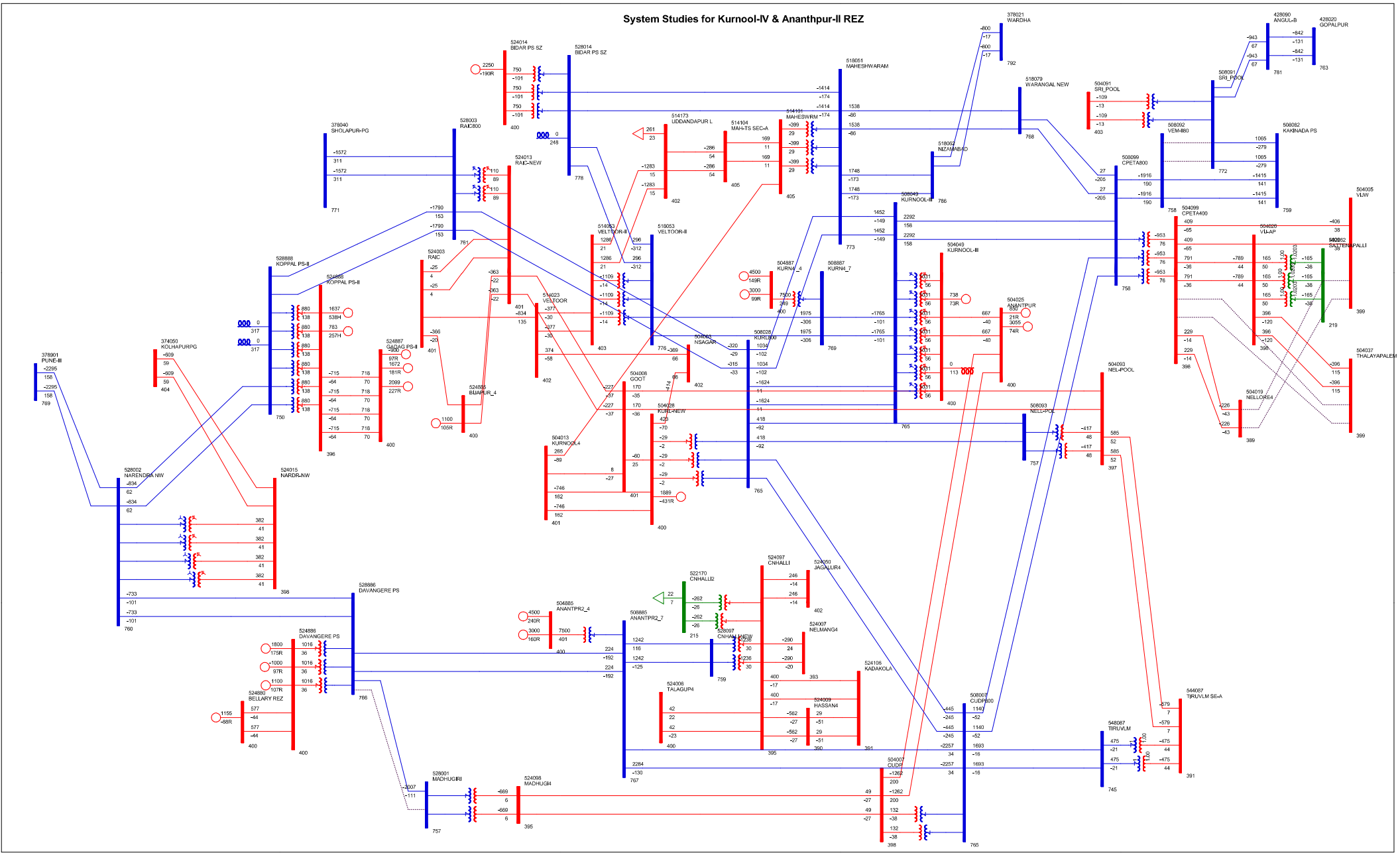
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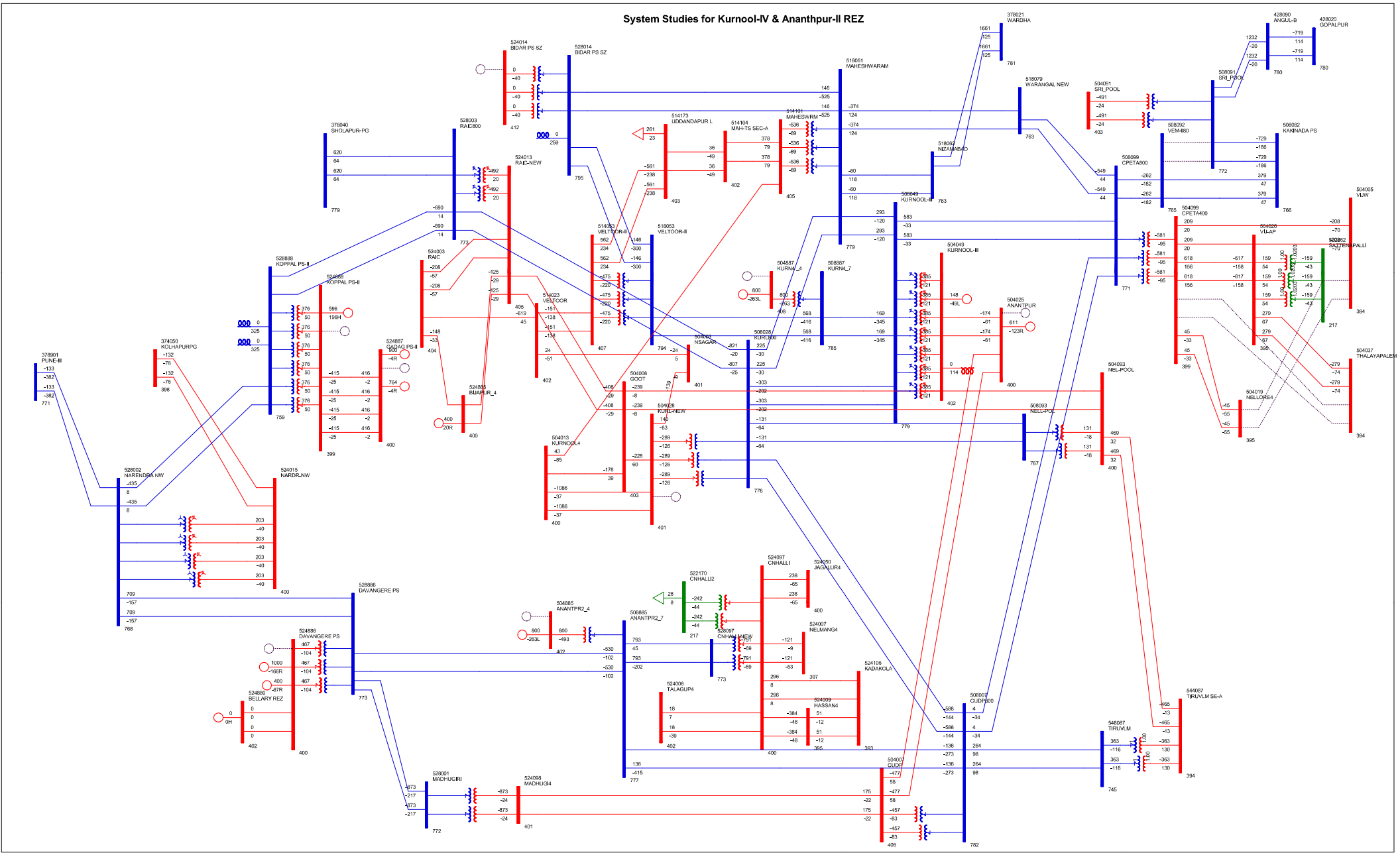
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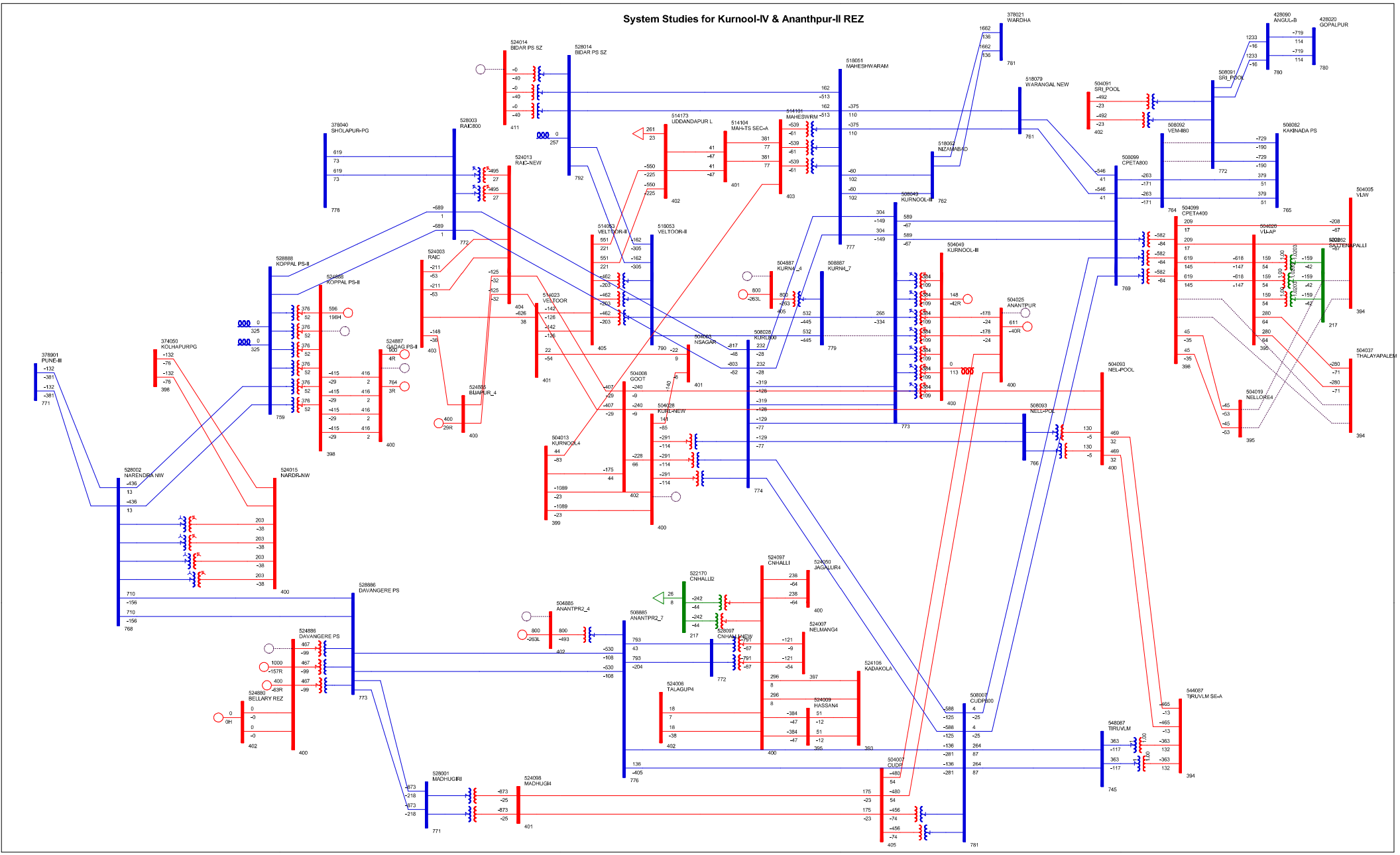
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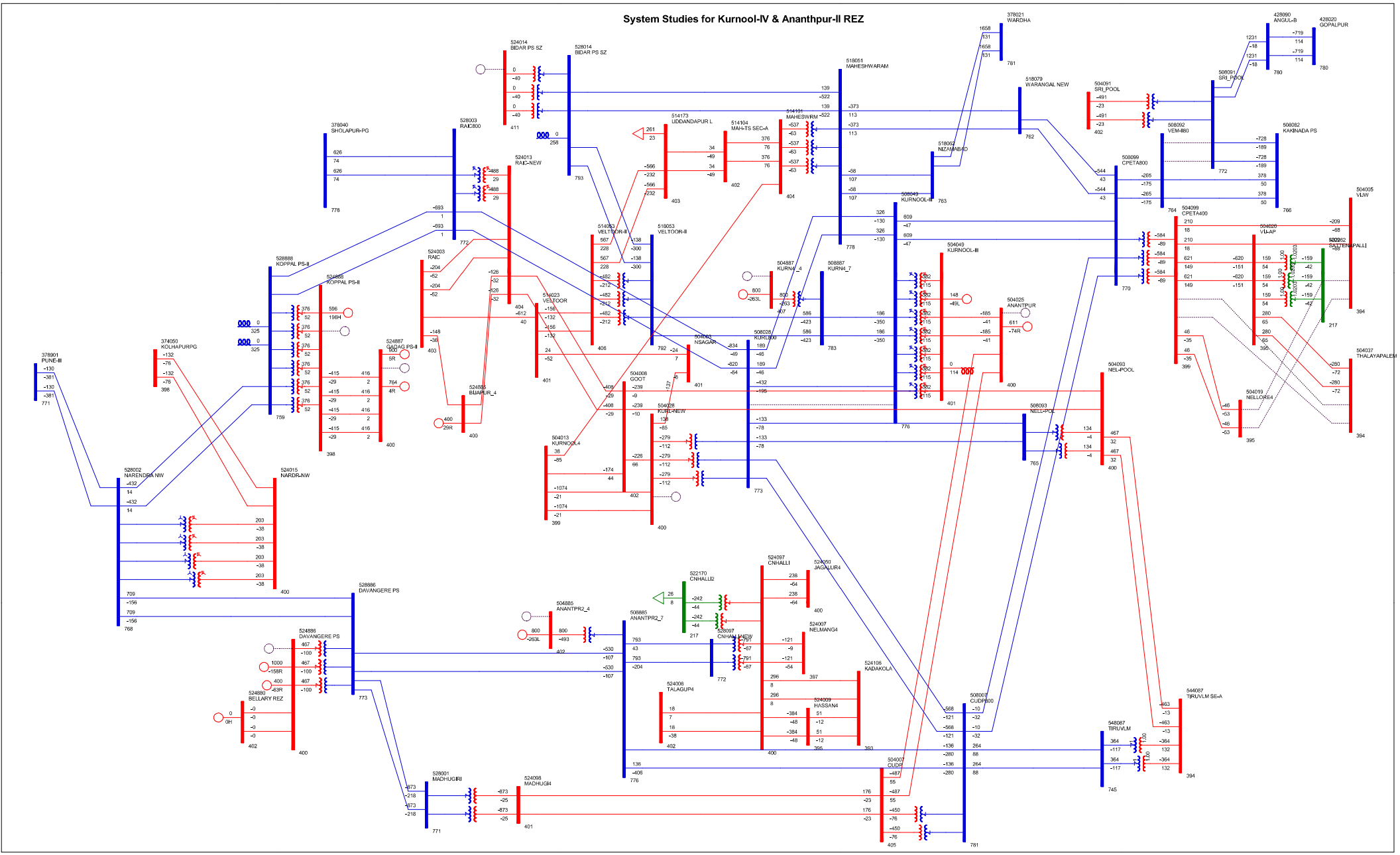

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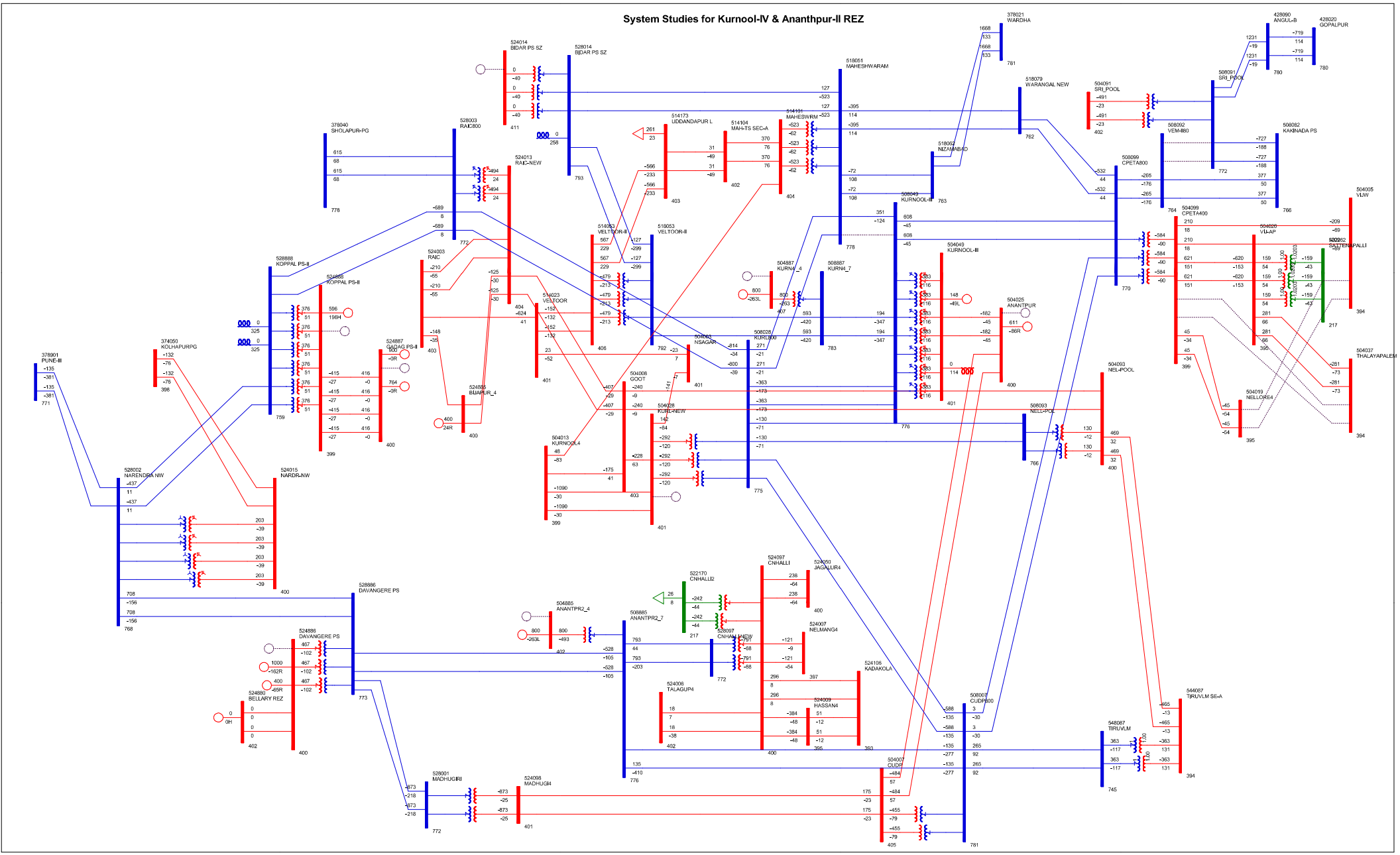
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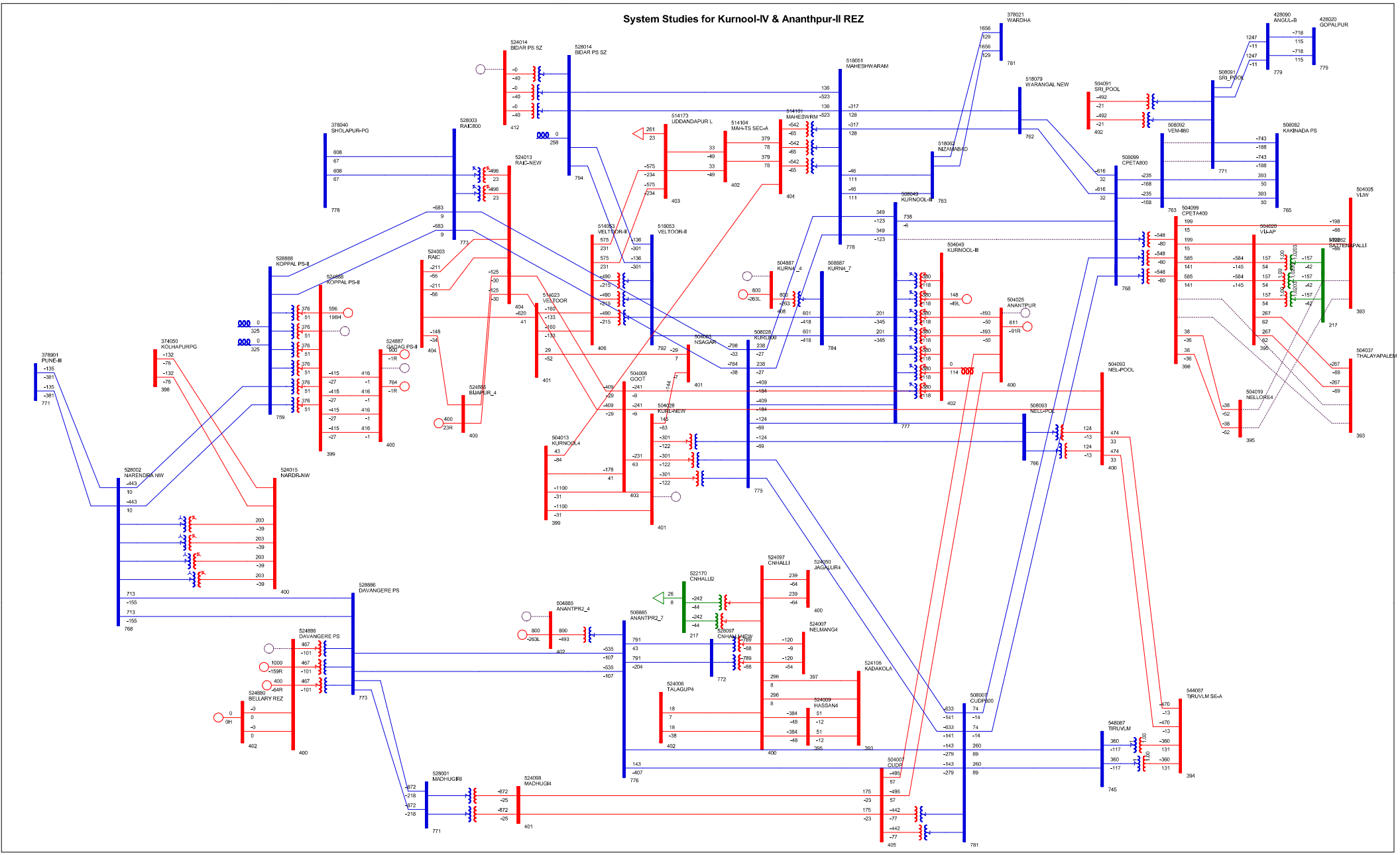
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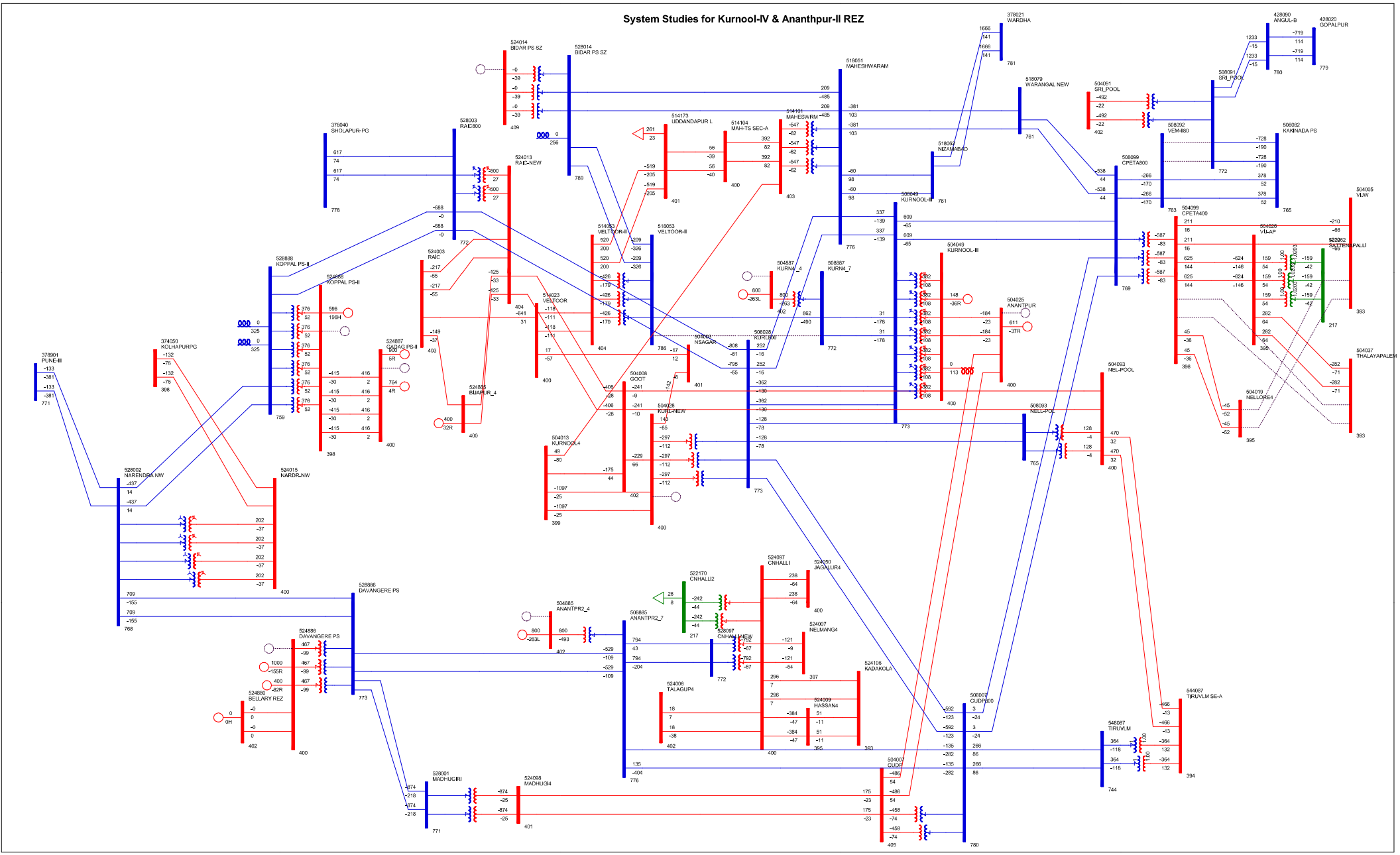
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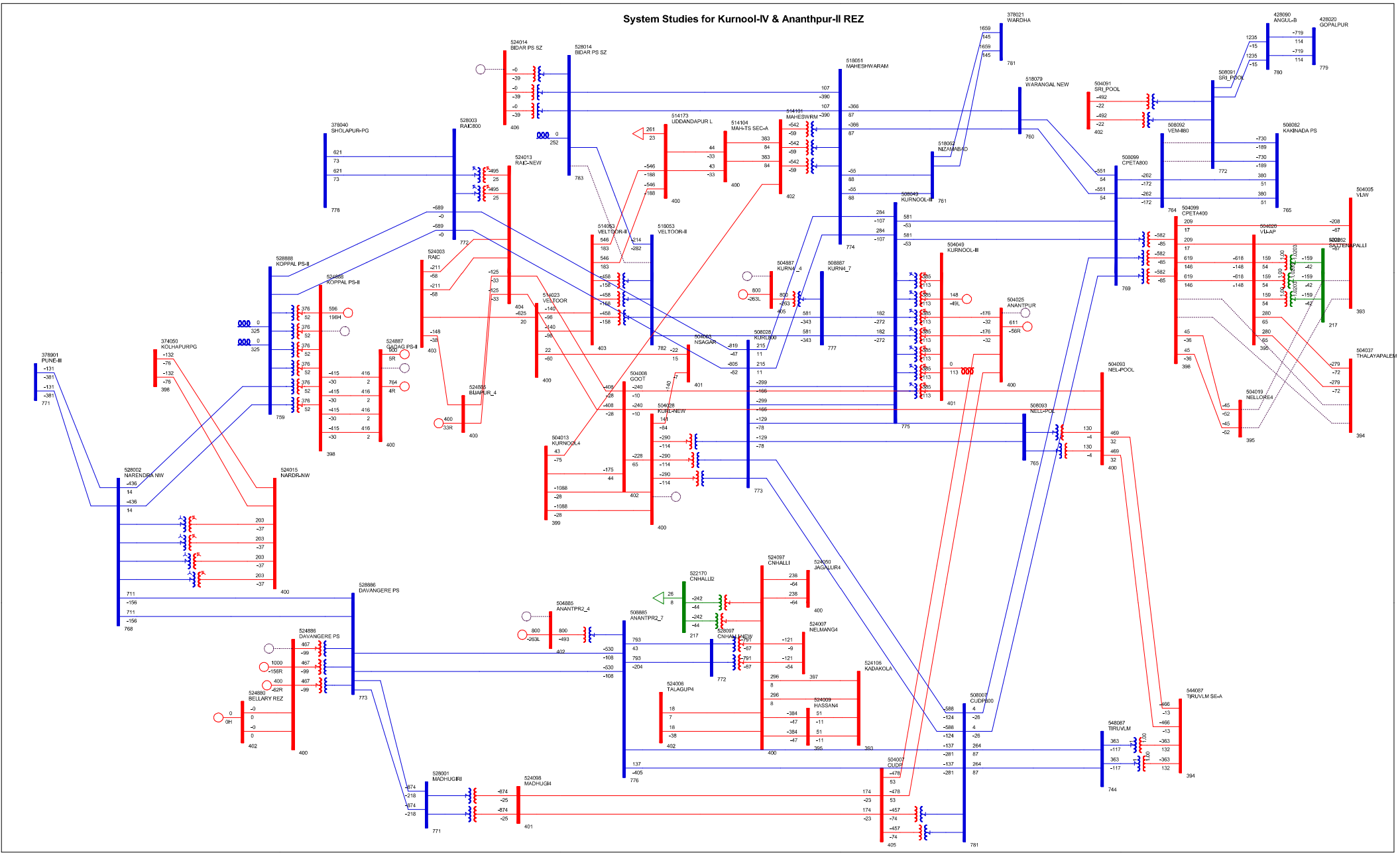
Ex-II-F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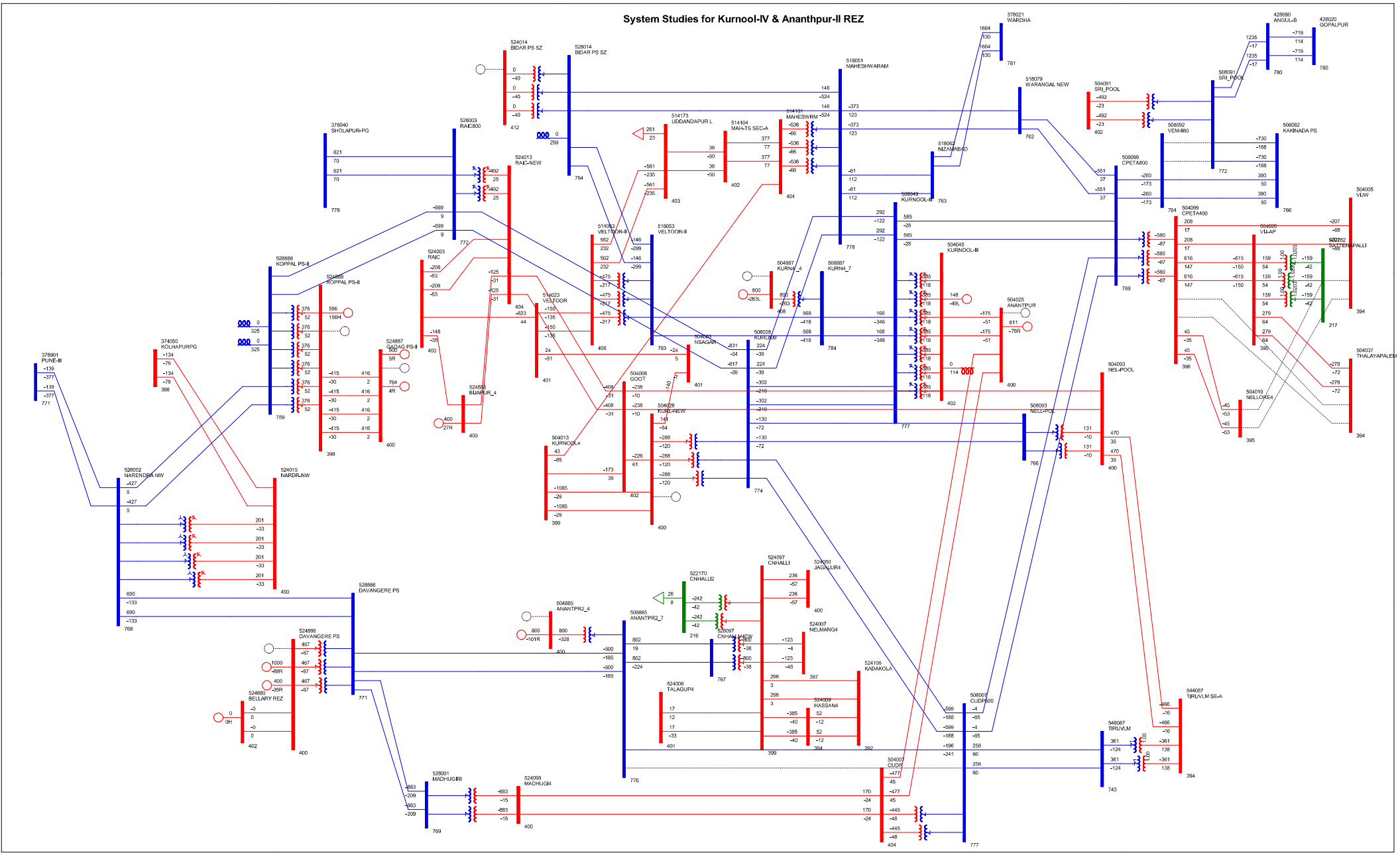
Ex-II-G



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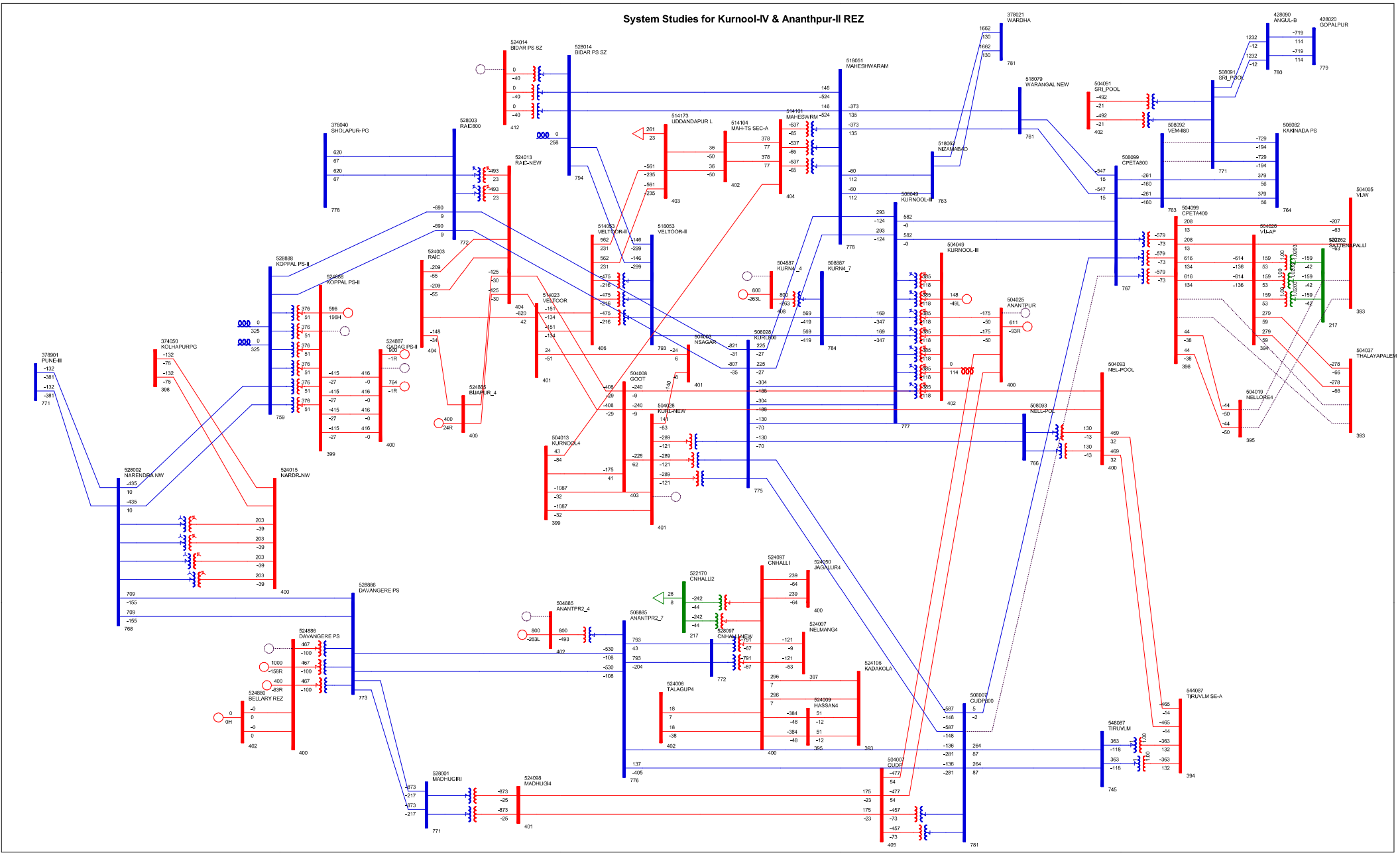
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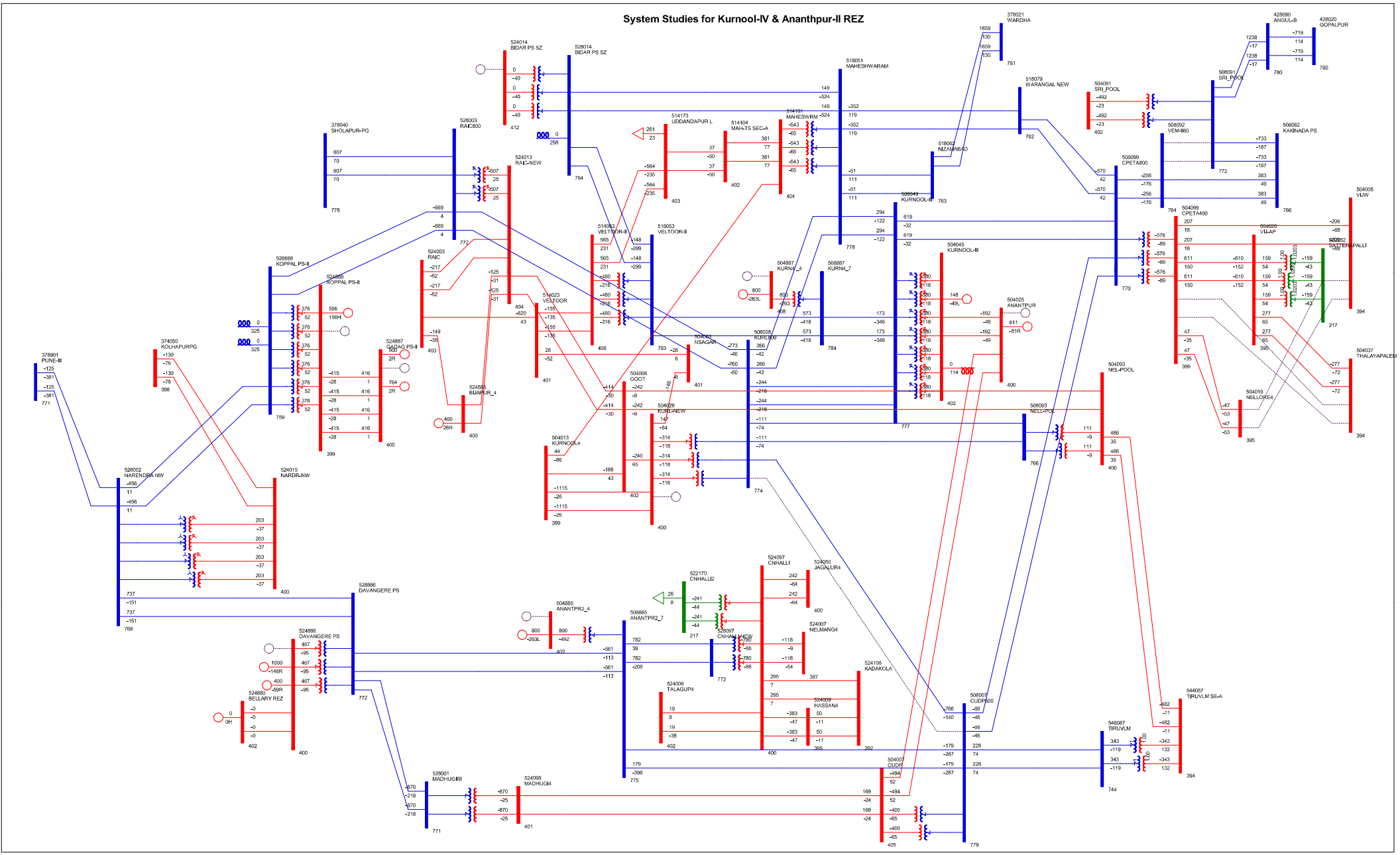
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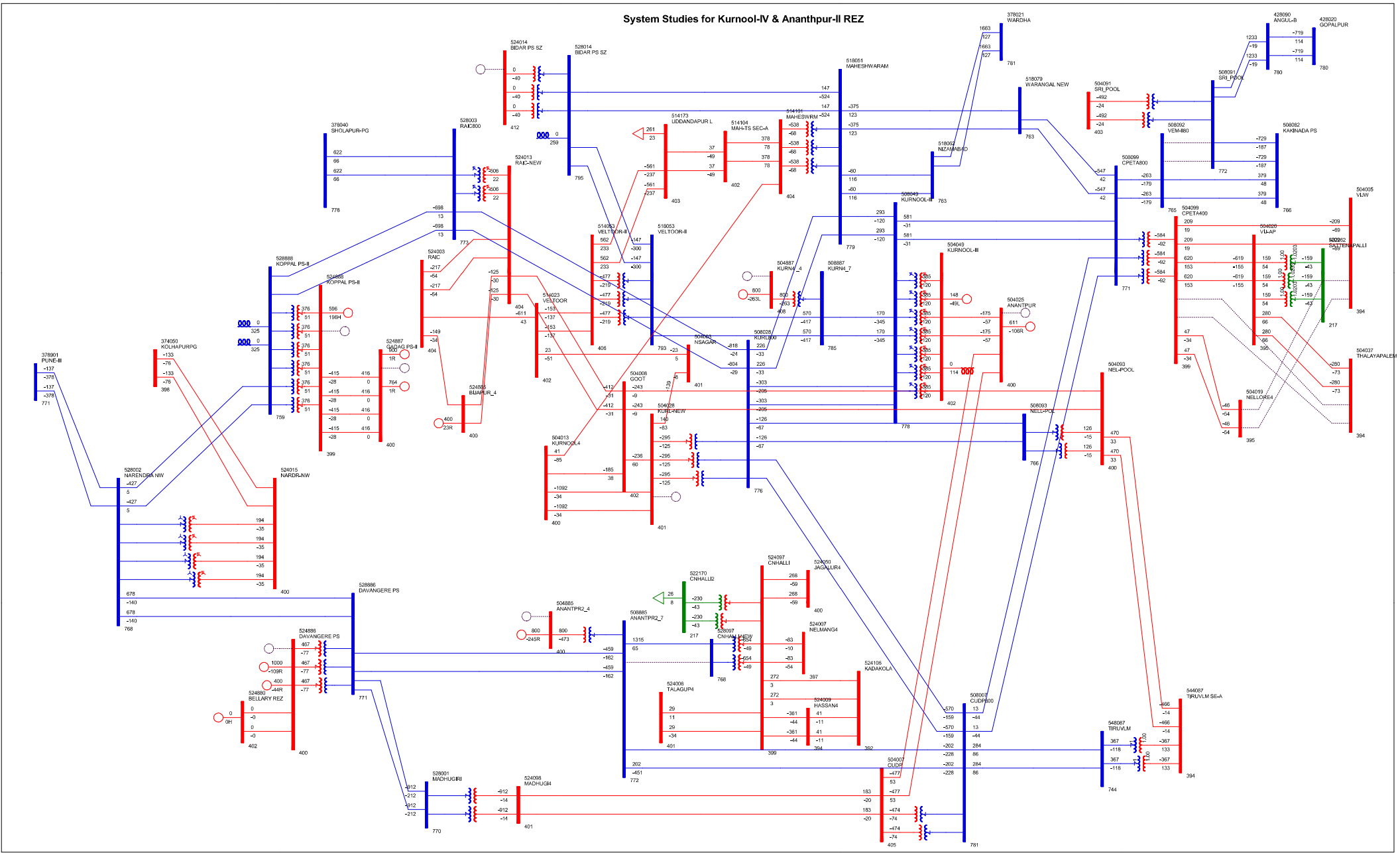
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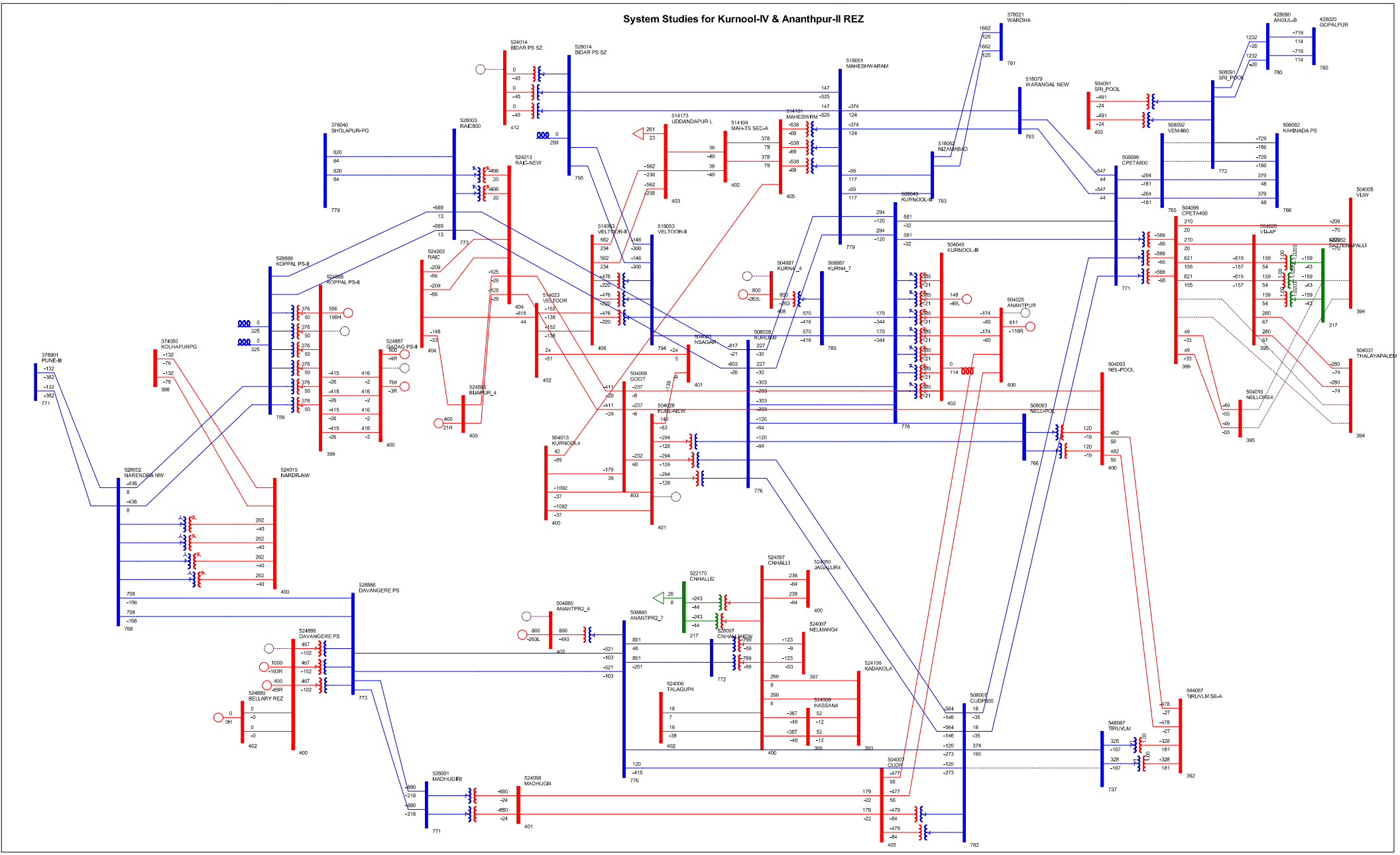
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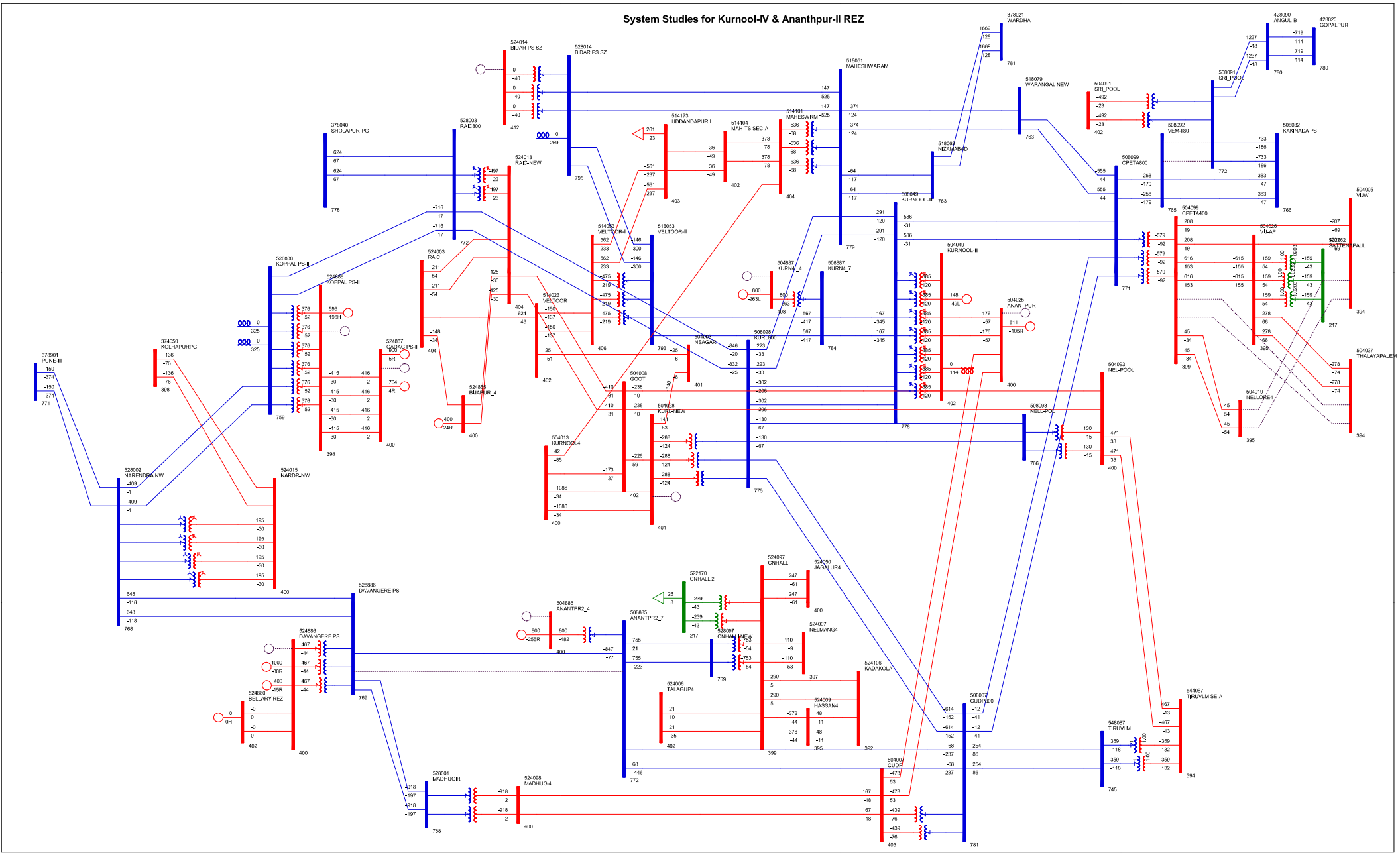
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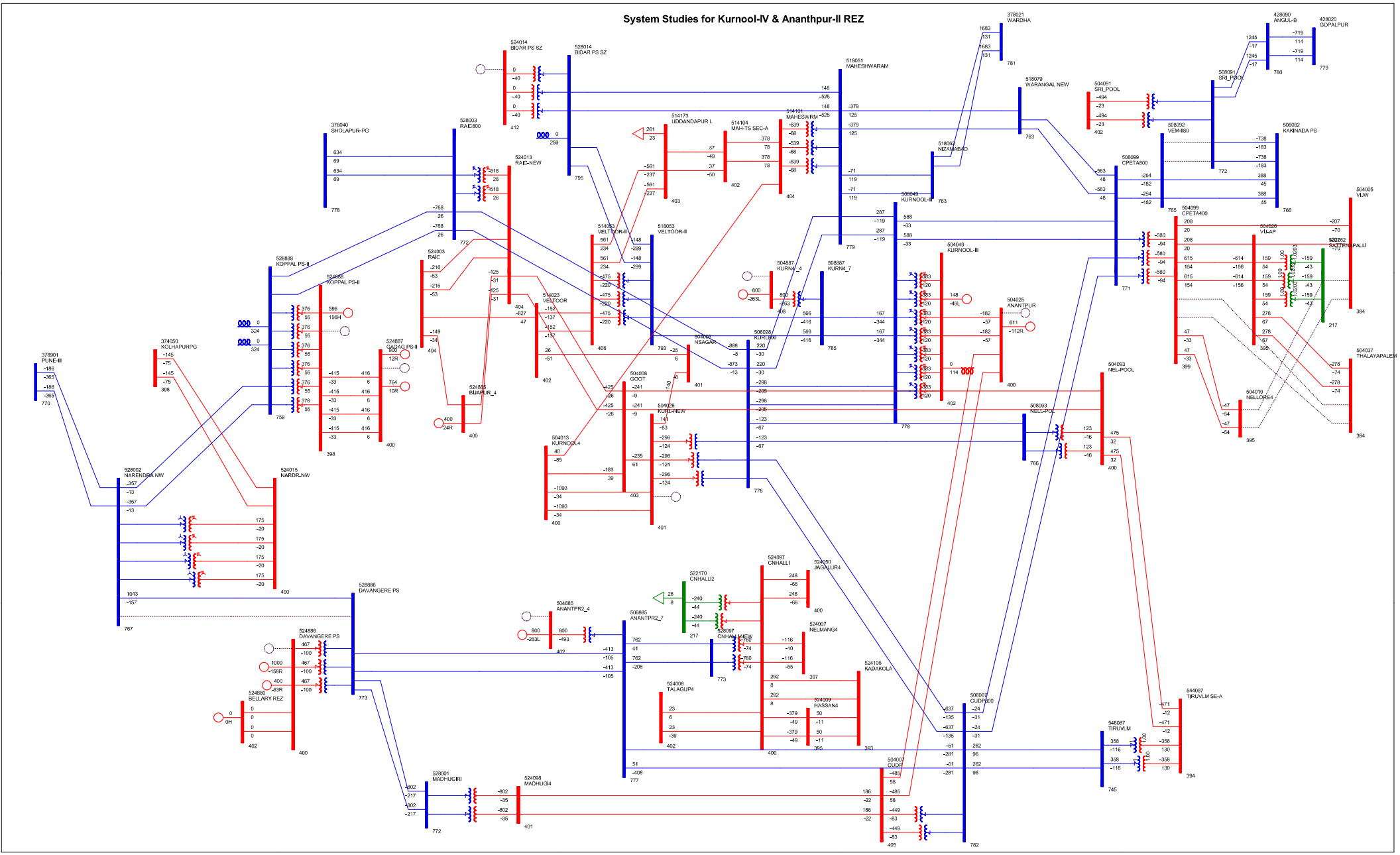
Ex-II-M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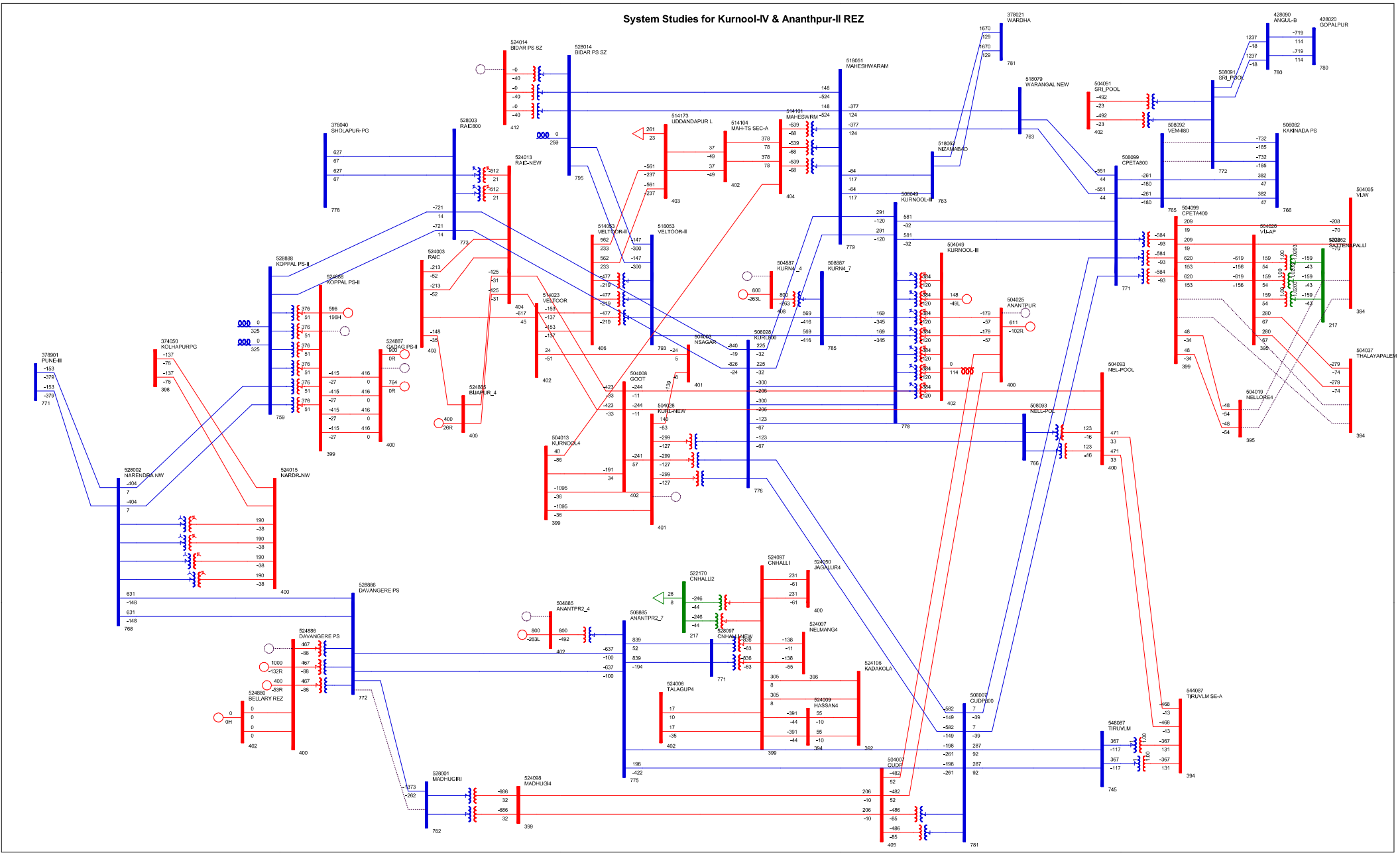
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Annexure-III

Inter-Regional links between NEW-Grid & SR-Grid and ISTS network strengthening in SR to facilitate import of power for meeting demand by 2029-30 time frame

System Studies has been carried out for 2029-30 time frame.

1. Assumptions and important Considerations for the study: 2029-30 timeframe

- Study time frame: 2029-30
- Scenarios: Scenario 8 - February Evening peak (SR Import) and Scenario 4 - June solar max (SR Export)
- **Major Assumptions for Scenario 8 - February Evening peak (SR Import)**
  - SR Demand **:** 109.5 GW (including Green Hydrogen demand of 9.75 GW in ISTS)
  - SR Generation : 83.25 GW
  - SR Surplus(+) / Deficit(-) : (-) 26.2 GW
  - State wise demand considered as per inputs from the STUs are as below:

State	Demand as per 20th EPS (MW)	Peak Demand provided by STUs (MW)	ISTS Demand (MW)*	Total Demand considered in study (MW)
Andhra Pradesh	22091	20996	3500	24536
Telangana	24215	23392	0	23355
Karnataka	20254	22215	2250	24780
Kerala	6431	5641	0	5571
Tamil Nadu	25764	26652	4000	30636
Puducherry	624	461	0	657
Total	**99379**	**99357**	**9750**	**109535**

*Green Hydrogen demand has been considered under ISTS

- The demand factors for the SR entities has been derived from actual demand factors met during FY 2023-24.
- Following Dispatch factors has been considered as per the profiling and LGB :
  - Solar – 0%
  - Wind – 15%
  - Thermal – 85% as per the inputs from the respective STUs
  - Nuclear – 80%
  - Hydro – 40%
  - ESS / PSPs – in generation mode
- HVDC power orders considered:
  - Raigarh – Pugalur HVDC (6000 MW from WR to SR)
  - Bhadrawati BtB HVDC (1000 MW from WR to SR)
  - Gazuwaka BtB HVDC (850 MW from ER to SR)
  - Talcher – Kolar HVDC (2000 MW from ER to SR)

- **Major Assumptions for Scenario 4 - June solar max (SR Export)**
  - SR Demand **:** 84.7 GW (including Green Hydrogen demand of 9.75 GW in ISTS)
  - SR Generation : 98.7 GW
  - SR Surplus(+) / Deficit(-) : (+) 14 GW
  - State wise demand considered as per inputs from the STUs are as below:

State	Demand as per 20th EPS (MW)	Peak Demand provided by STUs (MW)	ISTS Demand (MW)*	Total Demand considered in study (MW)
Andhra Pradesh	22091	14343	3500	18583
Telangana	24215	14343	0	14413
Karnataka	20254	15853	2250	18486
Kerala	6431	4529	0	4568
Tamil Nadu	25764	23402	4000	27635

Puducherry	624	528	0	1048
Total	**99379**	**72998**	**9750**	**84733**

*Green Hydrogen demand has been considered under ISTS

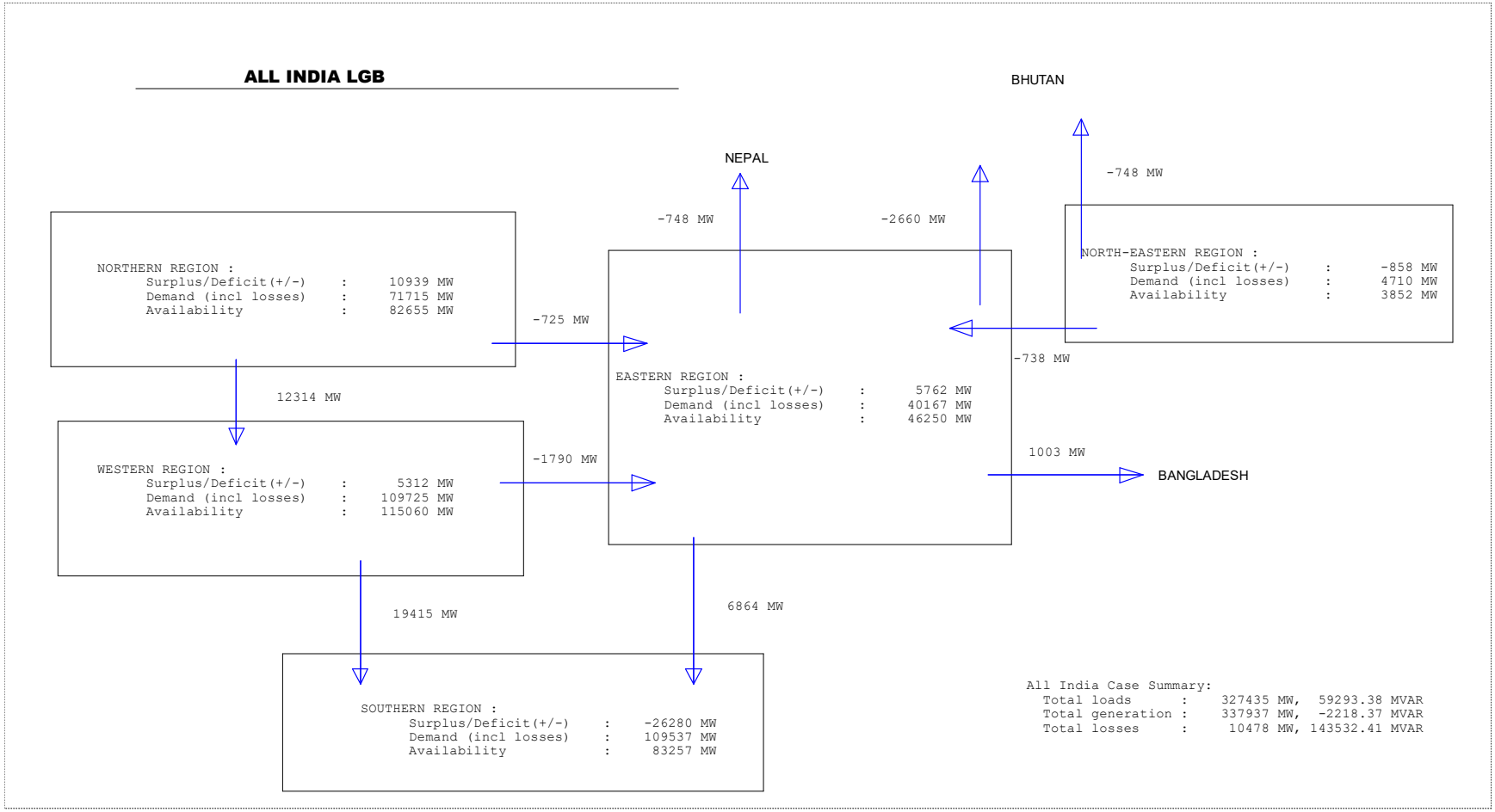
- The demand factors for the SR entities has been derived based on the average of past 3 years SR regional demand factors provided by SRLDC, GRID-INDIA.
- Following Dispatch factors has been considered as per the profiling and LGB :
  - Solar – 90 %
  - Wind – 55%
  - Thermal – 55% as per the variable cost of the generators
  - Nuclear – 80%
  - Hydro – 40%
  - ESS / PSPs – in absorption / motoring mode

- HVDC power orders considered:
  - Raigarh – Pugalur HVDC (3000 MW from SR to WR)
  - Bhadrawati BtB HVDC (1000 MW from SR to WR)
  - Gazuwaka BtB HVDC (850 MW from SR to ER)
  - Talcher – Kolar HVDC (1150 MW from ER to SR)

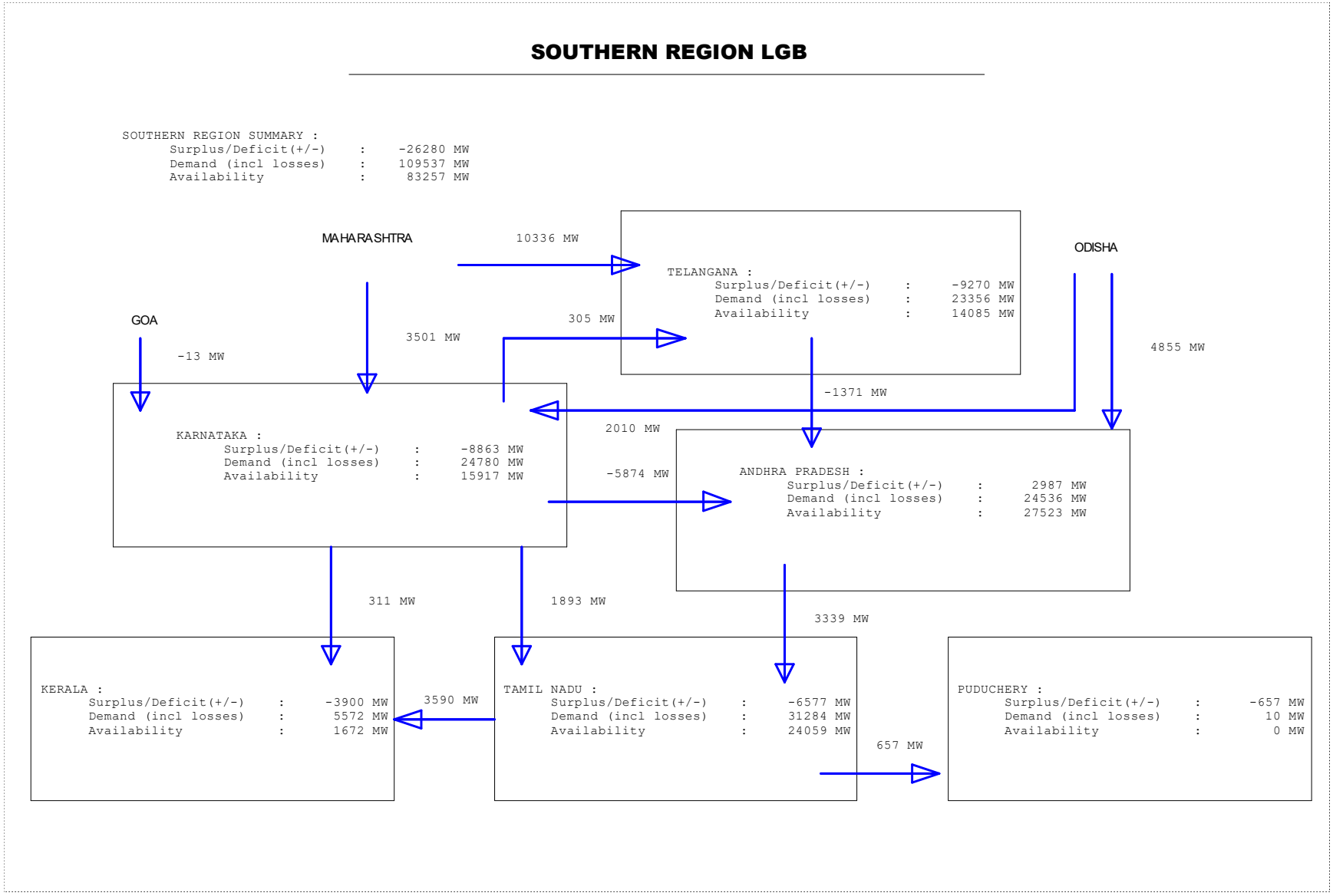
2. Load generation balance

Scenario 8 - February Evening peak (SR Import)

All India LGB snapshot

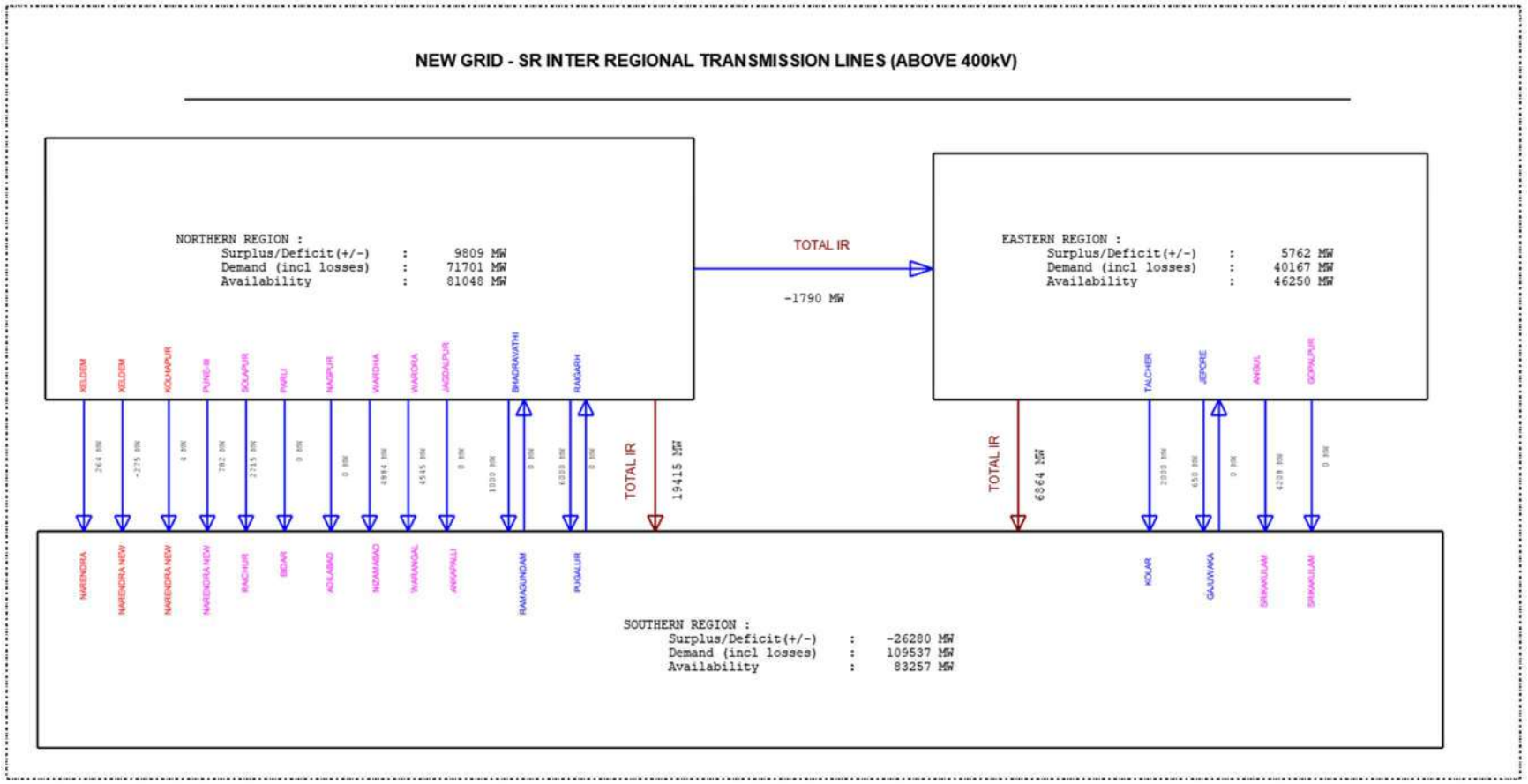


State wise LGB Summary

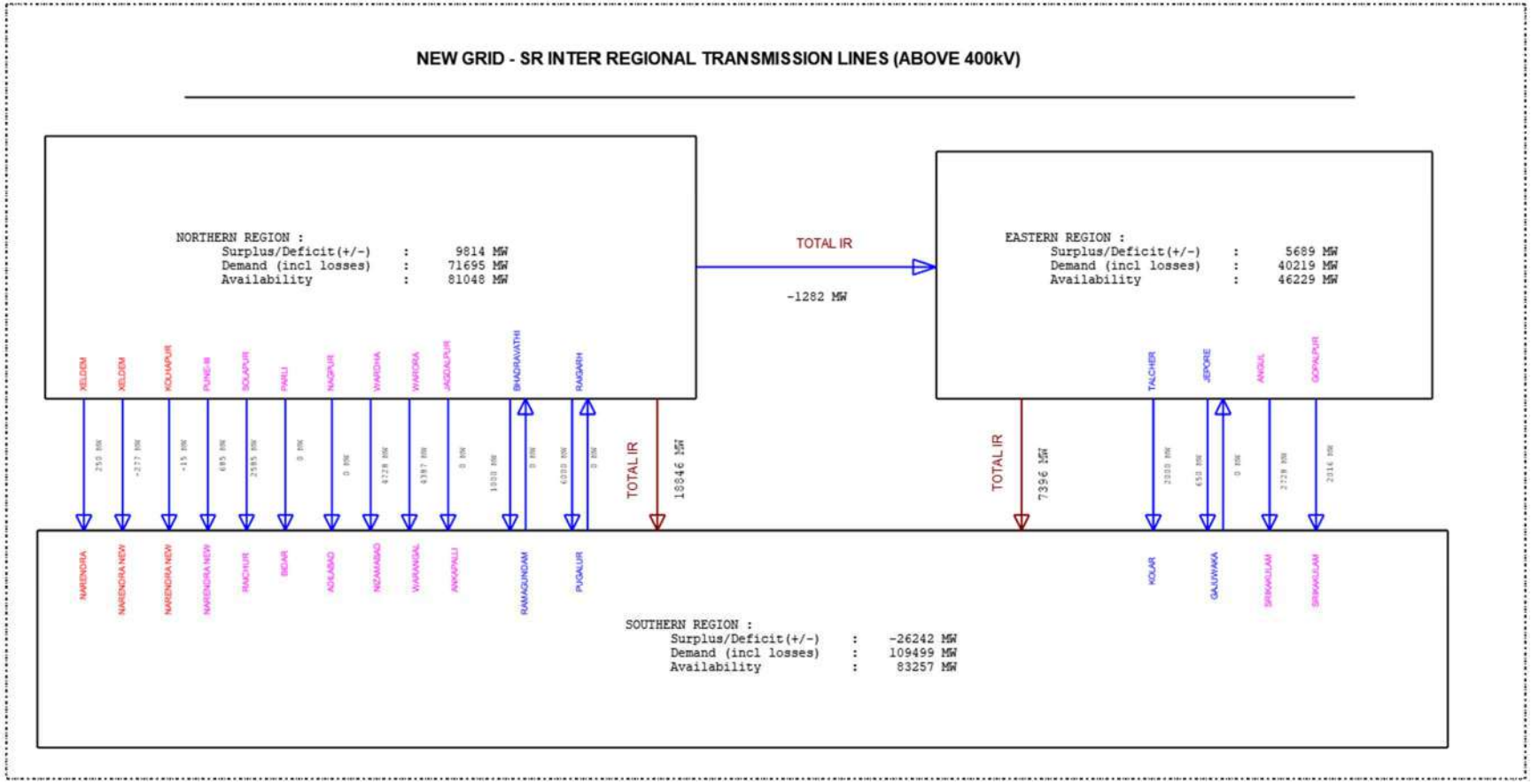


SR Inter-regional Tie line flows

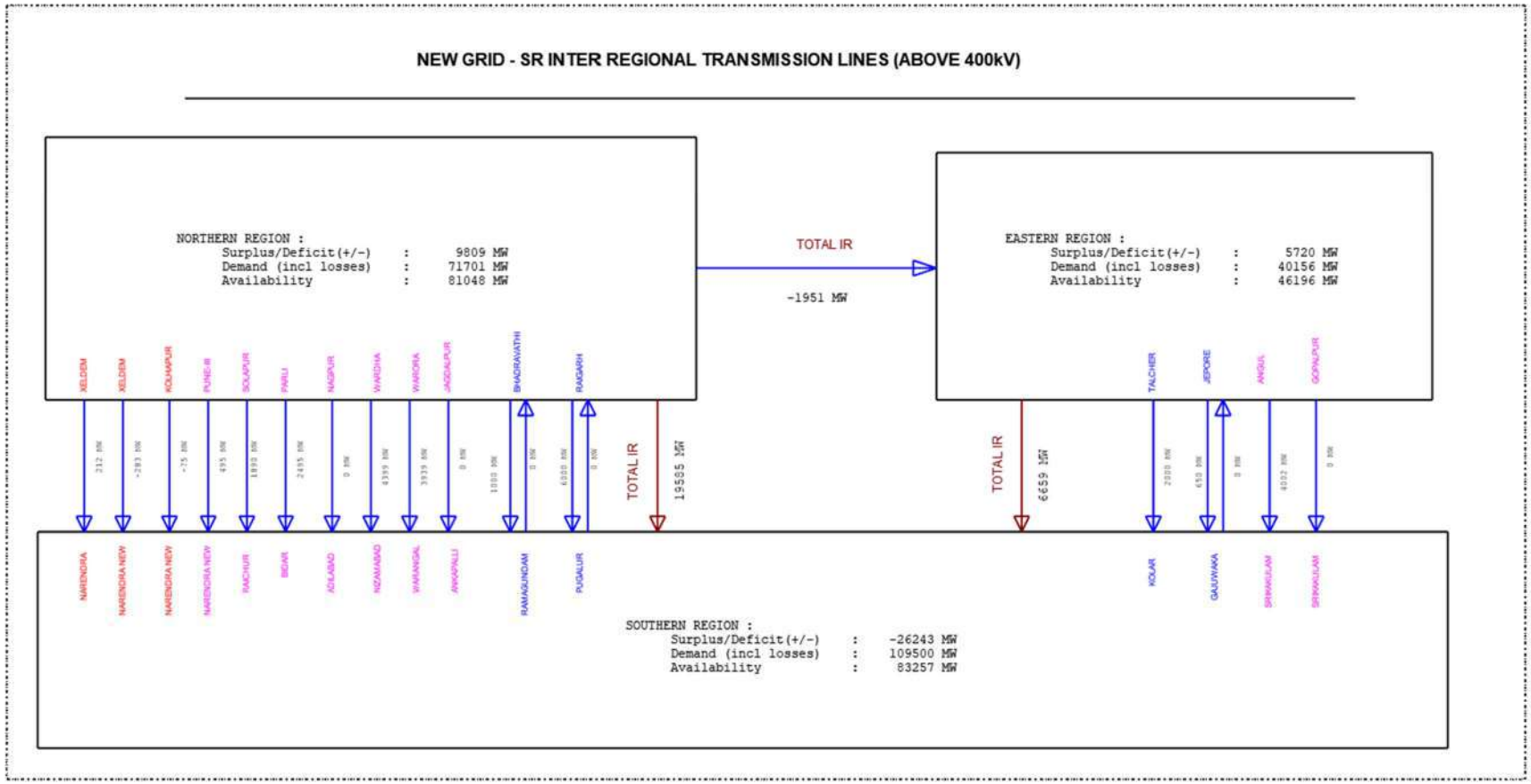
Base case



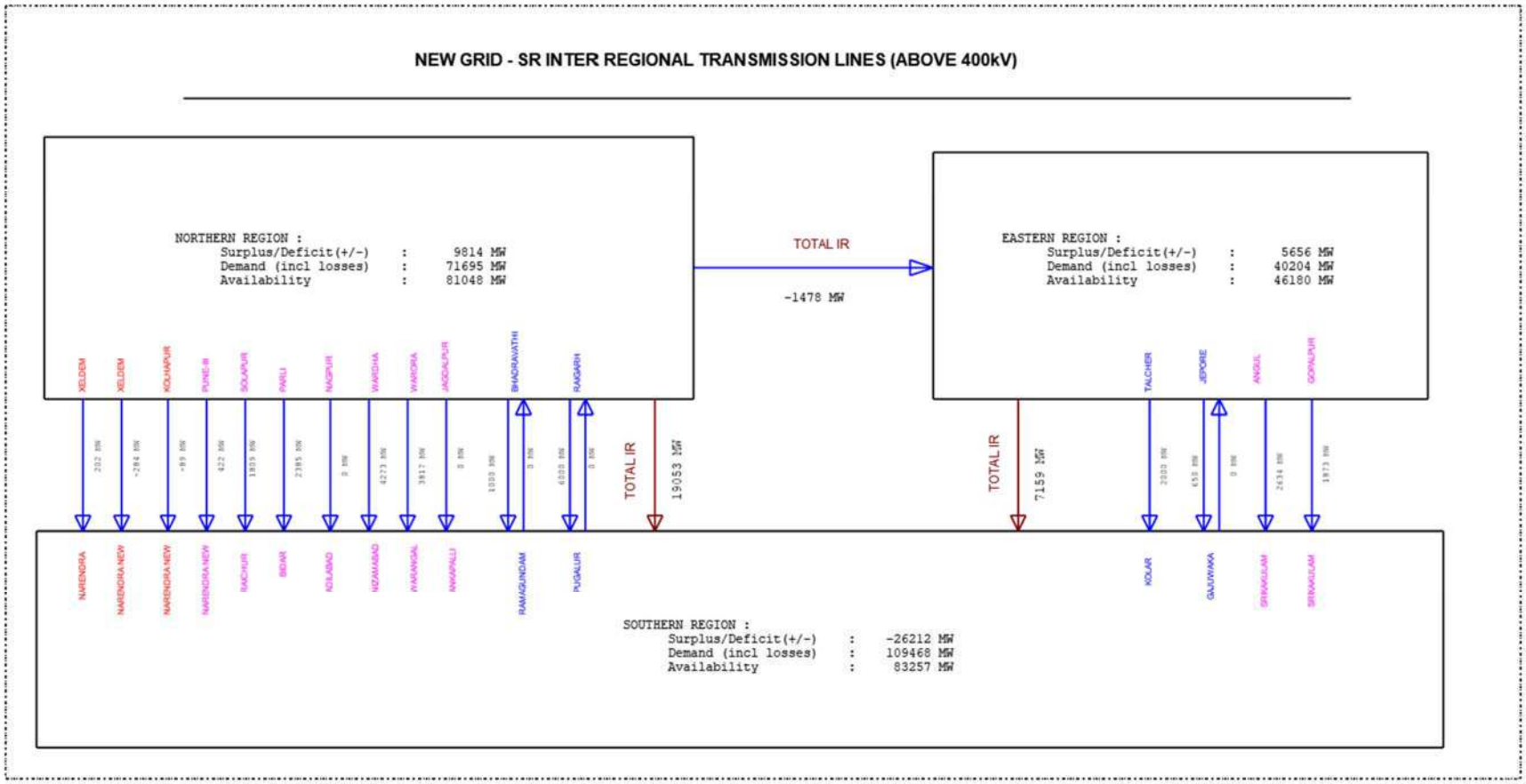
Base case + Gopalpur-Srikakulam 765kV D/c line



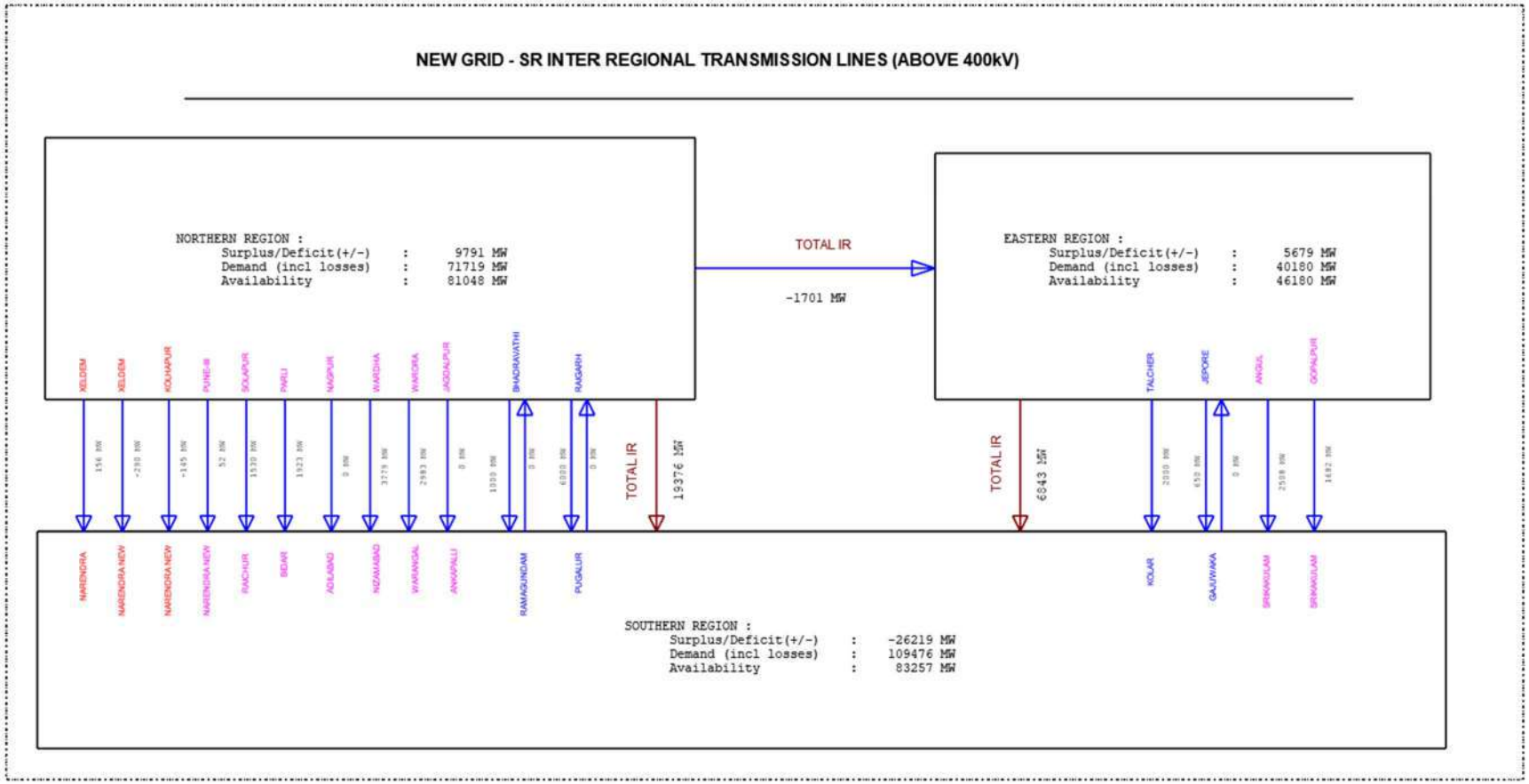
Base case + Parli - Bidar 765kV D/c line



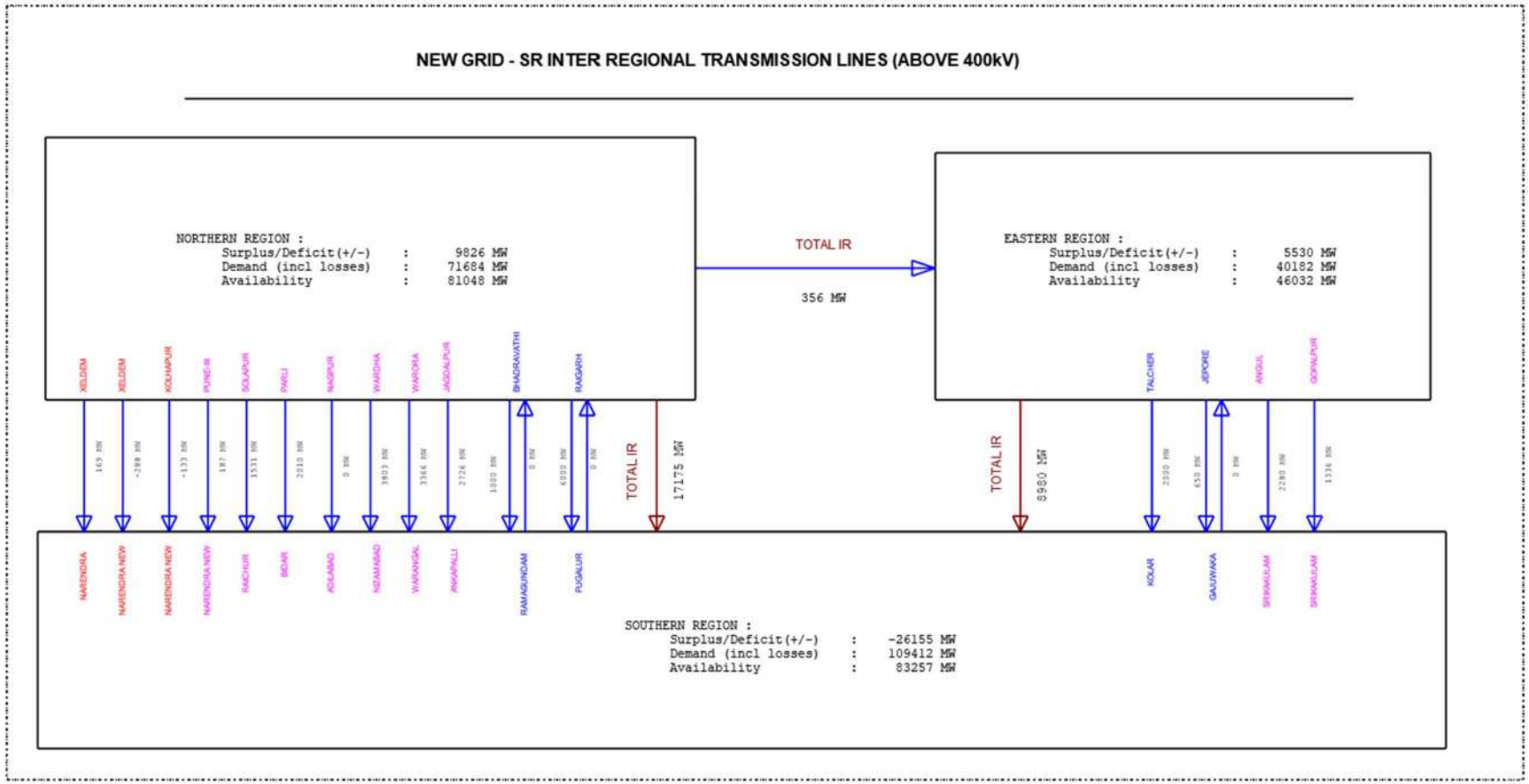
Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line



Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line + Nagpur – Adilabad – Warangal New 765kV D/c line

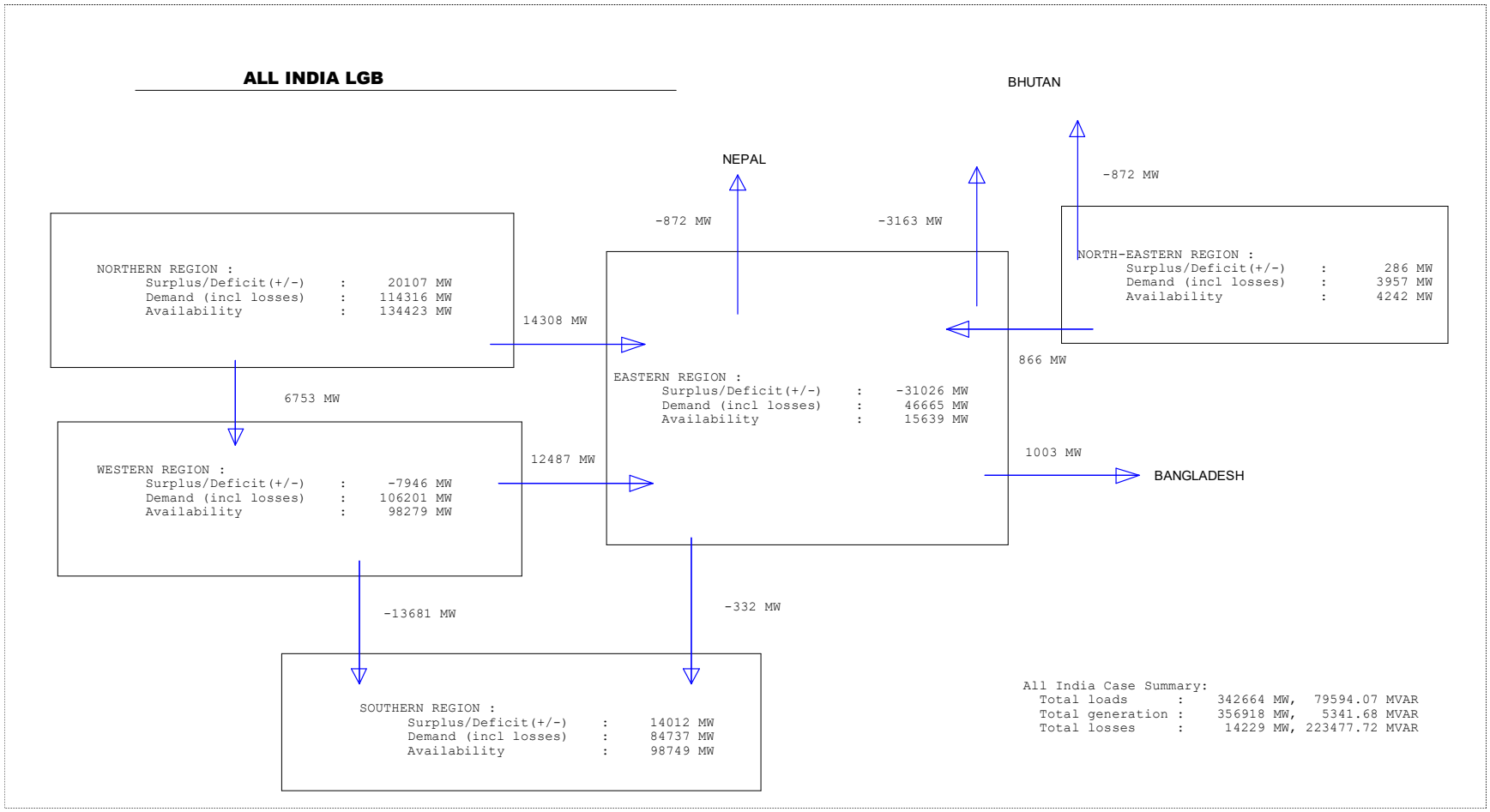


Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line + Raipur PS - Jagdalpur new - Vizag-II 765kV D/c line

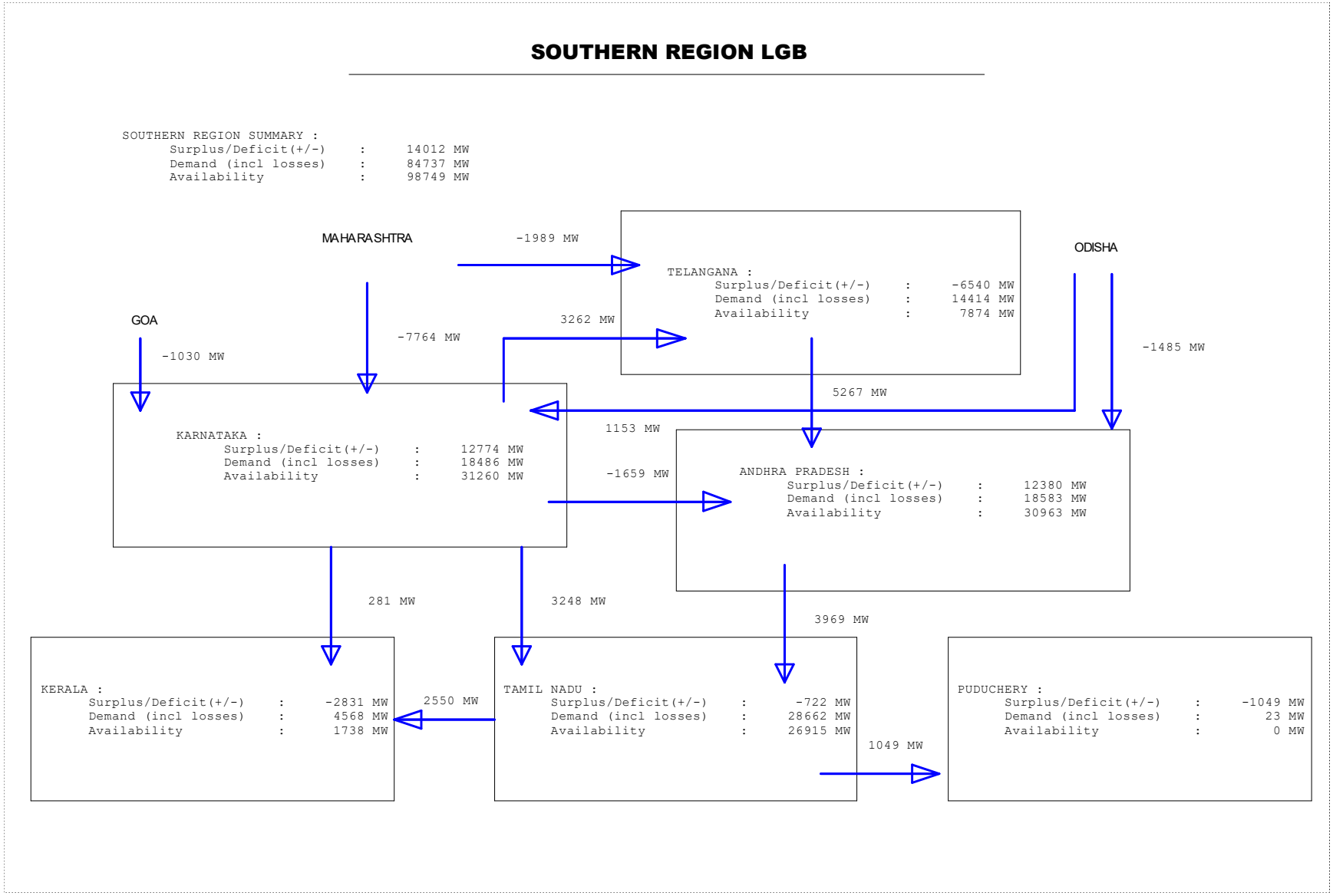


Scenario 4 - June solar max (SR Export)

All India LGB snapshot

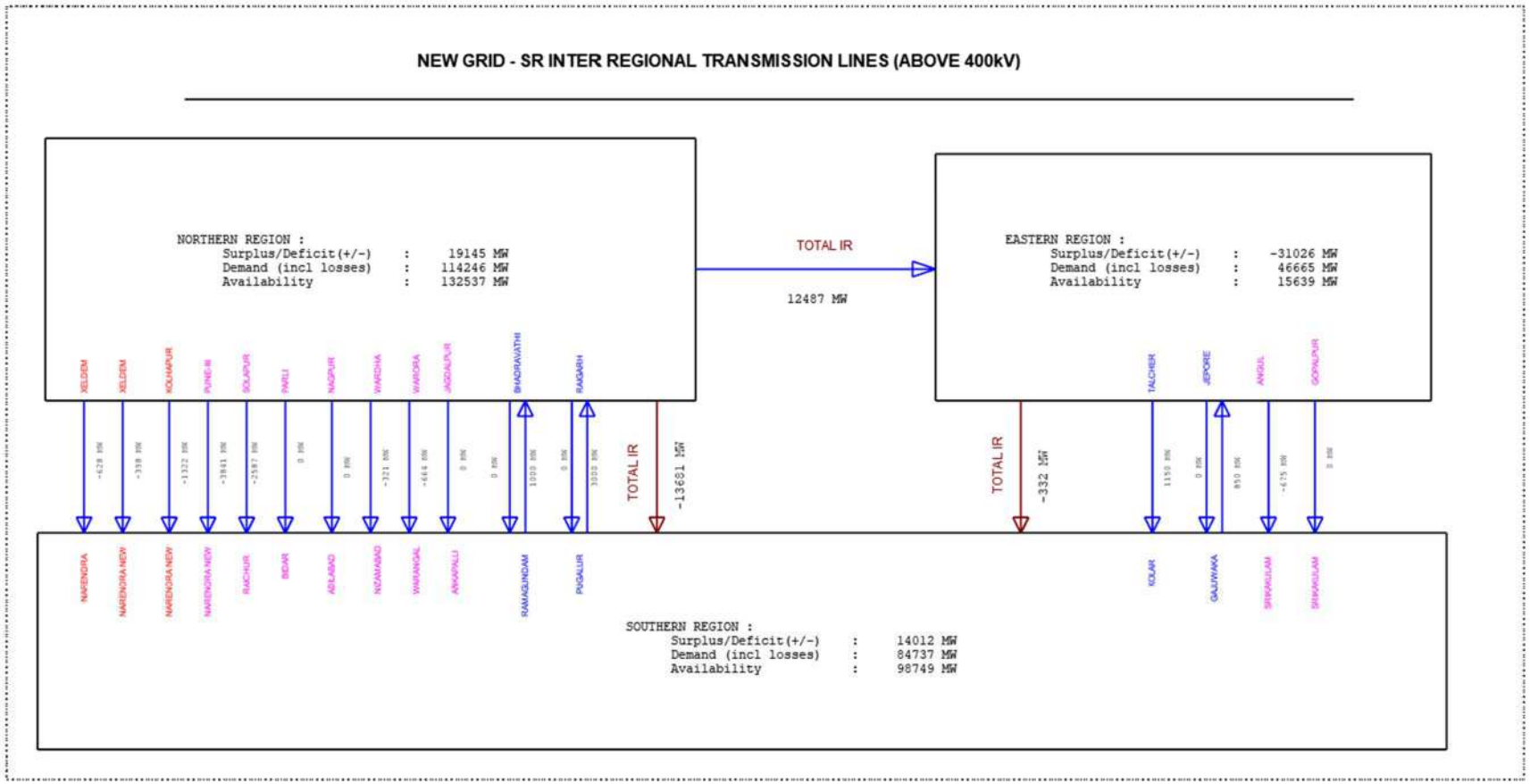


State wise LGB Summary

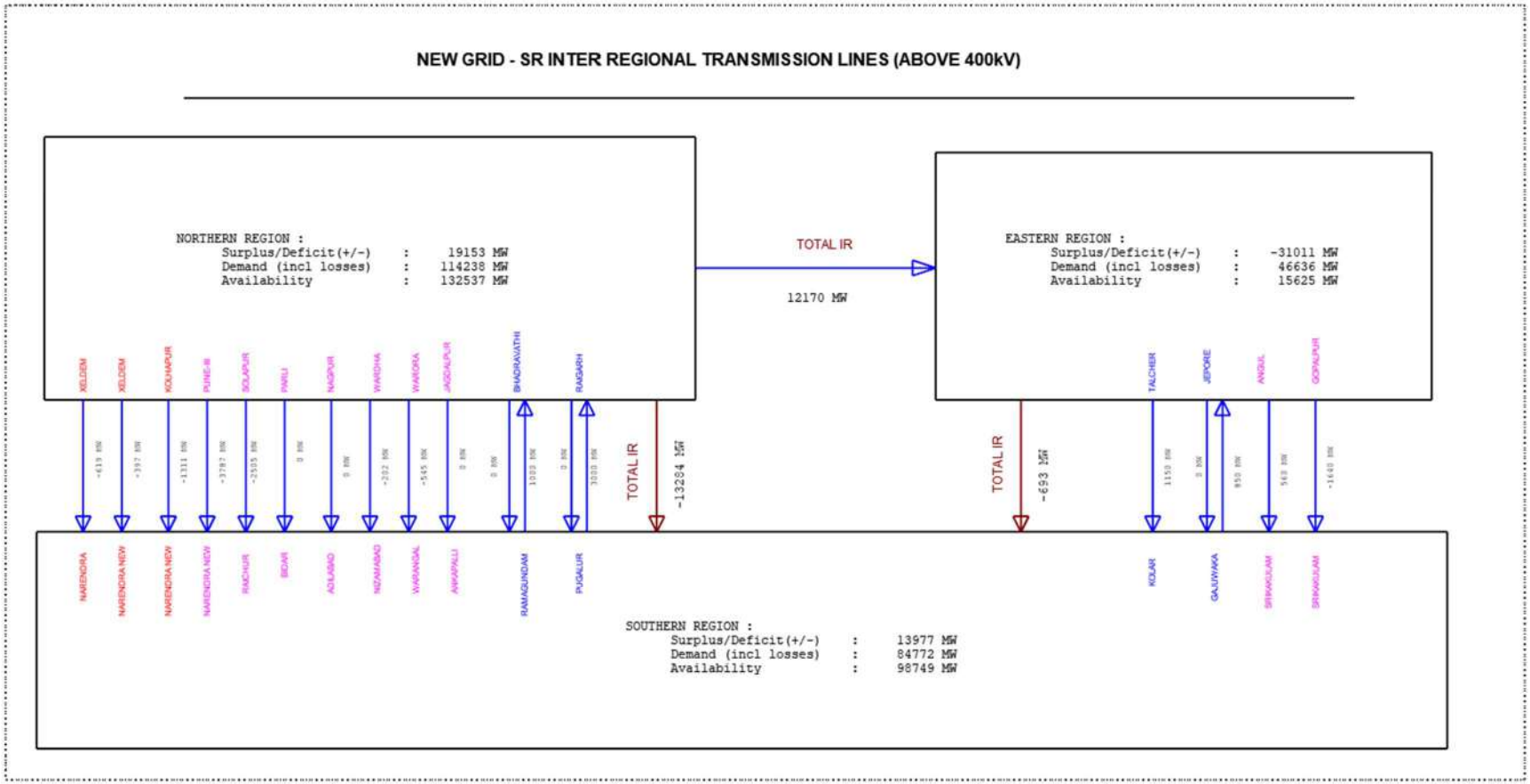


SR Inter-regional Tie line flows

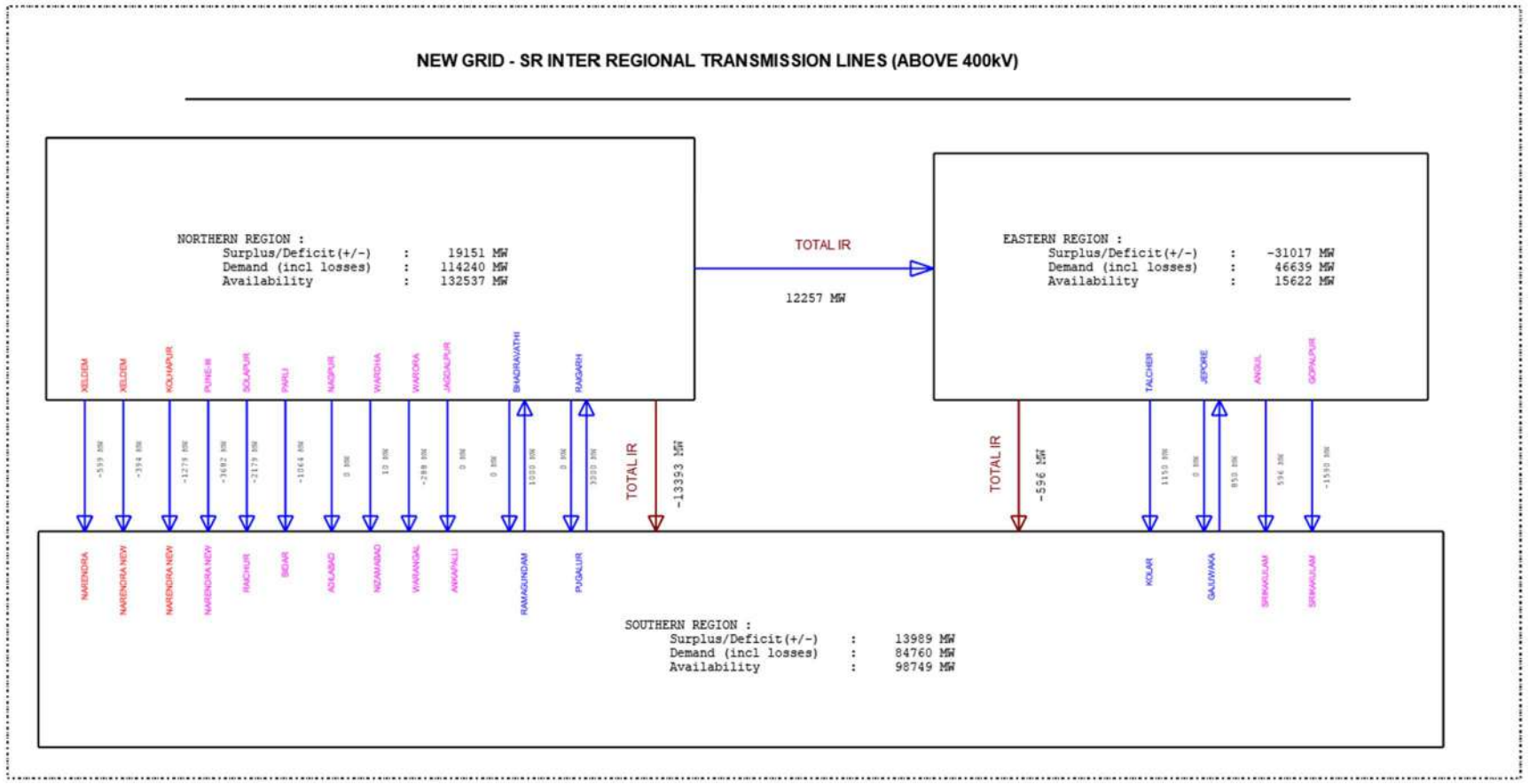
Base Case



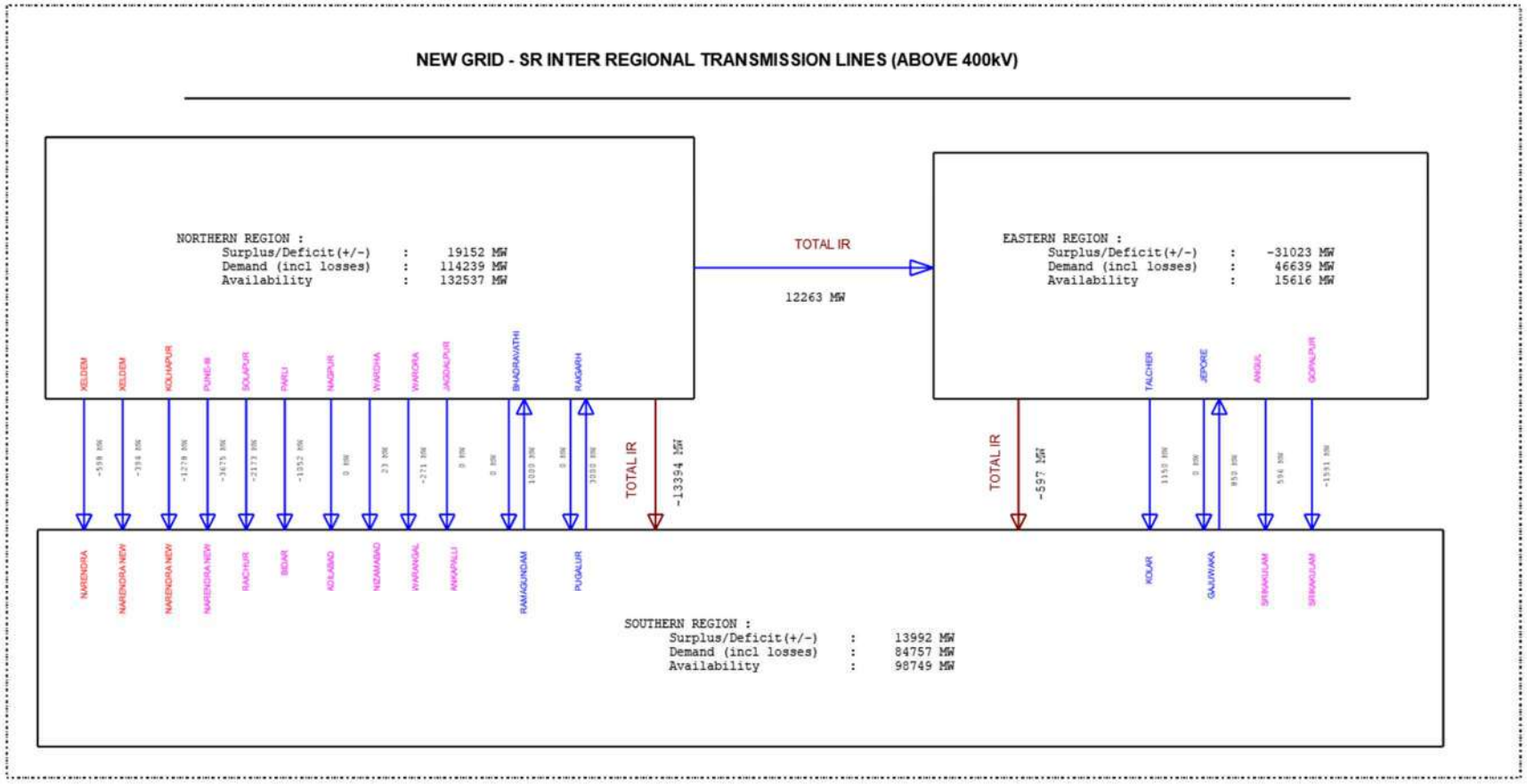
Base case + Gopalpur-Srikakulam 765kV D/c line



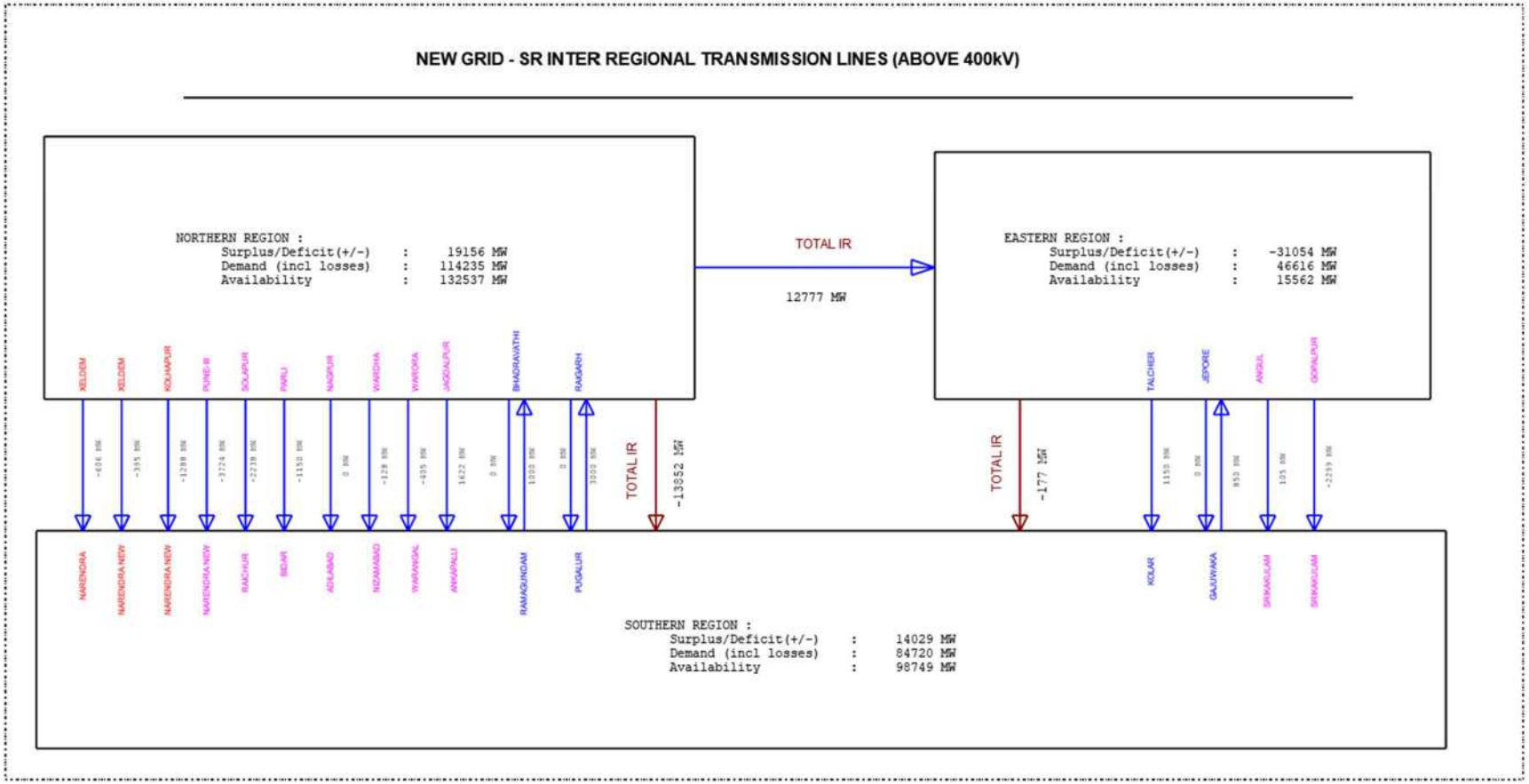
Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line



Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line + Nagpur – Adilabad – Warangal New 765kV D/c line



Base case + Gopalpur-Srikakulam 765kV D/c line + Parli - Bidar 765kV D/c line + Raipur PS - Jagdalpur new - Vizag-II 765kV D/c line



1/54/2023 - NT
Ministry of New and Renewable Energy
Government of India

Atal Akshay Urja Bhawan
Lodhi Road, New Delhi – 110003
1st November 2023

OFFICE MEMORANDUM

Subject: Details of year-wise planned Green Ammonia/ Green Methanol capacities and corresponding withdrawal capacities - reg.

The undersigned is directed to refer to the discussions held during the meeting chaired by Hon'ble Minister with Green Hydrogen industry stakeholders/associations on 19th October 2023, wherein Hon'ble Minister had instructed the developers to provide details of year-wise planned Green Ammonia/ Green Methanol capacities and corresponding withdrawal capacities desired at different locations. Hon'ble Minister also instructed that this information should be shared with the Central Transmission Utility of India Limited (CTUIL) for the purpose of planning the required substation capacities at these specified locations.

2. MNRE has consolidated the information received from various developers regarding their planned projects and their withdrawal requirements at the respective locations. The compiled list is attached herewith.

3. This issues with the approval of the component authority.

Anubhav Uppal
Scientist - C

Enclosed: *as above*

To:

Shri Abhay Choudhary
Chairman
Central Transmission Utility of India Limited
First Floor, Saudamini, Plot No.– 2, Sector– 29
Near IFFCO Chowk Metro Station
Gurgaon – 122001, Haryana

Copy for information to:

i. Chairman, Central Electricity Authority
ii. PS to Hon'ble Minister
iii. PSO (Secretary), MNRE

Connectivity to the Grid for planned Green Ammonia/ Green Methanol Plants						
S. No.	**Developer**	**Product (Green Hydrogen/ Ammonia/ Green Methanol/ others- specify)**	**Planned Capacity (in Million Tonnes Per Annum)**	**Expected Year of Operations (provide breakup of capacity year wise)**	**Location where connectivity is required (mention the nearest port as well, if applicable)**	**Required Capacity of Power withdrawal from nearest Substation (in GW)**
1.	**Renew Power**	Green Ammonia	1.1 MMTPA	300 TPD - 2026 1500 TPD - 2028 1500 TPD - 2030	Paradip	3 GW
		Green Ammonia	1.1 MMTPA	300 TPD – 2027 1500 TPD - 2029 1500 TPD - 2031	Gopalpur	3 GW
		Green Ammonia	1.1 MMTPA	300 TPD – 2027 1500 TPD - 2029 1500 TPD – 2031	Tuticorin	3 GW
		Green Ammonia	1.1 MMTPA	300 TPD – 2027 1500 TPD - 2029 1500 TPD - 2031	Kakinada	3 GW
		Green Ammonia	1.1 MMTPA	300 TPD – 2027 1500 TPD - 2029 1500 TPD - 2031	Kandla	3 GW
		Green Methanol	0.3 MMTPA	450 TPD - 2027 450 TPD - 2029	Rayagada	1.1 GW
		Green Methanol	0.5 MMTPA	750 TPD - 2027 750 TPD - 2029	Malkangiri	1.8 GW
2.	**Axis Energy Ventures India Pvt Ltd**	Green Hydrogen, Ammonia, Methanol and its derivatives	2 MMTPA	1 MMTPA – 2027 1 MMTPA - 2030	Ramayapatnam Port, Andhra Pradesh	3.5 - 4 GW
3.	**Welspun New Energy**	Green Hydrogen & Green Ammonia	0.7 MMTPA (GA equivalent)	0.1 MMTPA - 2027 0.6 MMTPA - 2030	Kendarpada dist.	3.5 GW
		Green Hydrogen & Green Ammonia	1 MMTPA (GA equivalent)	0.1 MMTPA - 2027 0.9 MMTPA - 2030	Kandla area, Kutch district	5 GW
4.	**Gentari Hydrogen - India**	Green Ammonia	0.5 MMTPA (500 KTPA) Phase 1	2027	V. O. Chidambaranar Port - Tuticorin (Tamil Nadu)	750 MW (0.75 GW)
		Green Ammonia	0.5 MMTPA	2028	New Mangalore Port	750 MW (0.75 GW)

			(500 KT PA) Phase 1		- Mangalore (Karnataka)	
5.	**Aditya Birla Renewables**	Green Ammonia	0.1 MMTPA	2027-28	Paradip Port	0.15 GW
6.	**Greenko**	Green Ammonia	1 MMTPA	2026	Kakinada	1.5 GW
		Green Ammonia	1 MMTPA	2027	Kakinada	1.5 GW
		Green Ammonia	1 MMTPA	2027	Tuticorin	1.5 GW
		Green Ammonia	1 MMTPA	2028	Mangalore	1.5 GW
		Green Ammonia	1 MMTPA	2028	Kandla	1.5 GW
7.	**Adani New Industries Limited (ANIL)**	Green Ammonia	1.2 MMTPA	2027	Injection point: (a) Lakadia ISTS S/s (up to 4 GW from Zone 3) (b) At a nearby location of Zone II / Zone I which may be taken into CEA planning considering huge quantum of power. Else, Radhanesda ISTS S/s (up to 18 GW) from Zone II / Zone I	4 GW
		Green Ammonia	1.2 MMTPA	2028		7 GW
		Green Ammonia	1.6 MMTPA	2029		6 GW
		Green Ammonia	1.6 MMTPA	2030		5 GW (22* GW combined) Withdrawal point - Proposed ISTS S/s at Navinal, Mundra (22 GW) ***Overall plan is for transmission of ~ 40 GW of RE through ISTS by the end of 2032 for ~9 MTPA of Green Ammonia production**
8.	**Infinity Global**	Green Ammonia (Odisha)	0.5 MMTPA	Phase 1- 2027 Phase 2- 2029	Gopalpur Port, Odisha	0.75 GW RTC
		Green Ammonia (Tamil Nadu)	0.5 MMTPA	Phase 1- 2027 Phase 2- 2029	Tuticorin Port, Tamil Nadu	0.75 GW RTC

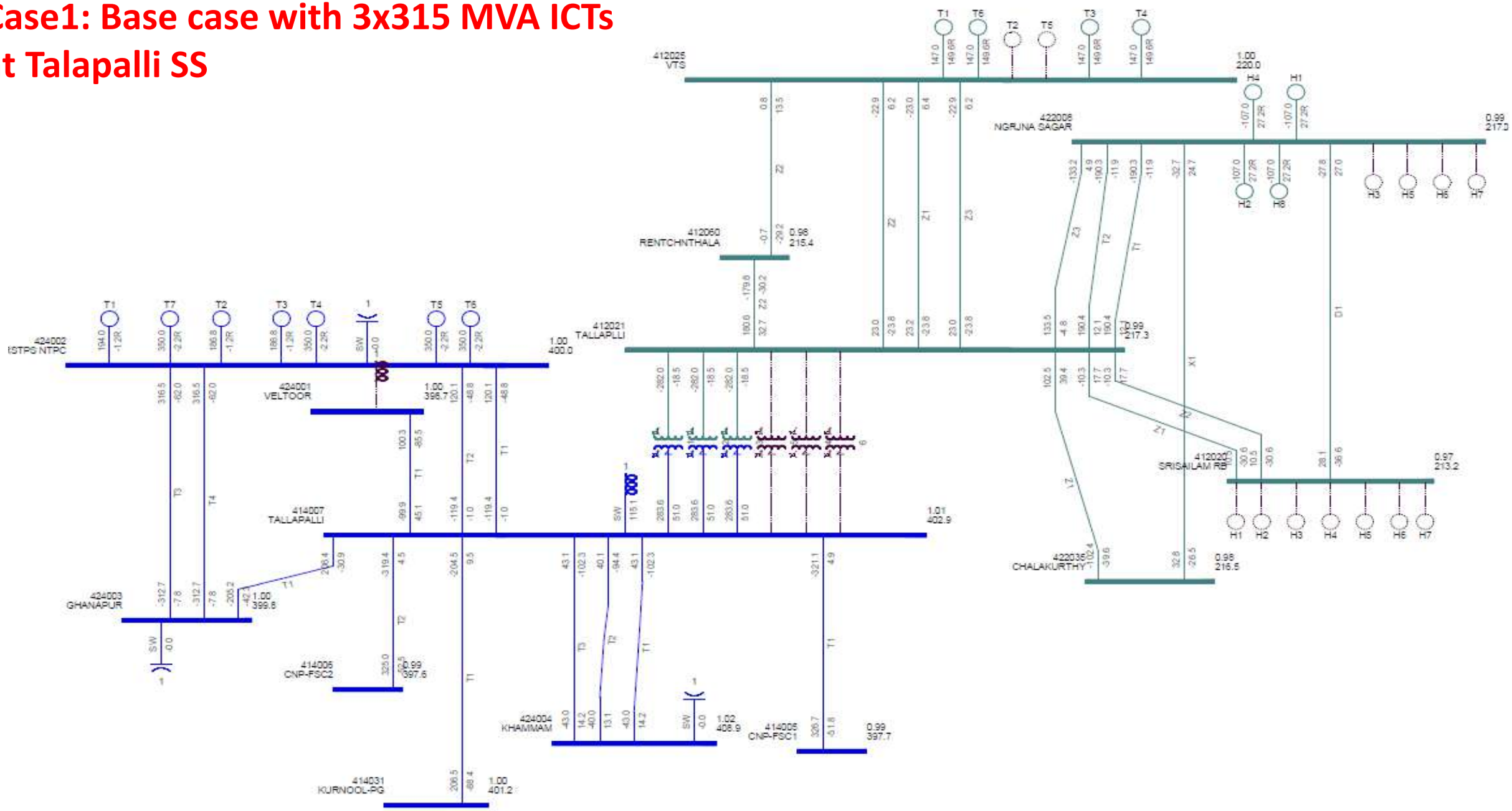
9.	**Ocior Energy**	Green Ammonia	1 MMTPA	0.1 MMTPA – Jan 2027 0.9 MMTPA – Jan 2030	Gopalpur Industrial Park (TATA SEZ) in Odisha near Gopalpur port	0.15 GW [connected on state (Odisha) transmission system by Jan 2027] 1.5 GW [connected on Inter State transmission system by 2030]
		Green Ammonia	1 MMTPA	0.1 MMTPA - Jan 2027 0.9 MMTPA - Jan 2030	Kandla, Gujarat near Deendayal/Kandla port	0.19 GW (connected on Inter State Transmission System by Jan 2027) 1.5 GW (connected on Inter State transmission System by 2030)
10.	**Hindustan Petroleum Corporation Limited (HPCL)**	Green Hydrogen – Visakhapatnam Refinery	0.37 KTPA (0.00037 MMTPA)	November 2023	Visakhapatnam, Andhra Pradesh	2.6 MW (0.0026 GW)
		Green Hydrogen – Barmer Refinery	4.30 KTPA (0.0043 MMTPA)	December 2025	Newai, Dist. Balotra, Rajasthan	30 MW (0.03 GW)
		Green Hydrogen – Visakhapatnam Refinery	2.60 KTPA (0.0026 MMTPA)	December 2025	Visakhapatnam, Andhra Pradesh	20 MW (0.02 GW)
		Green Hydrogen – Visakhapatnam Refinery	21.80 KTPA (0.0218 MMTPA)	2030	Visakhapatnam, Andhra Pradesh	150 MW (0.15 GW)
11.	**Bharat Petroleum Corporation Limited**	Green Hydrogen through electrolysis (cumulative production)	0.70 KTPA (0.0007 MMTPA)	2025	Bina, MP	5 MW (0.005 GW)
			7.60 KTPA (0.0076 MMTPA)	2027	Yet to be finalized	55 MW (0.055 GW)
			20.70 KTPA (0.0207 MMTPA)	2030	Yet to be finalized	150 MW (0.15 GW)

		Green Hydrogen through biomass (cumulative production)	37 KTPA (0.037 MMTPA)	2030	Yet to be finalized	
12.	**NTPC**	Green Ammonia	0.5 MMTPA	2027	VOC Port, Tuticorin, Tamil Nadu	1 GW
		Green Ammonia	1 MMTPA	2027	Deendayal Port, Kandla, Gujarat	2 GW
		Green Ammonia	2 MMTPA	2027	Pudimadaka, Andhra Pradesh (Near Visakhapatnam Port)	4 GW
		Green Ammonia	0.5 MMTPA	2028	Syama Prasad Mookerjee Port, (Near Haldia port)	1 GW
		Green Methanol	0.5 MMTPA	2028	Simhadri / Pudimadaka, Andhra Pradesh, (Near Visakhapatnam Port)	1 GW
Total			29.295 MMTPA			75.3 GW

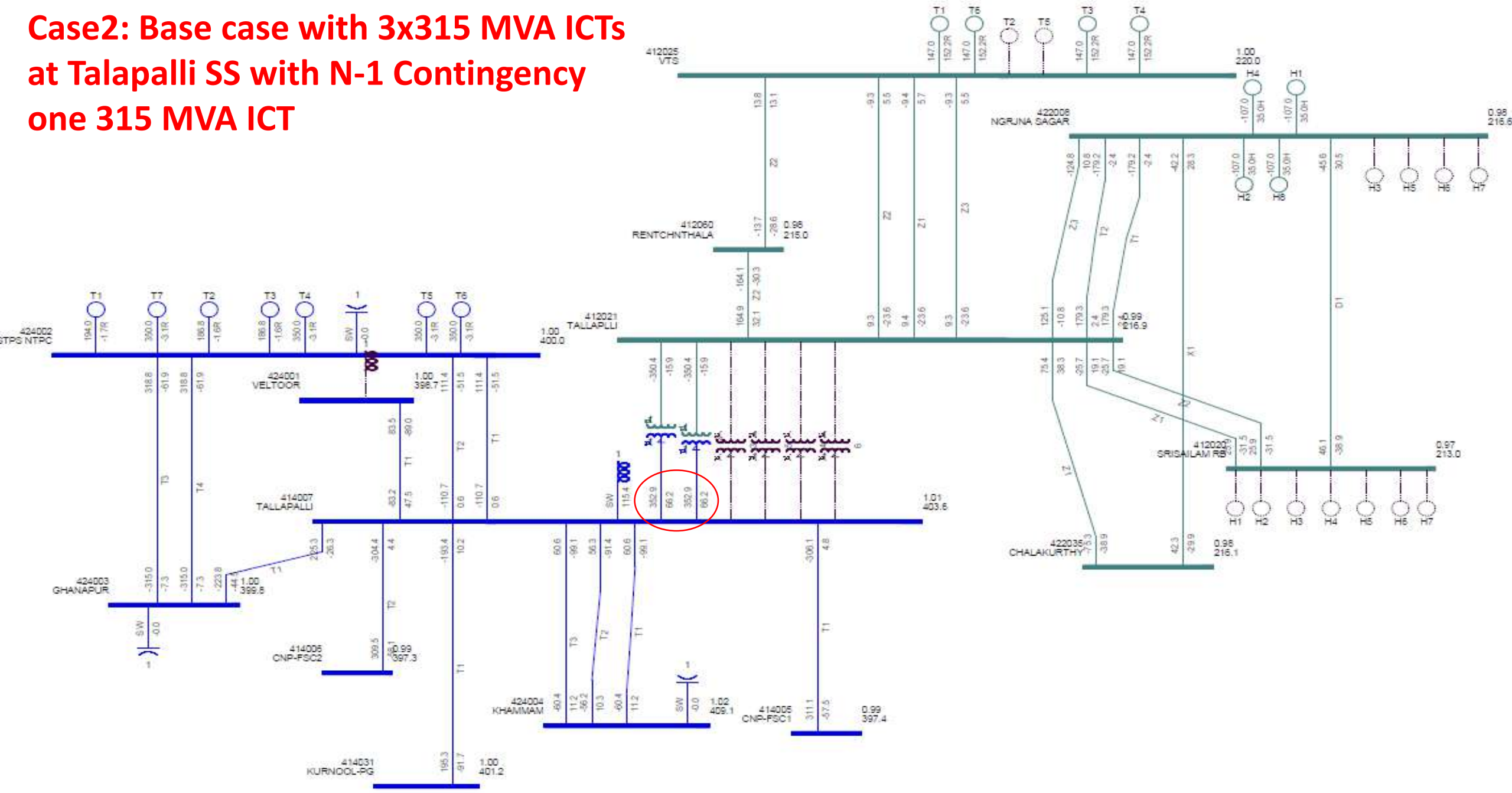
Annexure-V

400/220kV Talapalli ICTs overloading

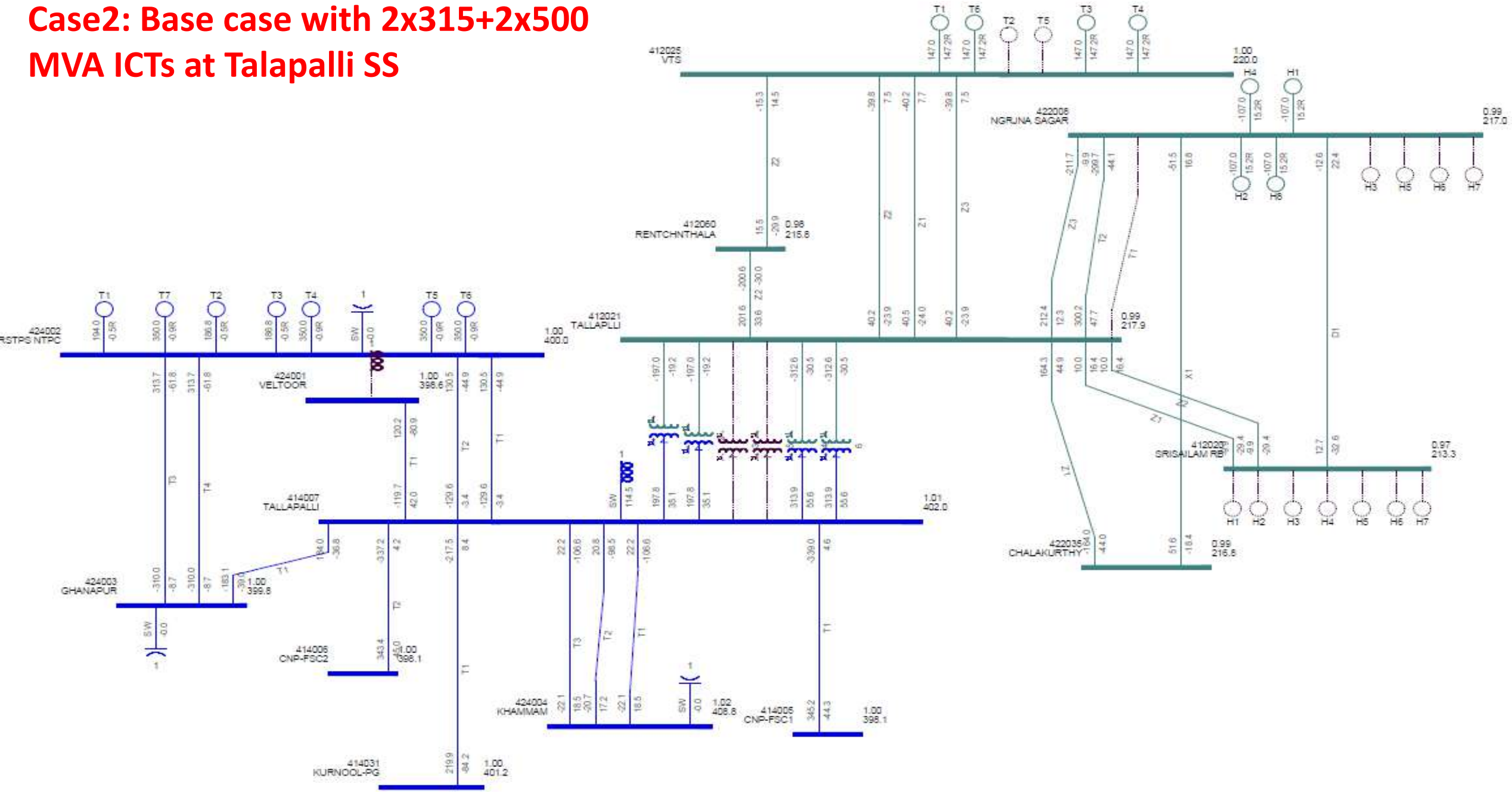
Case1: Base case with 3x315 MVA ICTs at Talapalli SS



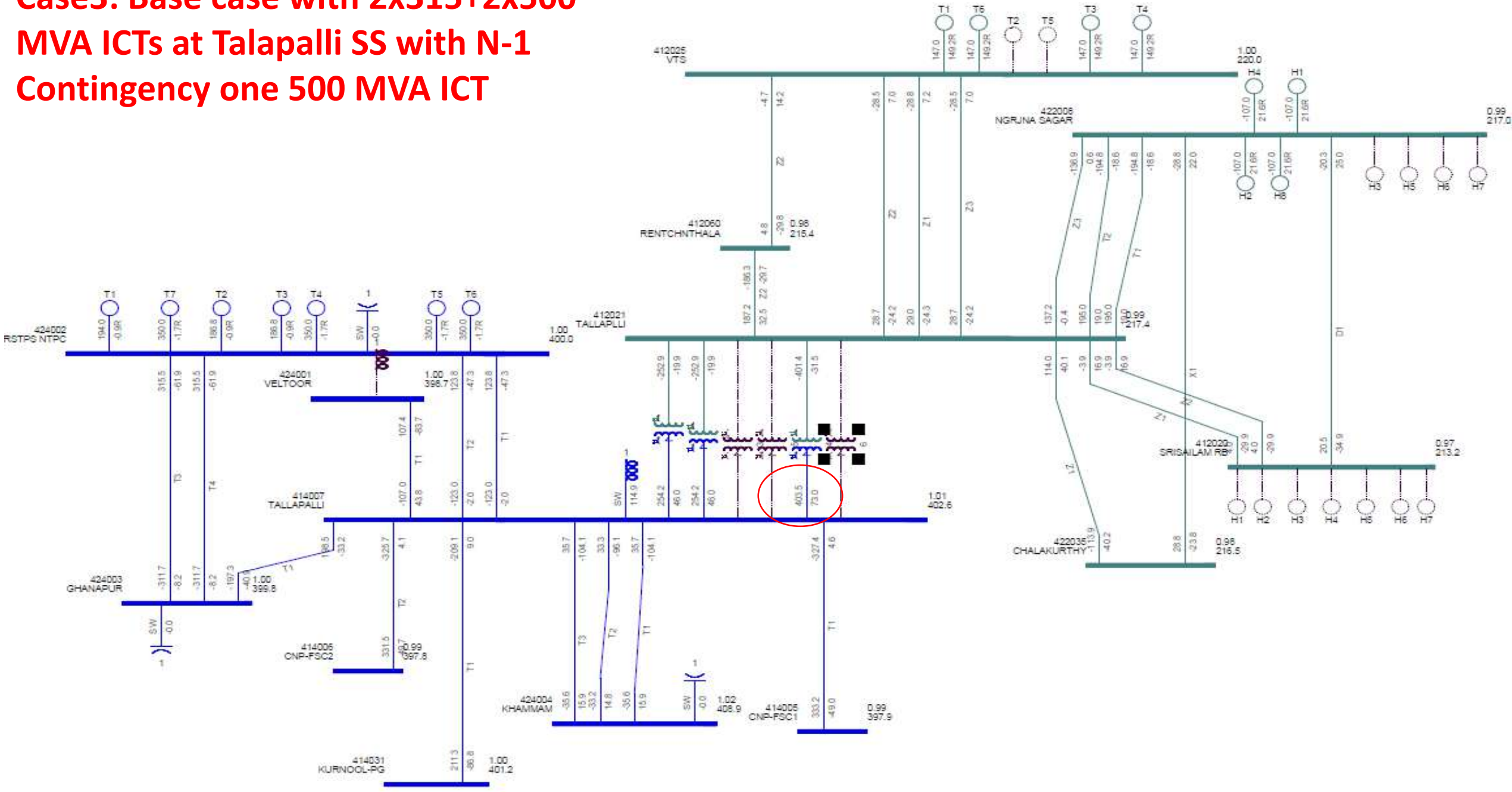
Case2: Base case with 3x315 MVA ICTs at Talapalli SS with N-1 Contingency one 315 MVA ICT

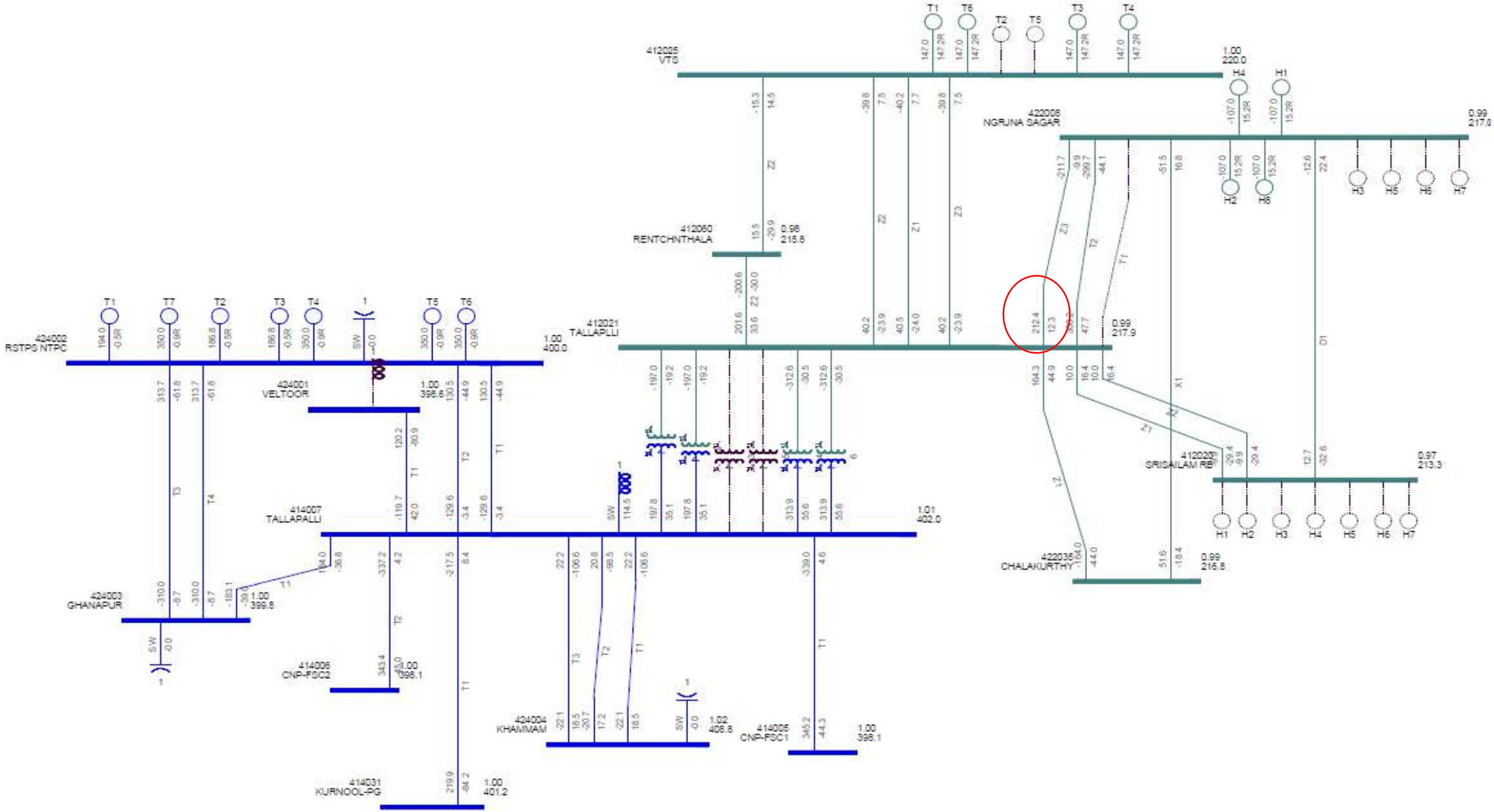


Case2: Base case with 2x315+2x500 MVA ICTs at Talapalli SS



Case3: Base case with 2x315+2x500 MVA ICTs at Talapalli SS with N-1 Contingency one 500 MVA ICT

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NGRJNA SAGAR
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RENTCHNTHALA
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TALLAPLLI
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RSTPS NTPC
424001
VELTOOR
414007
TALLAPALLI
424003
GHANAPUR
414006
CNP-FSC2
424004
KHAMMAM
414005
CNP-FSC1
414031
KURNOOL-PG
412020
SRISAILAM RB
422036
CHALAKURTHY

Annexure-F

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

सेवा में / To,

1) Member Secretary, Southern Region Power Committee, 29, Race Course Cross Road, Bangalore 560 009, FAX : 080-22259343	2) Chief Operating Officer (CTUIL), "Saudamini" Plot No. 2, Sector-29, Gurugram-122001 Tel. No. 0124-2571816
3) Executive Director, SRLDC, 29, Race Course Cross Road, Bangalore 560 009.	4) Chief Engineer (Planning & Power Systems), APTRANSCO, Vidyut Soudha, Gunadala, Vijayawada - 520008

विषय / Subject: Minutes of the meeting to discuss the intra-state transmission system proposals of APTRANSCO.

महोदय / Sir,

A meeting was held on 25th April 2024 through VC to discuss the intra-state transmission system proposals of APTRANSCO. Minutes of the meeting are enclosed.

भवदीय / Yours faithfully,

(कंचन चौहान/ Kanchan Chauhan)

उप निदेशक/ Dy. Director

Minutes of the meeting to discuss the intra-state transmission system proposals of APTRANSCO

List of participants is attached as **Annex-I**

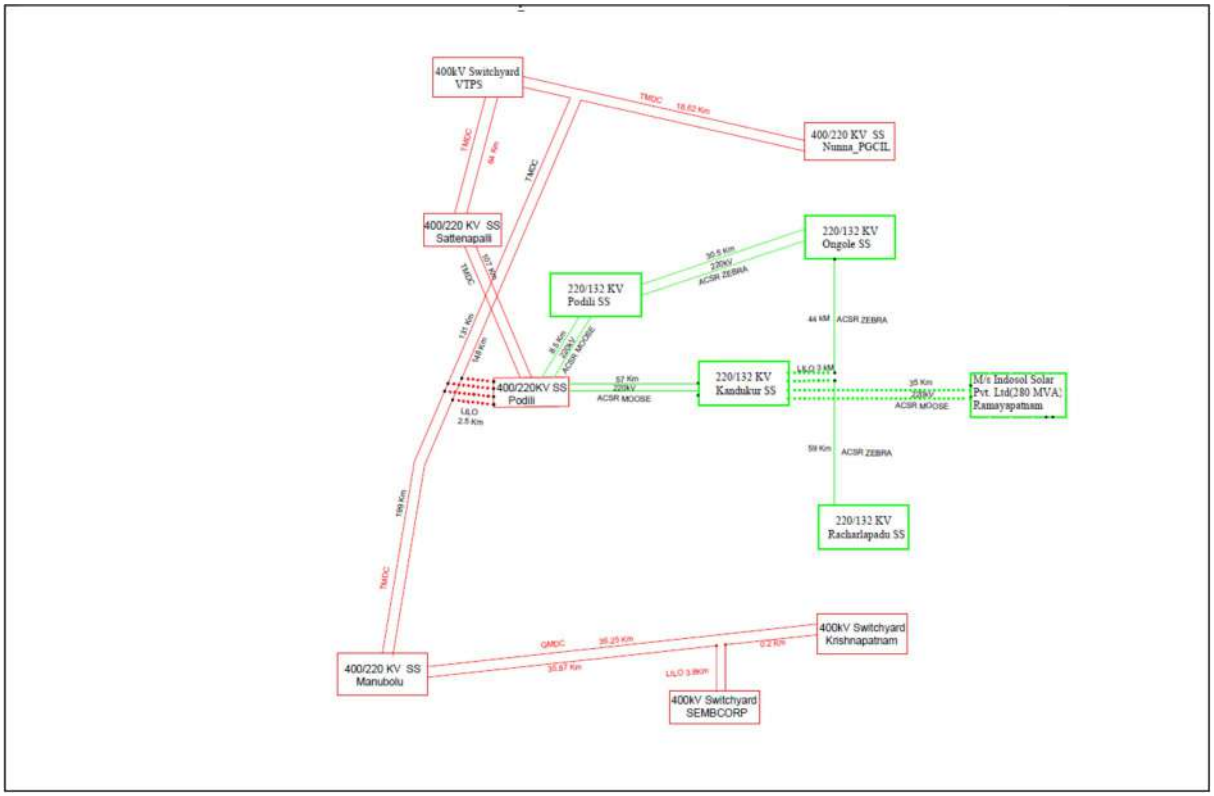
1. **System strengthening by making LILO of VTS-Manubolu 400 kV S/c line and Nunna–Manubolu 400 kV S/c line (ISTS) at 400 kV Podili S/s.**

Background:

1.1 M/s. INDOSOL Solar Pvt. Ltd. has requested APTRANSCO for extending Interim power requirement up to 280 MVA in phased manner at 220 kV level until 400 kV lines and switching station at Ramayapatnam is commissioned for their power requirement of 900 MVA (Ramayapatnam transmission system proposal is mentioned at agenda point 2).

1.2 APTRANSCO proposed to extend 280 MVA power supply to M/s. INDOSOL Solar Pvt. Ltd. from existing 220/132 kV Kandukuru S/s at 220 kV level. At Present, the 220 kV Kandukuru S/s is radially fed from 400/220 kV Podili S/s and LILO of existing Ongole- Racharlapadu 220 kV S/c line at Kandukuru S/s is under implementation.

1.3 As per load flows studies, it was observed that voltages at 400/220 kV Podili S/s are below 390 kV during peak load period as it is radially fed from 400/220 kV Sattenapalli S/s. Hence, in order to improve the voltage profile at 400/220 kV Podili S/s and at downstream substations duly considering the future load growth and upcoming loads at Ramayapatnam, APTRANSCO proposed LILO of VTS-Manubolu 400 kV S/c line and Nunna– Manubolu 400 kV S/c line at 400 kV Podili S/s. The schematic diagram of the proposed transmission scheme is given as below:



Deliberations in the meeting:

1.4 APTRANSCO informed that extension of supply for 280 MVA load at 220 kV is an interim arrangement only. Once the permanent arrangement i.e. 400 kV network is established, the 280 MVA load at 220 kV will be transferred to 400 kV level. The proposed Kandukur - Ramayapatnam 220 kV D/c line to feed 280 MVA load of M/s INDOSOL Solar Pvt. Ltd. will be kept as idle once the 400 kV network is established.

1.5 SRPC/SRLDC opined that as per the load flow studies, low voltages at 220 kV Ongole S/s, Racherlapdu S/s, Kandukuru S/s and Ramayapatnam S/s would persists even after the commissioning LILO of VTS-Manubolu 400 kV S/c line and Nunna– Manubolu 400 kV S/c Line at 400 kV Podili S/s. Also, under 'N-1' contingency of proposed 220 kV Kandukur to Ramayapatnam D/c line, the voltage at load end (Ramayapatnam S/s) would go below 202 kV. He advised that adequate reactive compensation should be provided at load end.

1.6 APTRANSCO informed that they have conducted the study considering worst scenario of system power factor (pf) being 0.95, but in practice it is more than 0.95 pf due to reactive power compensation at various locations. Further, M/s. INDOSOL Solar Pvt. Ltd. has confirmed that they will maintain power factor close to unity as far as possible by implementing suitable reactive power compensation.

1.7 SRLDC opined that under 'N-1' of proposed 220 kV Kandukur to Ramayapatnam D/c line, the loading of other circuit would go beyond the thermal rating of the conductor. APTRANSCO stated that considering 'N-1' contingency requirement, ACSS moose conductor should be considered instead of ACSR moose for the 220 kV Kandukur to Ramayapatnam D/c line.

1.8 After detailed deliberations following was agreed:

i. Adequate reactive compensation to be provided at 220 kV Ramayapatnam/220 kV INDOSOL S/s to maintain the voltage level within limits.

ii. LILO of VTS-Manubolu 400 kV S/c line and Nunna– Manubolu 400 kV S/c line at 400 kV Podili S/s to be implemented in matching timeframe of Kandukur - Ramayapatnam 220 kV D/c line to supply 280 MVA load.

iii. Kandukur-Ramayapatnam 220 kV D/c line to be implemented with ACSS moose conductor or other higher ampacity conductor to meet the 'N-1' contingency requirement.

2. Transmission scheme for extension of 900 MVA (Phase-I) EHT Supply to M/s INDOSOL Solar Pvt. Ltd., at Ramayapatnam.

Background:

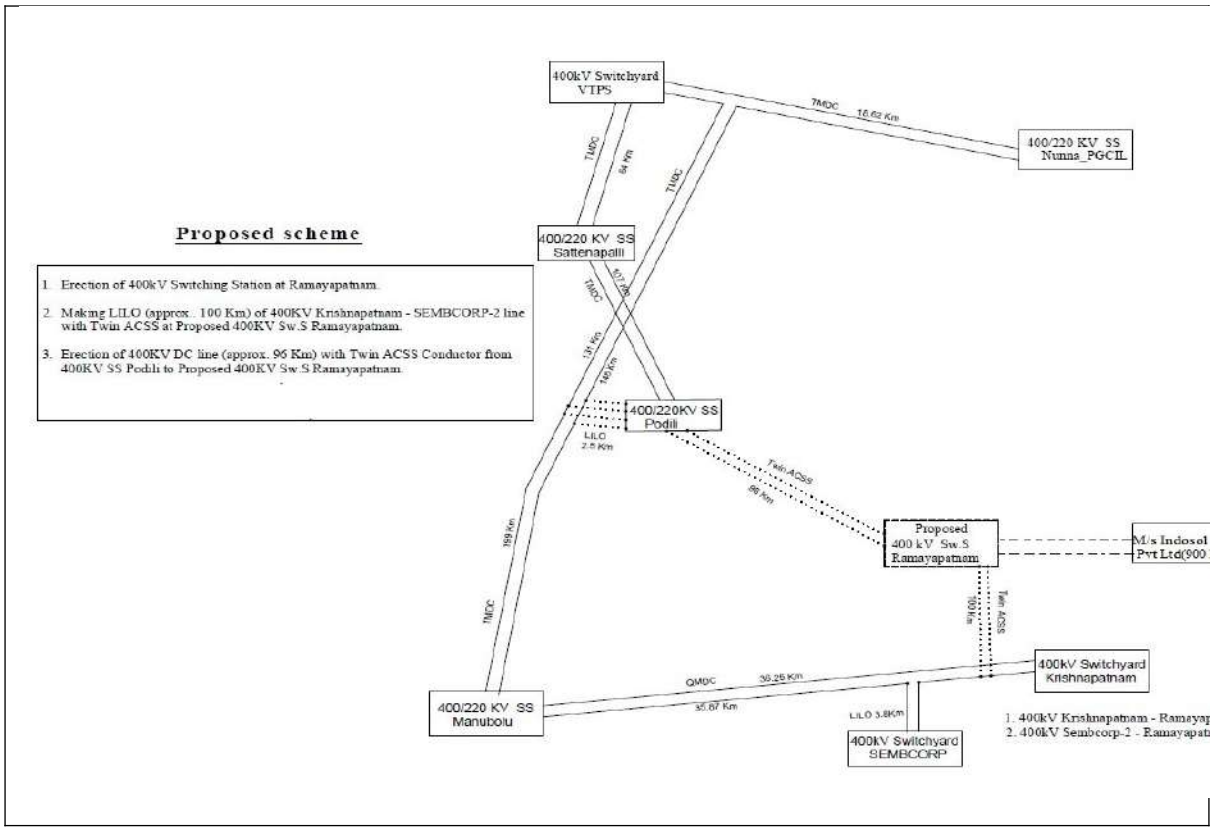
2.1 For extending 900 MVA load under Phase – I to M/s INDOSOL Solar Pvt. Ltd, APTRANSCO has proposed the following transmission scheme:

i. Erection of 400 kV Switching Station at Ramayapatnam.

ii. LILO of Krishnapatnam – SEMBCORP2 400 kV S/c line at 400 kV Ramayapatnam (with Twin ACSS Moose equivalent to Quad ACSR Moose Conductor at proposed.) – length 100 km (approx.)

iii. Podili- Ramayapatnam 400 kV D/c line (with Twin ACSS Moose equivalent to Quad ACSR Moose conductor) – length 96 km (approx.)

iv. Extension of 900 MVA load to M/s INDOSOL Solar Pvt. Ltd. by extending the 400 kV bus of Ramayapatnam with metering arrangement.



Deliberations in the meeting:

2.2 SRPC opined that as per APTRANSCO's proposal, Ramayapatnam S/s will be implemented as a switching substation. Considering future load growth, the provision of ICT may be kept at Ramayapatnam S/s. Also, voltages at 400 kV Podili S/s would go low during peak demand period. Accordingly, adequate reactive compensation may be provided at 400 kV Podili S/s to maintain the voltage within limits. Also, overloading of ICTs is observed at Rachaguneri S/s considering the 900 MVA load of M/s INDOSOL Solar Pvt. Ltd. So, ICT Augmentation would be required at Rachaguneri S/s.

2.3 APTRANSCO informed that 2x315 MVA ICTs are existing at Rachaguneri S/s. 3rd ICT is under implementation and will be commissioned by the end of 2024. 4th ICT is expected to be commissioned by the end of 2025.

2.4 CEA informed that as per MNRE, around 4 GW load on account of Green Hydrogen/Green Ammonia manufacturing is likely to come up around Ramayapatnam. So, provision of ICTs may be kept at Ramayapatnam S/s to cater to the demand.

2.5 After detailed deliberations, following was agreed:

i. The transmission scheme proposed (mentioned at point no.2.1) by APTRANSCO to meet 900 MVA load of M/s INDOSOL Solar Pvt. Ltd. was agreed.
ii. Provision of ICTs to be kept at 400 kV Ramayapatnam S/s to cater to the future electricity demand.
iii. Adequate reactive compensation to be provided at Ramayapatnam S/s to maintain the voltage within limits.

3. Augmentation of additional 500 MVA ICT at 400/220 kV Kamavarapukota (K.V. Kota) S/s

Background:

3.1 Kamavarapukota S/s has 2x315 MVA, 400/220 kV ICTs. Maximum demand of 532.8 MVA has been recorded on 12.06.2023 on the existing ICTs. Further, 4 Nos. of 220 kV feeders [K.V. Kota (400/220 S/s)- K.V. Kota 220 kV S/c line (3rd circuit), K.V. Kota (400/220 S/s)- - Nuzvidu 220 kV S/c line & K.V. Kota (400/220 S/s)- – Bhimadole 220 kV D/c line)] are under implementation and are about to be commissioned shortly.

3.2 As per the operational feedback by SRLDC, ICTs at 400/220 kV K.V. Kota S/s are not complying 'N-1' Criteria during the high demand period.

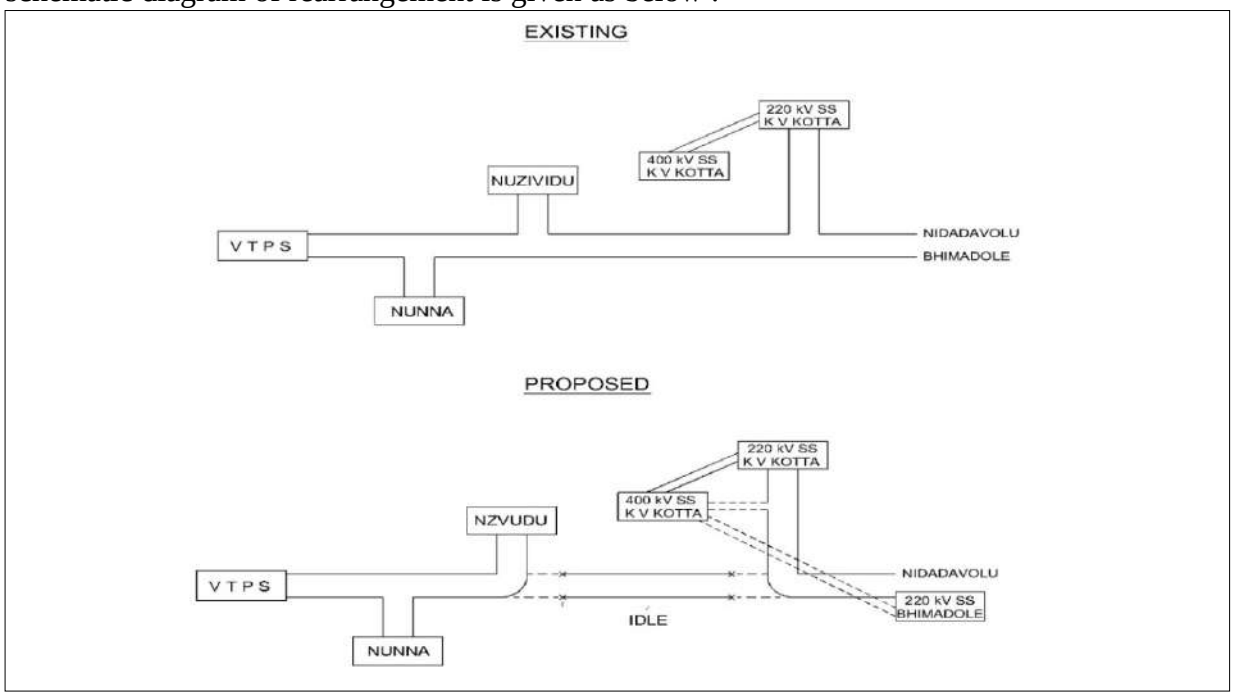
3.3 To satisfy the 'N-1' criteria during high demand period and to meet the growing demand, APTRANSCO proposed additional ICT (3rd) of 1x500 MVA at K.V. Kota.

Deliberations in the meeting:

3.4 SRLDC opined that in the present scenario, K.V. Kota (400/220 kV S/s) – K.V. Kota 220 kV D/c line is highly loaded and is violating 'N-1' criteria. With the 3rd ICT at K.V. Kota S/s and Guddigudem S/s, 17% increase in the loading is observed on 220 kV K.V. Kota (400/220 kV S/s) – K.V. Kota D/c line. The commissioning of K.V. Kota (400/220 kV S/s) – K.V. Kota 220 kV S/c line (3rd circuit) is immediately required. Also, the envisaged rearrangement of Nunna - Bhimadole 220 kV S/c line and K.V. Kota

(220 kV S/s) –Nuzvidu 220 kV S/c line as K.V. Kota (400/220 kV S/s) - K.V. Kota 220 kV S/c line (3rd circuit) and K.V. Kota (400/220 kV S/s) – Bhimadole 220 kV S/c line should be commissioned along with the K.V. Kota (400/220 kV S/s)– Bhimadole 220 kV D/c line in order to avoid the overloading of K.V. Kota (400/220 kV S/s) – Bhimadole S/c line. Also, SRLDC informed that 'N-1' violation of 400/220 kV K.V. Kota ICTs is observed even with addition (3rd) 1x500 MVA ICT. 4th ICT also may be planned based on the expected load growth.

3.5 APTRANSCO informed that the LILO of K.V. Kota –Nuzvidu 220 kV S/c line at K.V. Kota (400/220 kV S/s) which facilitates 3rd circuit from K.V. Kota (400/220 kV S/s) - K.V. Kota S/s is under implementation and is expected to be commissioned by May, 2024. Also, the envisaged rearrangement of Nunna-Bhimadole 220 kV S/c line and K.V. Kota –Nuzvidu 220 kV S/c line as K.V. Kota (400/220 kV S/s) - K.V. Kota 220 kV S/c line (3rd circuit) and K.V. Kota (400/220 kV S/s) – Bhimadole 220 kV S/c line will be taken up only after completion of the 220 kV K.V. Kota – Bhimadole D/c line. The detailed clarifications furnished by APTRANSCO is attached as **Annex-II**. The schematic diagram of rearrangement is given as below :



3.6 SRPC suggested APTRANSCO to consider additional 500 MVA (4th) ICT at 400/220 kV K.V. Kota S/s considering the future load growth.

3.7 After detailed deliberations, following was agreed:

i. ICT augmentation from 2x315 MVA to (2x315 + 1x500) MVA at 400/220 kV K.V. Kota S/s was agreed.

ii. APTRANSCO to expedite the commissioning of K.V. Kota (400/220 kV S/s) – K.V. Kota 220 kV S/c line (3rd circuit) to relieve the overloading on existing K.V. Kota – K.V. Kota 220 kV D/c line.

iii. The envisaged rearrangement of Nunna-Bhimadole 220 kV S/c line and K.V. Kota –Nuzvidu 220 kV S/c line as K.V. Kota (400/220 kV S/s) - K.V. Kota 220 kV S/c line (3rd circuit) and K.V. Kota (400/220 kV S/s) – Bhimadole 220 kV S/c line to be taken up only after completion of the 220 kV K.V. Kota– Bhimadole D/c line.

4. Augmentation of ICTs from 2x315 MVA to 3x315 MVA at 400/220 kV Guddigudem S/s

Background:

4.1 Maximum electricity demand of 374 MVA has reached on the existing 2x315 MVA ICTs at 400/220 kV Guddigudem S/s. Further, 2 nos. of 220 kV feeders from Guddigudem S/s to Purushothapatnam S/s were charged on 14.03.2024 and 2 nos. of 220 kV feeders from Guddigudem S/s to Tadipudi S/s are under construction.

4.2 Lift Irrigation load of 267 MW at Guddigudem S/s will be released by extending the 220 kV bus at Guddigudem S/s. Another 97.1 MW lift irrigation loads will be released after commissioning of 2 nos. of 220 kV Tadipudi feeders from Guddigudem S/s.

4.3 In order to meet the above loads, APTRANSCO has proposed the augmentation by 3rd 315 MVA ICT at 400/220 kV Guddigudem S/s.

Deliberations in the meeting:

4.4 It was suggested to consider 1x500 MVA ICT instead of 315 MVA ICT at Guddigudem S/s and the same was agreed by APTRANSCO.

Annexure-I

List of participants:

Sl. No	Name	Designation
CEA		
1	Ishan Sharan	Chief Engineer
2	Kanchan Chauhan	Dy. Director
3	Mayank Wadhwa	Assistant Director
SRPC		
4	Meka Ramakrishnan	SE
SRLDC		
5	A Janardhan	Chief Manager
APTRANSCO		
6	K. Bindu	SE/Power System
7	Ch. Sreenivasarao	EE-1/System Studies-1

Annexure-G

पावरग्रिड
POWERGRID

पावर ग्रिड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(भारत सरकार का उद्यम)
POWER GRID CORPORATION OF INDIA LIMITED
(A Government of India Enterprise)

Ref.: SRTS-I/AM/2024-APTRANSCO/ 76

Date : 07-06-2024

To
The Superintending Engineer
400kV OMC Circle
2nd Floor
Old Zonal Office Building,
Gunadala, Vijayawada – 04

Sir,

Sub.: LILO of 400kV Vijayawada-Nellore D/C line at Podili Substation (AP Transco)

Ref.: Your Lr. No. SF/400kV OMC/VJA/Tech/DEE/AEE-1/F.No.164/D.No.562/24, Dtd. 27-05-2024.

This has reference to your letter, proposing LILO of Vijayawada – Nellore D/C transmission line. You may be aware that this line is a part of ISTS system and any modifications of ISTS system needs to be deliberated in CMETS. Hence, you are requested to refer the issue to M/s. CTUIL for further deliberations and approval please.

Yours faithfully,

7-6-24

(Nanaji SMV)
CGM (AM)

Copy to:
The Chief Engineer/Projects/Vidyut Soudha/APTransco/Vijayawada.
The Chief Engineer/Zone/Vijayawada.
The Senior General Manager, POWERGRID, Vijayawada SS
The Executive Engineer/400kV Construction Division/Guntur.
The CGM, POWERGRID, SRTS-I, Secunderabad – for information please.
The Executive Director, POWERGRID, SRTS-I, Secunderabad. – for kind information pls.

Annexure-H

Details of Connectivity granted/ agreed for grant at Ananthapuram-II PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
1	Green Infra Wind Energy Pvt. Ltd.	2200000820	17.05.2024	300
2	Ganeko Three Energy Pvt. Ltd.	2200000869	30.05.2024	300
3	Purvah Green Power Pvt. Ltd.	2200000872	30.05.2024	349.8
4	Purvah Green Power Pvt. Ltd.	2200000881	31.05.2024	339.9
			Total	**1289.7**

Details of Connectivity granted/ agreed for grant at Kurnool-IV PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
1.	Auro Infra Pvt. Ltd.	2200000609	14.03.2024	800
2.	Indosol Solar Pvt. Ltd.	2200000882	31.05.2024	1100
3.	Indosol Solar Pvt. Ltd.	2200000884	31.05.2024	1200
4.	SAEL Industries Ltd.	2200000843	25.05.2024	300
5.	SAEL Industries Ltd.	2200000844	25.05.2024	300
			Total	**3700**

Details of Connectivity granted/ agreed for grant/ under process at Bijapur PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
Details of Connectivity granted/ agreed for grant :				
1	Apraava Energy Pvt. Ltd.	2200000171	03.08.2023	300
2	Tata Power Renewable Energy Ltd.	2200000393	30.11.2023	252
3	TEQ Green Power XVI Pvt. Ltd.	2200000397	30.11.2023	125
4	TEQ Green Power XVI Pvt. Ltd.	2200000429	15.12.2023	175
5	Tata Power Renewable Energy Ltd.	2200000447	21.12.2023	50.4
6	Renew Solar Power Pvt Ltd	2200000517	25.01.2024	300
7	Sunsure Solarpark Rj One Pvt Ltd	2200000586	26.02.2024	252
8	UPC Renewables India Management Pvt Ltd	2200000584	08.03.2024	160
9	Tepsol Green Energy Private Limited	2200000657	27.03.2024	200
10	EG Solwin Renewables Pvt. Ltd.	2200000687	04.04.2024	100
Details of under process applications :				
11	Vismaya Renewables India Project Pvt. Ltd.	2200000692	05.04.2024	300
12	Sunsure Solarpark Rj One Pvt Ltd	2200000708	12.04.2024	48
13	Welspun Godavari Pvt. Ltd.	2200000717	16.04.2024	250
14	Enfinity Global Haritha Udwal Pvt. Ltd.	2200000764	25.04.2024	100
15	UPC Renewables India Management Pvt. Ltd.	2200000792	02.05.2024	56
16	Purvah Green Power Pvt.Ltd.	2200000868	30.05.2024	351
17	Ganeko Four Energy Pvt. Ltd.	2200000870	30.05.2024	300
18	Purvah Green Power Pvt.Ltd.	2200000871	30.05.2024	250.8
			Total	**3570.2**

Details of Connectivity granted/ agreed for grant at Bidar PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
1.	Hero Solar Energy Pvt. Ltd.	2200000422	14.12.2023	300
2.	Sprng Powerinfra Pvt. Ltd.	2200000560	09.02.2024	200
3.	Hero Solar Energy Pvt. Ltd.	2200000640	14.03.2024	250
4.	Welspun Narmada Pvt. Ltd.	2200000716	23.04.2024	250
5.	Sprng Vayu Kiran Pvt. Ltd.	2200000751	24.04.2024	200
6.	SAEL Industries Ltd.	2200000759	25.04.2024	300
7.	Ampin Energy Utility Pvt. Ltd.	2200000762	25.04.2024	150
8.	Sprng Green Energy Pvt. Ltd.	2200000753	01.05.2024	100
9.	Ampin Energy Utility Pvt. Ltd.	2200000763	01.05.2024	150
10.	SAEL Industries Ltd.	2200000760	01.05.2024	300
11.	Sprng Energy Pvt. Ltd.	2200000767	06.05.2024	100
12.	Ampin Energy Utility Pvt. Ltd.	2200000892	31.05.2024	150
13.	AMP Energy C&I Thirteen Pvt. Ltd.	2200000893	31.05.2024	50
			Total	**2500**

Details of Connectivity granted/ agreed for grant at Devengere/Chitradurga PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
1.	Renew Solar Power Pvt. Ltd.	22000000519	25.01.2024	200
2.	Layer Hybren Pvt. Ltd.	2200000625	15.03.2024	140
3.	Serentica Renewables India Pvt. Ltd.	2200000660	23.03.2024	300
4.	Furies Solren Pvt. Ltd.	2200000700	11.04.2024	300
5.	Illuminate Hybren Pvt. Ltd.	2200000701	11.04.2024	300
6.	Layer Hybren Pvt. Ltd.	2200000702	11.04.2024	160
7.	Chandragiri Wind Park Private Limited	2200000585	05.03.2024	290
8.	Amplus Cenedus Solar Pvt. Ltd.	2200000714	15.04.2024	350
9.	Jade Hybren Pvt. Ltd.	2200000780	11.04.2024	300
			Total	**2340**

Details of Connectivity granted/ agreed for grant at Karur PS

Sl. No.	Applicant name	application no.	Application date	Connectivity quantum (MW)
1.	JSW Renew Energy Limited	1200002868	25.09.2020	270
2.	JSW Neo Energy Ltd (erstwhile JSW Future Energy Ltd)	1200003212	18.04.2021	150
3.	Tata Power Renewable Energy Ltd.	2200000242	07.09.2023	198
4.	JSP Green Wind 1 Pvt. Ltd.	2200000438	19.12.2023	300
5.	First Energy Pvt. Ltd.	2200000441	20.12.2023	100
6.	Tata Power Renewable Energy Ltd.	2200000448	21.12.2023	93.6
7.	Nannai Solar Park Private Ltd.	2200000628	08.03.2024	93
8.	Amplus Sun Beat Pvt. Ltd.	2200000698	18.04.2024	80
9.	Amplus Theta Energy Pvt. Ltd.	2200000699	10.04.2024	65
10.	JSW Neo Energy Ltd.	2200000818	25.05.2024	150
			Total	**1499.6**

Annexure-I

सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केंद्रीय विद्युत प्राधिकरण

Central Electricity Authority

विद्युत प्रणाली योजना एवं मूल्यांकन प्रभाग- II

Power System Planning & Appraisal Division-II

सेवा में /To

As per list of Addresses

विषय:ट्रांसमिशन पर राष्ट्रीय समिति (एनसीटी) की उन्नीसवीं बैठक के कार्यवृत्त – के सम्बन्ध में ।

Subject: Minutes of the 19th Meeting of National Committee on Transmission (NCT) – regarding.

महोदया (Madam) / महोदय (Sir),

The 19th meeting of the "National Committee on Transmission" (NCT) was held on 29th April, 2024 at CEA, New Delhi. Minutes of the meeting are enclosed herewith.

भवदीय/Yours faithfully,

28.5.2024

(बी.एस.बैरवा/ B.S. Bairwa)

मुख्य अभियन्ता (इंचार्ज) एवं सदस्य सचिव,एन.सी.टी./

Chief Engineer (I/C) & Member Secretary (NCT)

प्रतिलिपि / Copy to:

Joint Secretary (Trans), Ministry of Power, New Delhi-110001

Sl. No.	Description of Transmission Element	Scope of work (Type of Substation/Conductor capacity/ km/No. of bays etc.)
		PS (single phase)-1 No.
3	Merta-II – Beawar 400 kV D/c line (Quad)	Line Length ~55 km (Quad)
4	Merta-II – Dausa 765 kV D/c line along with 240 MVAr switchable line reactor for each circuit at each end of Merta-II – Dausa 765kV D/c line line	Line Length -250 km • 765 kV, 240 MVAr switchable line reactors at Dausa S/s end– 2 Nos. • 765 kV, 240 MVAr switchable line reactors at Merta-II S/s end– 2 Nos. • Switching equipment for 765 kV, 240 MVAr switchable line reactors at Dausa S/s end – 2 Nos. • Switching equipment for 765 kV, 240 MVAr switchable line reactors at Merta-II PS end – 2 Nos.
5	2 Nos. 765kV line bays each at Barmer-I PS & Dausa S/s	• 765 kV line bays at Barmer-I PS – 2 Nos. • 765 kV line bays at Dausa S/s – 2 nos
6	2 Nos. 400kV line bays at Beawar S/s	• 400 kV line bays at Beawar S/s – 2 Nos.

Note:

- The line lengths mentioned above are approximate as the exact length shall be obtained after the detailed survey
- Developer of Barmer-I PS shall provide space for 2 Nos. of 765 kV line bays along with space for 2 Nos. of 330 MVAR switchable line reactor and space for spare reactor unit (110 MVAr) at Barmer -I PS
- Sterlite shall provide space for 2 Nos. of 400 kV line bays at Beawar S/s
- POWERGRID shall provide space for 2 Nos. of 765 kV line bays at Dausa S/s along with space for 2 Nos. of 240 MVAR switchable line reactor

4.3 System strengthening at Koppal-II and Gadag-II for integration of RE generation projects

4.3.1 Representative of CTUIL stated that Koppal-II 765/400/220 kV PS is being established as part of 500 GW RE capacity by 2030 and presently is under construction with implementation schedule of 24 months i.e. Dec'2025. Presently, 2x1500 MVA, 765/400 kV ICTs, 2x500 MVA, 400/220 kV ICTs and 04 Nos. of 220 kV line bays under Koppal-II Phase-A and augmentation with 2x1500 MVA, 765/400 kV ICTs, 2x500 MVA, 400/220 kV ICTs and 04 Nos. of 220 kV additional line bays under Koppal-II Phase-B are under implementation.

4.3.2 He further stated that Gadag-II PS is being established as part of 500 GW RE capacity by 2030 and presently is under construction with implementation schedule of 24 months i.e. Dec'2025. Presently, 2x500 MVA, 400/220 kV ICTs and 04 Nos. of 220 kV line bays under Gadag-II Phase-A are under implementation.

4.3.3 CTUIL informed that connectivity of about 4127 MW has been granted / agreed for grant at 220 kV level of Koppal-II PS and connectivity of about 5276 MW (3476 MW at 220 kV and 1800 MW at 400 kV level) has been granted / agreed for grant at Gadag-II PS. Further, as RE potential in Gadag area is being integrated with Koppal-II PS through Gadag-II PS – Koppal-II PS 400kV (Quad Moose) D/c lines and evacuation of power from Gadag-II PS is contingent upon Koppal-II PS. Accordingly, augmentation of transformation capacity at Koppal-II and Gadag-II for evacuation of power from RE generation projects has been identified in a progressive manner as per the receipt of applications.

4.3.4 CMD, Grid-India stated that the power injected at Gadag-II would also be pooled at Koppal-II, thereby resulting in pooling of around 9000 MW power at Koppal-II. Pooling of such large quantum of power at a single station is not desirable from resiliency point of view. He further suggested to explore the possibility of providing independent evacuation lines from Gadag-II towards Narendra.

4.3.5 Director (SO), Grid-India stated that 7x1500 MVA, 765/400 kV ICTs have been proposed at Koppal-II whereas as per Transmission Planning Criteria, 2023, transformation capacity of any single sub-station of 765/400kV level shall not normally exceed 9000 MVA.

4.3.6 Representative of CTUIL stated that declared RE potential in Koppal and Gadag area of Karnataka has been exhausted and CTU have received Connectivity applications much beyond the declared RE potential. Further CTU have not received any application from BESS developers, as has been considered under the CEA's report on 500 GW RE capacity by 2030. The proposed transmission system strengthening scheme, shall facilitate in evacuation of above Connectivity applications at Koppal-II PS / Gadag-II PS. It was informed that Koppal-II PS / Gadag-II PS has been closed for further consideration of new applications for grant of Connectivity. It was also informed that the above Connectivity quantum considered at Koppal-II PS / Gadag-II PS includes 900 MW PSP generation project. In view of the above, in place of establishment of new pooling station in the vicinity, augmentation of Koppal-II PS with 7th 1500 MVA 765/400kV ICT was proposed for optimal utilisation of transmission system. Further this shall be the most suited techno-economical transmission system for integration of above RE generation projects at Koppal-II PS / Gadag-II PS.

4.3.7 The proposal was discussed in 50th SRPC meeting held on 16.03.2024 wherein the SR constituents opined that as these additional ICTs are approved based on the connectivity granted to RE generation projects, hence implementation & CoD of these ICTs should be linked with the commissioning of RE generation projects. In case of any mismatch in commissioning of transmission and RE generation, the transmission charges are to be billed directly to RE generation projects. In this regard, NCT opined that any mismatch in the commissioning of transmission and RE generation shall be dealt as per the CERC Regulations.

4.3.8 Representative of CTUIL also informed that during SRPC meeting, constituents have also suggested to reduce the Connectivity quantum of 900 MW Saundatti PSP (of M/s Greenko) for calculation of margins or grant of Connectivity to RE generation projects. Further constituents have also suggested that the despatch factors, as provided in the Planning Criteria, 2023, may be considered for immediate integration and evacuation of power RE generation projects. CTU further informed that is under obligation to grant connectivity for full quantum as per application(s) under CERC GNA Regulations, 2022. Therefore, CTU is required to consider the connectivity quantum for grant and determination of margins for immediate connectivity. There may be instances when the PSP may be under shut down for any reason and in this case, the RE generator should be able to inject power corresponding to the quantum of connectivity granted to it. Therefore, connectivity quantum of 900 MW Saundatti PSP (of M/s Greenko) may not be reduced during peak RE scenario for the time being for determination of margins at any pooling station.

4.3.9 After deliberations NCT recommended implementation of the System strengthening at Koppal-II and Gadag-II for integration of RE generation projects under TBCB.

4.3.9.1 Summary of the scheme is given below:

Sl. No.	Name of the scheme and tentative implementation timeframe	Estimated Cost (₹ Crores)	Remarks
1.	System strengthening at Koppal-II and Gadag-II for integration of RE generation projects Implementation timeframe : specified in detailed scope	1354.4	Recommended under TBCB route with PFCCL as BPC

4.3.9.2 Detailed scope of the scheme is given below:

Sl. No.	Scope of the scheme	Scope of Works	Schedule
1.	• Augmentation of 3x1500 MVA 765/400 kV ICTs (5th, 6th & 7th) at Koppal-II PS • Augmentation of 5x500 MVA 400/220 kV ICTs (5th, 6th, 7th, 8th & 9th) at Koppal-II PS • 6 nos. of 220kV line bay at Koppal-II PS for termination of dedicated Connectivity transmission line of RE developers	• *3x1500 MVA, 765/400kV ICT* • *765 kV ICT bay – 3 Nos.* • *400 kV ICT bay – 3 Nos.*	Dec'25
		• *5x500 MVA, 400/220kV ICTs* • *400 kV ICT bay – 5 Nos.* • *220 kV ICT bay – 5 Nos.*	Dec'25
		• *220 kV line bays – 2 Nos.*	30.12.2025
		• *220 kV line bays – 2 Nos.*	01.03.2026
		• *220 kV line bays – 1 No.*	31.01.2026
		• *220 kV line bays – 1 No.*	31.12.2026
2.	• Augmentation of 7x500 MVA 400/220 kV ICTs (3rd, 4th, 5th, 6th, 7th, 8th & 9th) at Gadag-II PS • Gadag-II PS – Koppal-II PS 400 kV (Quad) 2nd D/c line • 1 No. of 400 kV line bay at Gadag-II PS for termination of dedicated transmission line of RE developers • 5 Nos. of 220 kV line bays at Gadag-II PS for termination of dedicated transmission line of RE developers	• *3x500 MVA, 400/220kV ICTs* • *400 kV ICT bay – 3 Nos.* • *220 kV ICT bay – 3 Nos.*	Dec'2025
		• *400 kV line bays – 1 No. &* *220 kV line bays - 2 Nos.*	30.12.2025
		• *4x500 MVA, 400/220kV ICTs* *400 kV ICT bay – 4 Nos.* • *220 kV ICT bay – 4 Nos.*	24 Months
		~ 45 km • *400 kV line bays – 2 Nos. (at Koppal-II PS)* • *400 kV line bays – 2 Nos. (at Gadag-II PS)*	24 Months
		• *220 kV line bays – 1 No.*	31.07.2026
		• *220 kV line bays – 1 No.*	31.03.2027
		• *220 kV line bays – 1 No.*	01.06.2027

Note:

- The line length mentioned above is approximate as the exact length shall be obtained after the detailed survey
- Developer of Koppal-II PS / Gadag-II PS shall provide space for implementation of above system strengthening works at Koppal-II PS / Gadag-II PS