सत्यमेव जयते

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

उत्तर क्षेत्रीय विद्युत समिति

Northern Regional Power Committee

विषय: प्रचालन समन्वय उप-समिति की 216वीं बैठक की कार्यसूची।

Subject: Agenda of the 216th OCC meeting.

प्रचालन समन्वय उप-समिति की **216वीं** बैठक दिनांक **14.02.2024** (**सुबह 09:30**) जैसलमेर, राजस्थान में होगी। बैठक की मेजबानी पावरग्रिड द्वारा की जा रही है। उक्त बैठक की कार्यसूची संलग्न है। कृपया बैठक में भाग लेने की कृपा करें।

यह अनुरोध किया जाता है कि प्रतिभागी (**प्रत्येक सदस्य संगठन से एक**) एनआरपीसी सचिवालय को अपनी यात्रा का विवरण एक्सेल शीट लिंक पर निर्धारित प्रारूप में 12.02.2024 तक सूचित कर सकते हैं।

The **216th** meeting of the Operation Co-ordination sub-committee (**OCC**) will be held on **14.02.2024** (**09:30 A.M.**) at Jaisalmer, Rajasthan. Meeting is being hosted by Powergrid. Agenda for the same is attached. Kindly make it convenient to attend the meeting.

It is requested that participants (**one each from member organization**) may intimate NRPC Secretariat, their journey details latest by 12.02.2024 in prescribed format at excel sheet link enclosed in the mail.

Nodal officer(s) for facilitating meeting are as below:

Name	Designation	Contact No
Sh. Kumar Gautam	DGM(AM), NR1	+91-8650502474
Sh. Vishal Roy	DGM(RTAMC), NR1	+91-8826167350

Signed by D. K. Meena
Date: 09-02-2024 17:13:30
Reason: Approved

(डी. के. मीना)
अधीक्षण अभियंता (प्रचालन)

List of addressee (via mail)			
OCC Members for FY 2023-24			
S. No.	**OCC Member**	**Category**	**E-mail**
1	CTUIL	Central Transmission Utility	kashish@powergrid.in
2	PGCIL	Central Government owned Transmission Company	ravindrangupta@powergrid.in
3	NLDC	National Load Despatch Centre	nomination awaited
4	NRLDC	Northern Regional Load Despatch Centre	alok.kumar@grid-india.in
5	NTPC	Central Generating Company	hrastogi@ntpc.co.in
6	BBMB		powerc@bbmb.nic.in
7	THDC		rrsemwal@thdc.co.in
8	SJVN		sjvn.cso@sjvn.nic.in
9	NHPC		vijayk@nhpc.nic.in
10	NPCIL		nomination awaited
11	Delhi SLDC	State Load Despatch Centre	nomination awaited
12	Haryana SLDC		cesocomml@hvpn.org.in
13	Rajasthan SLDC		ce.ld@rvpn.co.in
14	Uttar Pradesh SLDC		cepso@upsldc.org
15	Uttarakhand SLDC		se_sldc@ptcul.org
16	Punjab SLDC		ce-sldc@pstcl.org
17	Himachal Pradesh SLDC		cehpsldc@gmail.com
18	DTL	State Transmission Utility	nomination awaited
19	HVPNL		cetspkl@hvpn.org.in
20	RRVPNL		ce.ppm@rvpn.co.in
21	UPPTCL		smart.saxena@gmail.com
22	PTCUL		ce_oandmk@ptcul.org
23	PSTCL		ce-tl@pstcl.org
24	HPPTCL		nomination awaited
25	IPGCL	State Generating Company	nomination awaited
26	HPGCL		seom2.rgtpp@hpgcl.org.in
27	RRVUNL		ce.ppmcit@rrvun.com
28	UPRVUNL		cgm.to@uprvunl.org
29	UJVNL		gm_engg_ujvn@yahoo.co.in
30	HPPCL		nomination awaited
31	PSPCL	State Generating Company & State owned Distribution Company	ce-ppr@pspcl.in
32	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	cecommercial@dhbvn.org.in
33	Jaipur Vidyut Vitran Nigam Ltd.		acempit@jvvnl.org
34	Madhyanchal Vidyut Vitaran Nigam Ltd.		commvvnl@gmail.com
35	UPCL		cgmupcl@yahoo.com
36	HPSEB		nomination awaited

37	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	sanjay.bhargava@tatapower.com
38	Aravali Power Company Pvt. Ltd		amit.hooda01@gmail.com
39	Apraave Energy Ltd.,		rajneesh.setia@apraava.com
40	Talwandi Sabo Power Ltd.		nomination awaited
41	Nabha Power Limited		Durvesh.Yadav@larsentoubro.com
42	Lanco Anpara Power Ltd		nomination awaited
43	Rosa Power Supply Company Ltd		Suvendu.Dey@relianceada.com
44	Lalitpur Power Generation Company Ltd		avinashkumar.ltp@lpgcl.com
45	MEJA Urja Nigam Ltd.		anilkumar02@ntpc.co.in
46	Adani Power Rajasthan Limited		manoj.taunk@adani.com
47	JSW Energy Ltd. (KWHEP)		roshan.zipta@jsw.in
48	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	sumant@renew.com
49	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	sojpdd@gmail.com
50	UT of Ladakh		cepdladakh@gmail.com
51	UT of Chandigarh		elop2-chd@nic.in
52	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	jitendra.nalwaya@relianceada.com
53	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by central govt.)	Abhishek.Kukreja@adani.com
54	Adani Enterprises	Electricity Trader (nominated by central govt.)	mayursinhd.gohil@adani.com
55	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee for FY 2023-24	ce.ruvnl@rajasthan.gov.in

उत्तर क्षेत्रीय विद्युत समिति
NORTHERN REGIONAL POWER COMMITTEE

Agenda of the
216th meeting of
Operational Co-ordination Sub-Committee
of
Northern Regional Power Committee

Date: 14th February 2024
Time: 09:30 AM

Venue: Hotel Rang Mahal,
Jaisalmer, Rajasthan

Contents

खण्ड-क: उ.क्षे.वि.स. Part-A: NRPC

A.1. Confirmation of Minutes

215th OCC meeting was held on 12.01.2024. Minutes of the meeting were issued vide letter dt. 26.01.2024.

Decision required from Forum:

Forum may approve the minutes of 215th OCC meeting.

A.2. Review of Grid operations

A.2.1. Power Supply Position (Provisional) for January 2024

Anticipated Power Supply Position v/s Actual Power Supply Position (Provisional) of Northern Region during the month of January-2024 is as under:

State / UT	Req. / Avl.	Energy (MU)			Peak (MW)		
		Anticipated	Actual	% Variation	Anticipated	Actual	% Variation
CHANDIGARH	(Avl)	110	158	43.6%	270	201	-25.6%
	(Req)	150	158	5.3%	300	201	-33.0%
DELHI	(Avl)	3292	2740	-16.8%	5650	5816	2.9%
	(Req)	2350	2740	16.6%	5650	5816	2.9%
HARYANA	(Avl)	5999	4911	-18.1%	8064	9530	18.2%
	(Req)	4598	4989	8.5%	8817	9530	8.1%
HIMACHAL PRADESH	(Avl)	1183	1139	-3.7%	2101	2181	3.8%
	(Req)	1180	1144	-3.0%	2110	2181	3.3%
J&K and LADAKH	(Avl)	1180	1997	69.2%	3920	3132	-20.1%
	(Req)	1990	2032	2.1%	3120	3107	-0.4%
PUNJAB	(Avl)	4970	4929	-0.8%	10800	9370	-13.2%
	(Req)	4743	4929	3.9%	9250	9370	1.3%
RAJASTHAN	(Avl)	8650	10062	16.3%	19030	18128	-4.7%
	(Req)	9610	10172	5.8%	17500	18128	3.6%
UTTAR PRADESH	(Avl)	11470	11633	1.4%	22500	22703	0.9%
	(Req)	11160	11784	5.6%	22500	22703	0.9%
UTTARAKHAND	(Avl)	1333	1410	5.7%	2500	2635	5.4%
	(Req)	1349	1430	6.1%	2550	2405	-5.7%

NORTHERN REGION	(Avl)	38187	38978	2.1%	76700	69600	-9.3%
	(Req)	37129	39379	6.1%	68100	69300	1.8%

As per above, negative / significant variation (≥5%) in Actual Power Supply Position (Provisional) vis-à-vis Anticipated figures is observed for the month of January-2024 in terms of Energy Requirement for Chandigarh, Delhi, Haryana, HP, Rajasthan, UP, and Uttarakhand and in terms of Peak Demand similar variation is noted for Chandigarh, Haryana, UTs of J&K and Ladakh, and Uttarakhand. These states/UTs are requested to submit reason for such variations so that the same can be deliberated in the meeting.

All SLDCs are requested to furnish provisional and revised power supply position in prescribed formats on NRPC website portal by 2nd and 15th day of the month respectively for the compliance of Central Electricity Authority (Furnishing of Statistics, Returns and Information) Regulations, 2007.

A.3. Maintenance Programme of Generating Units and Transmission Lines

A.3.1 Maintenance Programme for Generating Units

The meeting on proposed maintenance programme for Generating Units for the month of March-2024 is scheduled on 12-February-2024 via Video Conferencing

A.3.2 Outage Programme for Transmission Elements

The meeting on proposed outage programme of Transmission elements for the month of March-2024 is scheduled on 12-February-2024 via Video conferencing.

A.4. Planning of Grid Operation

A.4.1. Anticipated Power Supply Position in Northern Region for March 2024

The Anticipated Power Supply Position in Northern Region for March 2024 is as under:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	120	300	No Revision submitted
	Requirement	120	270	
	Surplus / Shortfall	0	30	
	% Surplus / Shortfall	0.0%	11.1%	
DELHI	Availability	2090	5530	No Revision submitted
	Requirement	2370	4520	
	Surplus / Shortfall	-280	1010	
	% Surplus / Shortfall	-11.8%	22.3%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
	Availability	5140	11140	
HARYANA	Requirement	4840	7970	No Revision submitted
	Surplus / Shortfall	300	3170	
	% Surplus / Shortfall	6.2%	39.8%	
HIMACHAL PRADESH	Availability	1053	2055	06-Feb-24
	Requirement	1068	2065	
	Surplus / Shortfall	-15	-10	
	% Surplus / Shortfall	-1.4%	-0.5%	
J&K and LADAKH	Availability	1410	4190	No Revision submitted
	Requirement	1910	3810	
	Surplus / Shortfall	-500	380	
	% Surplus / Shortfall	-26.2%	10.0%	
PUNJAB	Availability	5690	11640	No Revision submitted
	Requirement	4860	7970	
	Surplus / Shortfall	830	3670	
	% Surplus / Shortfall	17.1%	46.0%	
RAJASTHAN	Availability	8820	18480	No Revision submitted
	Requirement	9820	16620	
	Surplus / Shortfall	-1000	1860	
	% Surplus / Shortfall	-10.2%	11.2%	
UTTAR PRADESH	Availability	10540	20500	07-Feb-24
	Requirement	10695	20500	
	Surplus / Shortfall	-155	0	
	% Surplus / Shortfall	-1.4%	0.0%	
UTTARAKHAND	Availability	1188	2220	08-Feb-24
	Requirement	1221	2275	
	Surplus / Shortfall	-33	-55	
	% Surplus / Shortfall	-2.7%	-2.4%	
NORTHERN REGION	Availability	36051	71600	
	Requirement	36904	62200	
	Surplus / Shortfall	-853	9400	
	% Surplus / Shortfall	-2.3%	15.1%	

SLDCs are requested to update the anticipated power supply position of their respective state / UT for the month of March-2024 and submit the measures

proposed to be taken to bridge the gap between demand & availability, as well to dispose-off the surplus, if any, in the prescribed format.

A.5. Follow-up of issues from previous OCC Meetings- Status update.

The updated status of agenda items is enclosed at ***Annexure-A.I***.

All utilities are requested to update the status.

A.6. NR Islanding scheme

Latest status of Islanding Scheme of NR is attached as **Annexure-A.II.**

Members may kindly deliberate.

A.7. Coal Supply Position of Thermal Plants in Northern Region

A.7.1. In 186th OCC meeting, it was agreed that coal stock position of generating stations in northern region may be reviewed in the OCC meetings on the monthly basis.

A.7.2. Accordingly, coal stock position of generating stations in northern region during current month (till 07th February 2024) is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
ANPARA C TPS	1200	0.83	17	22.2
ANPARA TPS	2630	0.39	17	26.3
BARKHERA TPS	90	0.32	26	22.7
DADRI (NCTPP)	1820	0.65	26	8.6
GH TPS (LEH.MOH.)	920	0.68	26	23.1
GOINDWAL SAHIB TPP	540	0.61	26	3.1
HARDUAGANJ TPS	1265	0.63	26	9.9
INDIRA GANDHI STPP	1500	0.50	26	26.1
KAWAI TPS	1320	0.88	26	5.3
KHAMBARKHERA TPS	90	0.00	26	20.5
KOTA TPS	1240	0.72	26	6.2
KUNDARKI TPS	90	0.06	26	27.2
LALITPUR TPS	1980	0.68	26	17.6
MAHATMA GANDHI TPS	1320	0.83	26	13.4
MAQSOODPUR TPS	90	0.03	26	21.8
MEJA STPP	1320	0.71	26	16.5
OBRA TPS	1094	0.55	26	8.4
PANIPAT TPS	710	0.37	26	20.3
PARICHHA TPS	1140	0.45	26	18.2
PRAYAGRAJ TPP	1980	0.55	26	19.8

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd (Days)	Actual Stock (Days)
RAJIV GANDHI TPS	1200	0.34	26	16.9
RAJPURA TPP	1400	0.88	26	18.0
RIHAND STPS	3000	0.81	17	30.9
ROPAR TPS	840	0.63	26	29.6
ROSA TPP Ph-I	1200	0.68	26	7.8
SINGRAULI STPS	2000	0.89	17	13.0
SURATGARH TPS	1500	0.64	26	**2.8**
TALWANDI SABO TPP	1980	0.65	26	3.9
TANDA TPS	1760	0.72	26	21.6
UNCHAHAR TPS	1550	0.54	26	15.6
UTRAULA TPS	90	0.37	26	30.9
YAMUNA NAGAR TPS	600	0.73	26	19.9
CHHABRA-I PH-1 TPP	500	0.90	26	**2.0**
KALISINDH TPS	1200	0.77	26	6.0
SURATGARH STPS	1320	0.36	26	5.1
CHHABRA-I PH-2 TPP	500	0.89	26	**1.8**
CHHABRA-II TPP	1320	0.39	26	4.9

A.8. Status of availability of ERS towers in Northern Region (Agenda by NRPC Sectt.)

A.8.1. In the 68th meeting of NRPC issues arising due to non-availability of sufficient ERS were discussed and it was decided that ERS availability monitoring shall be taken as rolling/follow-up agenda in OCC meetings for regular monitoring of ERS under different utilities in Northern region.

A.8.2. Subsequently matter was deliberated in 211th OCC meeting wherein NRLDC representative briefed about the Requirement of ERS, recent experience in Northern Region, CEA Regulation on ERS, Govt. Guidelines and Present situation on ERS.

A.8.3. NRPC Sectt. vide letter dated 26.09.2023 requested all transmission utilities of NR to furnish the length of transmission line (ckt-kms) and number of ERS towers available with them at different voltage levels (e.g. 220 kV, 400 KV 765 KV and + -500 kV HVDC via email at seo-nrpc@nic.in.

A.8.4. In this regard, inputs received from utilities are attached as **Annexure-A.III.**

Transmission utilities of NR to update status.

A.9. Furnishing of substation details for implementation of Centralized Database for Protection Settings in Northern Region (Agenda by NRPC Sectt.)

A.9.1. In 48th TCC & 70th NRPC Meeting (held on 17-18 Nov 2023), NRPC Committee has approved for development of a portal through PSDF for Centralized database containing details of relay settings for grid elements connected to 220 kV and above.

A.9.2. Further, a meeting was held on 08.01.2024 with POWERGRID to deliberate on tendering, wherein POWERGRID desired to know the number of sub-stations and elements for which relay details shall be modelled in Centralized Database for preparation of estimate of work for implementation of the portal.

A.9.3. In view of above, it was requested vide letter dtd. 24.01.2024 (**Annexure-A.IV**) to NRLDC/NLDC and SLDCs of Northern region to furnish the details of all elements connected at 220 kV and above, in respective control area latest by 30.01.2024.

A.9.4. However, details of WUPPTCL, Anpara-D, OCBTL, GTL, Obra -C, RPSCL and Prayagraj zone (UPPTCL) only have been received as of now.

A.9.5. A reminder mail dtd. 06.02.2024 has also been sent for the same.

A.9.6. It is again requested to NRLDC/NLDC and SLDCs of Northern region to arrange the same at the earliest.

NR Utilities to submit information.

A.10. Nomination of officer(s) for conducting Third Party Protection Audit of substations in Northern region (Agenda by NRPC Sectt.)

A.10.1 In 48th TCC & 70th NRPC Meeting (held on 17-18 Nov 2023), NRPC Committee has approved for development of a portal through PSDF for Centralized database containing details of relay settings for grid elements connected to 220 kV and above. Portal shall have other features including protection setting calculation tool. Approved scope of portal is attached as **Annexure-A.V.**

A.10.2 As per clause 15 of IEGC 2023:

> *All users shall also conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.*

A.10.3 Further, a Standard Operating Procedure (S.O.P.) for Protection System Audit (attached as **Annexure-A.V**) was circulated by NPC division of CEA wherein it is recommended to form a committee to conduct 3rd party protection audit of substations.

A.10.4 Accordingly, all utilities are requested to send the nomination of officer(s) related to protection field. A letter vide dated 06.02.2024 has also been sent to all members of NRPC for seeking the nomination(s) (attached as **Annexure-A.VI**)

A.10.5 All utilities may nominate the suitable officer(s) from their organizations. List of nominated officers shall be used for forming committee for 3rd party protection audit.

NR Utilities to submit information.

A.11. Methodology for calculation of Transmission Deviation charges considering Primary Response (Agenda by NRPC Sectt.)

A.11.1 Regulation 12(2) of Amendment-I to CERC (Sharing of ISTS Charges and Losses) Regulations, 2023 provides that:

"Transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC:

Provided also that each RPC shall issue necessary guidelines for furnishing the data by the generating stations regarding their primary response"

A.11.2 Further, Regulation 30(8) of IEGC, 2023 provides as under:

"The primary response of the generating units shall be verified by the Load Despatch Centres (LDCs) during grid events. The concerned generating station shall furnish the requisite data to the LDCs within two days of notification of reportable event by the NLDC."

A.11.3 The matter was deliberated in 212th OCC on 20.10.2023 & 48th CSC meeting on 04.12.2023. However, the philosophy for incorporating primary response in RTDA was not finalized in OCC, although it was Proposed by GM, NRLDC in CSC meeting that a philosophy based on similar lines as finalized by SRPC (attached as **Annexure-A.VII**) may be developed. Therefore, it is now proposed that methodology devised by SR to be deliberated for NR to incorporate primary response in RTDA calculation.

Members may kindly deliberate.

A.12. Proposed SPS for 2X500 MVA, 400/220kV ICTs at GSS Ramgarh (Agenda by RVPN)

A.12.1 RVPN vide letter dated 18.01.2024 has proposed a SPS for 2X500 MVA, 400/220kV ICTs at GSS Ramgarh (details of the SPS is attached as **Annexure-A.VIII**)

Members may kindly deliberate.

A.13. Issue of FTC for balance 765kV Bays (701, 702, 703, 705, 706) and Spare Reactor & ICT units w.r.t. M/s PMSTL at 765/400/220KV GIS Meerut substation (Agenda by Powergrid-NR1)

A.13.1 765/400/220kV Meerut GIS has been constructed by POWERGRID Meerut Simbhavali Transmission Limited (PMSTL) & following 765kV elements at 765/400/220kV GIS has been successfully commissioned:

i) 3x500 MVA, 765/400/33 kV ICT-1 (Bay 707)

ii) 3x500 MVA, 765/400/33 kV ICT-2 (Bay 704)
iii) 3x80 MVAR, 765 kV Bus Reactor (Bay 712)
iv) 765 kV Meerut-Hapur Line (Bay 710)
v) 765 kV Meerut-Gr. Noida Line (Bay 709)
vi) 765 kV Tie Bay 708 & 711
vii) 765 kV Bus-I & Bus-II

A.13.2 It is to mention here that FTC for following elements have not been issued by SLDC/ UPPTCL stating that Standing committee approval for these future elements & associated bays is not in place. Various correspondences have been made by PMSTL with M/s UPPTCL on the subject matter:

i) Bay 701 (ICT-3 Future)
ii) Bay 702 (Tie Bay of ICT-3 Future and Future Line-2),
iii) Bay 703 (Future Line-2),
iv) Bay 705 (Tie Bay of ICT-2 and Future Line-I),
v) Bay 706 (Future Line-I),
vi) spare unit of 765 kV ICT,
vii) Spare unit of 765kV Bus Reactor

A.13.3 It is also submitted that the scope of the project is mentioned in RFP & TSA documents. The same scope was mentioned in the letter dated 06 March'2019 from UPPTCL appointing PFCCL as BPC inter-alia informing scope of project-Meerut Simbhavali prior to floating of TBCB tender by the BPC (NIT for the Project was released on 17 June 2019). Furthermore, the same scope of work is contained in the TSA which is signed between TSP and LTTCs. The relevant pages of RFP document and a copy of aforementioned letter from UPPTCL are enclosed at **Annexure-A.IX**.

A.13.4 Following documents has been submitted to SLDC wherein detailed scope of work including Future bays/elements is mentioned but SLDC as per remarks of NRLDC requires Standing committee approval:

i) Minutes of the 22nd meeting of the 13th plan period of "Transmission Work Approval Committee" constituted by U.P. Power Transmission Corporation Ltd convened on 09.01.2019 Issued through letter no. 3739 – Superintendent/T.P.E. P.S.M./13V. Scheme/TWC Dated: 14.01.2019.
ii) Section 68 permission vide Letter ref no. 1167/ 24-1-2019-450 /2019, dated 14.08.2019 from Chief Secretary, UP Govt for scheme agreed.
iii) Transmission Service Agreement of PMSTL. Relevant documents quoted above are attached as **Annexure-A.X**.

A.13.5 The issue regarding issue of FTCs for balance 765 kV Bays (701, 702, 703, 705, 706) and Spare Reactor & ICT units was discussed in 67th NRPC ,214th OCC meeting and 71st NRPC, wherein M/s UPPTCL was advised to take up the matter with Chief Engineer, PSPA Division, CEA for resolution of the issue.

A.13.6 Further a letter has been issued by NRLDC Vide Letter ref no. NRLDC\TS-11\30-33 dated 12.01.2024 and a separate communication has been done by PMSTL vide Letter ref no. NR-1\PMSTL\UPPCL\UNL dated 29.01.2024 for issuance of clearance. Issue is still unresolved.

Members may kindly deliberate.

A.14. Demolition and reconstruction of residential/ non-residential buildings in the substation premises at Ballbhgarh, Bassi, Mandola under RHTL and Hisar Sub Station under MBTL system through Additional Capitalization in Tariff Block 2019-24. (Agenda by Powergrid-NR1)

A.14.1 The projects RHTL and MBTL were executed by POWERGRID and presently in service. The transmission assets commissioned under above projects have completed/ shall complete 30years of useful service life during the Tariff Block 2024-29. Residential/ non-residential buildings were also constructed at Ballbhgarh, Bassi, Mandola, and Hissar for employees to carry out round the clock Operation and Maintenance (O&M) of the above transmission projects.

A.14.2 All these buildings are in dilapidated and non-liveable condition and may cause accident any time. The repairing of buildings at this stage will not provide any significant structural strength. Thus, repairing these building at this condition is not viable and also not long lasting. In order to prevent the accidental collapse of any or part of the building and to ensure safety of the occupants, it is required to demolish the existing structure and construct the new quarters as per existing building code.

A.14.3 Round the clock availability of manpower is required to be ensured for smooth maintenance of Sub-station. Availability of quarters in good condition is essential for healthy living of employees. The manpower required for Maintenance of the transmission assets has been optimized largely.

A.14.4 In view of above, Powergrid has proposed to **Demolition and reconstruct** quarters and Non-residential building (Transit Camp & Recreational Centre) at above stations after demolition of old and dilapidated quarters and old non residential buildings as below:

Name of station	Proposed for Demolition and reconstruction	
	Residential building	Non- Residential building
Name of project – RHTL		
Ballabhgarh	17	1 Transit camp and 1 Recreation centre
Bassi	17	1 Transit camp and 1 Recreation centre
Mandola	17	1 Transit camp and 1 Recreation centre
Name of project – MBTL		
Hissar	17	1 Transit camp and 1 Recreation centre

A.14.5 In reference of minutes of the meeting of 42nd Meeting of SRPC dated 4.6.2022 re-construction of dilapidated township of Vijayawada Sub-station under ACE for2019-

24 tariff period approved on same ground. MoM enclosed at **Annexure-A.XI.**

Members may kindly deliberate.

A.15. Concern regarding imposition of shutdown charges by Rajasthan Rajya Vidut Prasaran Nigam Limited, Jaisalmer of their transmission lines for construction activities by POWERGRID, contrary to CERC Regulation. (Agenda by Powergrid-NR1)

A.15.1 Powergrid NR-1 has intimated that RRVPNL has requested them to deposit shutdown charges for shutdown of transmission lines being availed by POWERGRID, which is contrary to CERC regulation 2019-24.

A.15.2 The relevant point no. 4 of Appendix-II of CERC regulation-II is reproduced as under:

Quote

"The transmission elements under outage due to following reasons shall be deemed to be available:

i. Shut down availed for maintenance of another transmission scheme or construction of new element or renovation/upgradation/additional capitalization in existing system approved by the Commission. If the other transmission scheme belongs to the transmission licensee, the Member Secretary, RPC may restrict the deemed availability period to that considered reasonable by him for the work involved. In case of dispute regarding deemed availability, the matter may be referred to Chairperson, CEA within 30 days.

ii. Switching off of a transmission line to restrict over voltage and manual tripping of switched reactors as per the directions of concerned RLDC."

Unquote

A.15.3 Powergrid has requested forum that shutdown charges shall be levied for any outage being availed for construction work in line with CERC regulation.

A.15.4 This issue was discussed in 214th OCC and 71st NRPC meeting as table agenda, wherein M/s RRVPNL was requested to look into matter. However, still issue is unresolved.

Members may kindly deliberate.

A.16. Frequent faults in 220kV lines of UPPTCL connected to POWERGRID, GIS Bagpat; and UPPTCL's consent for rectification of Partial Discharge (PD) activity observed in 220 kV Main Bus 1 of POWERGRID, GIS Bagpat. (Agenda by Powergrid-NR1)

A.16.1 In recent past the 220 kV Transmission Lines of UPPTCL connected to POWERGRID, GIS Baghpat are tripping/auto-reclosing very frequently due to severe transient and permanent faults. Such frequent unwarranted trippings of

transmission lines results in flow of heavy fault current to the tune of about 25kA through connected 400/220 kV ICTs and other bay equipment at GIS Baghpat of POWERGRID, thus adversely affecting equipment life & financial burden on POWERGRID. In addition, such occurrences result in problems for not just UPPTCL but POWERGRID and Outage Management Units as well.

A.16.2 The transmission lines of UPPTCL are proving to be dangerously hazardous as is evident from the data tabulated below:

S.No.	Name of the Element	No. of Faults in CY'23 & CY'22
1	220 kV Baghpat (PG)-Shamli (UP) Line	59
2	220 kV Baghpat (PG)-Mandola Vihar (UP) Line	28
3	220 kV Baghpat (PG)-Baghpat (UP) Ckt-I	05
4	220 kV Baghpat (PG)-Baghpat (UP) Ckt-II	18
5	220 kV Baghpat (PG)-Modipuram (UP) Ckt-I	24
6	220 kV Baghpat (PG)-Modipuram (UP) Ckt-II	13

It is worth highlighting that these frequent faults causing tripping/auto-reclosure have recently resulted in failure of:

i) Circuit breaker of the bay connected to 220 kV Baghpat (PG) – Shamli (UP) transmission line in August 2023.
ii) Bus Support insulator in SF6 to Air Bushing Duct of 220 kV Baghpat (PG) – Baghpat (UP) Ckt-1 transmission line in December 2023.

A.16.3 To add to the worries, recently Partial Discharge (PD) activity has been observed in 220 kV Main Bus-1, which might have been caused due to the history of multiple faults in the system leading to defect in GIS system. The location of the PD defect is in Main Bus 1 and the severity of this PD activity has been assessed to have the potential of causing GIS failure.

A.16.4 A GIS failure results in undesirable interruption of the power supply for a long period, thus leading to financial loss & embarrassment to both POWERGRID and UPPTCL. To avoid such undesirable interruption of the power supply, POWERGRID is forced to undertake preventive maintenance to rectify this PD defect in GIS. For rectification, replacement of Gas Tight Barrier in the Bus Coupler Bay is required. This planned maintenance activity shall go on for 4 days and will necessitate continuous shutdown of following three 220kV transmission elements of UPPTCL:

220 kV Baghpat (POWERGRID)- Baghpat (UPPTCL) ckt-I Line
220 kV Baghpat (POWERGRID)- Baghpat (UPPTCL) ckt-II Line
220 kV Baghpat (POWERGRID)- Modipuram (UPPTCL) ckt-I Line

A.16.5 It is understandable that continuous outage will cause problems for customers &

utilities involved and will require special efforts on part of Load Despatch Centre to manage load, however it's still better than a situation arising out of sudden outage for indefinite period due to GIS failure. To avoid a potentially threatening situation of unplanned GIS failure, preventive maintenance as planned for PD rectification must be undertaken urgently.

A.16.6 The abovementioned issue was earlier discussed during 214th & 215th meeting of OCC held in Dec 2023 and Jan 2024 wherein it was directed to take up the necessary rectification at POWERGRID's GIS at Baghpat with UPPTCL's consent. In this regard, concerned officials of UPPTCL have been appraised of the situation seeking necessary consent for taking up the rectification work. The need for rectification has been acknowledged at all levels, however no formal consent has been received till date.

A.16.7 In view of the above, Powergrid has suggested that in order to maintain healthiness of GIS and rectify the Partial Discharge defect, consent for shutdown of requested elements for the said time period is requested from UPPTCL. Considering the fact that winter peak demand is comparatively lower and most of the stations have alternate load sources, load management during these planned maintenance days should be manageable, else with the onset of summers, it will be difficult to manage the increased load demand by Load Dispatch Centres with these elements out of service. Moreover, in case of failure of GIS due to this defect, outage period will definitely be more then rectification period and will have more cost implication to POWERGRID.

Members may kindly deliberate.

A.17. Varanasi Islanding Scheme (Agenda by UPSLDC)

A.17.1 In the 215th OCC meeting of NRPC, UPSLDC was instructed to submit steady state study of Varanasi Islanding Scheme.

A.17.2 UPSLDC vide letter dated 08.02.2024 (attached as **Annexure-A.XII**) has submitted requisite study for discussion in 216th OCC meeting.

Members may kindly deliberate.

A.18. Review of switching -off of 765 KV Agra-Fatehpur lines on Voltage Regulation (Agenda by Powergrid NR-3)

A.18.1 Powergrid NR-3 has mentioned that during the winter seasons, transmission lines are opened and closed due to system constraints on High voltage in Northern region frequently on daily basis. Such frequent operations create huge stress on both end equipment.

A.18.2 Another major critical issue, which POWERGRID is facing due to frequent opening of this line is the theft of hardware fittings and accessories by miscreants. As the line is getting opened on daily basis, miscreants become aware about the same and steal expensive hardware fittings. This creates severe damage to Tower and

conductor and endangering the whole Transmission Line.

A.18.3 Detail of such outages from 01.01.23 to 31.01.24 are furnished below: -

Name of Transmission Line	No. of Operation on V/R	Spacer Damper Missing	CC Ring Missing	Rigid Spacer Missing
765 KV Agra-Fatehpur-I	117	799	183	155
765 KV Agra-Fatehpur-II	108	1805	411	33
Grand Total	**225**	**2604**	**594**	**188**

A.18.4 In this context, POWERGRID requests that switching-off of 765 KV Agra-Fatehpur Lines may be avoided on Voltage Regulation to prevent theft and for grid stability and reliability.

Members may kindly deliberate.

खण्ड-ख: उ.क्षे.भा.प्रे.के. Part-B: NRLDC

B.1. NR Grid Highlights for January 2024

Detailed presentation on grid highlights of Jan'2024 will be shared by NRLDC in OCC meeting.

B.2. Grid Operation related issues

I. Expediting revival of 400kV Jodhpur-Kankroli & shutdown of 400kV Bhinmal-Kankroli and 400kV Bhinmal-Zerda:

Shutdown of 400kV Jodhpur (RVPNL)-Kankroli (PGCIL) (PGCIL) was approved from 1st Oct'23 for re-conductoring work of entire 188km for 4 months. Due to outage of 400kV Akal-Kankani, 400kV Jaiselmer-Kankani lines, there was delay in providing shutdown of 400kV Jodhpur-Kankroli line and shutdown was provided on 06.10.2023.

400kV Jodhpur-Kankroli is an important line for evacuation of wind generation from intrastate network of RVPN. With the commissioning of 400kV Fatehgarh II – FatehgarhIII – Jaisalmer link, the flow on intrastate network has also increased. To avoid any possibility of intrastate/ interstate RE generation curtailment due to other shutdowns in the complex, it is requested to expedite revival of 400kV Jodhpur-Kankroli line.

Further, a meeting was organized on 06.02.2024 to discuss scheme to relieve high loading of WR-NR Inter Regional Corridor (400 kV Bhinmal-Zerda line). In the meeting, following was decided:

i. Shutdown for interim arrangement shall be taken after revival of 400kV Jodhpur-Kankroli line with HTLS conductor.
ii. Rajasthan SLDC to explore possibility of shifting of load from Bhinmal to Kankroli or nearby substations. (load of 220kV substations fed from Bhinmal

such as Bali, Pindwara, Sanchore, Dhaurimanna etc.) and check for any overloading of 220kV or below voltage level intrastate lines/ ICTs etc. including for nearby s/s such as Rajwest. Basecase may be shared with NRLDC.

iii. Rajasthan SLDC to discuss with DISCOM to regulate load at 400kV Bhinmal & shift some load to night time fed from 400kV Bhinmal to avoid huge variation in demand, voltage profile and avoid overloading. Supply from 400/220kV ICTs at Bhinmal may be radialised to avoid impact on major area, in case of overloading/ low voltages.

iv. Rajasthan to expedite commissioning of capacitors at underlying n/w of Bhinmal (already approved by NRPC forum).

v. Rajasthan SLDC to monitor any switching at Bhinmal station in view of reduction in fault level

vi. POWERGRID to complete the interim arrangement works within one day after shutdown of 400kV Bhinmal-Kankroli and 400kV Bhinmal-Zerda is provided make 400kV Kankroli-Zerda ckt1 and ckt 2 available.

vii. POWERGRID to expedite commissioning of already approved 3rd 315MVA ICT at 400kV Bhinmal, to be completed by 31st Mar 2024.

viii. POWERGRID to confirm whether DIA of 400kV Bhinmal-Zerda and 400kV Bhinmal-Kankroli can be closed during the interim period & during permanent bypass arrangement through mail.

ix. Protection settings to be reviewed at Kankroli, Zerda and adjacent stations of Kankroli & Zerda. Revised settings to be implemented by POWERGRID & GETCO before first time charging.

x. No approval would be required from PSPA division of CEA, as the interim arrangement is similar to final arrangement.

xi. NLDC/NRLDC to review ATC/TTC corridor on NR-WR path after the stabilization of interim arrangement.

POWERGRID and Rajasthan SLDC are requested to provide update.

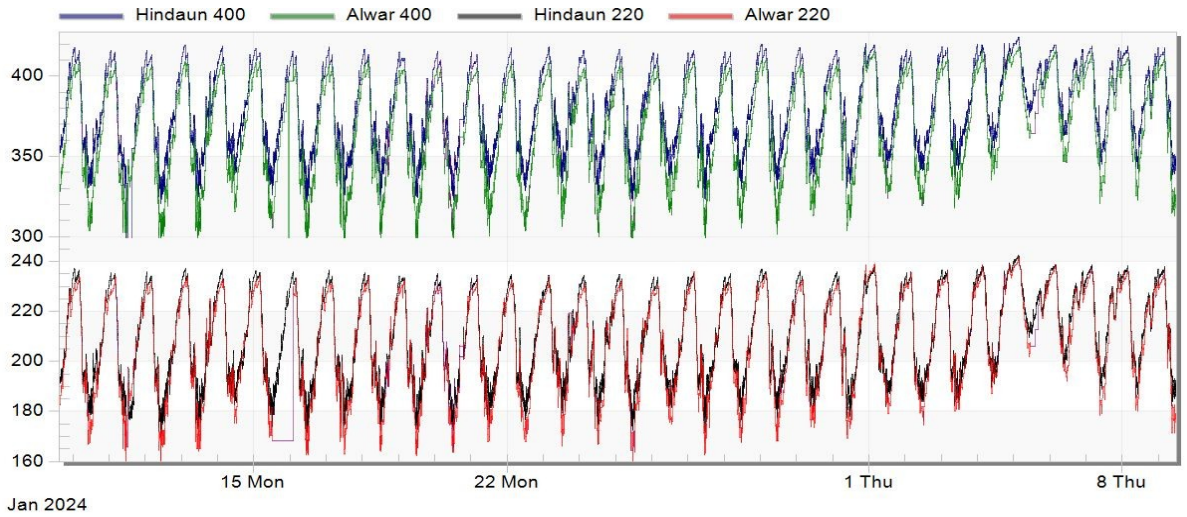
Members may please discuss.

II. Critically low voltage at 400/220kV Hindaun & Alwar substations:

Serious concerns have been raised by NRLDC on the transmission related issues being observed in RVPN control area in various forums including NRPC and OCC forum. Sustained low voltage operations in several Rajasthan system pockets, like voltage dropping to 340 & 330 kV level at the 400kV Hindaun & Alwar substations respectively, are leading to risky & vulnerable grid operation, apart from the more serious concerns in the down-stream distribution sector.

It is to be noted that the issues is being highlighted by NRLDC since 2019-20, still the issue is pending and requires quick action from RVPN side as the situation is degrading with every passing day.

In 70 NRPC meeting held in Nov 2023, RVPN representative agreed to run Dholpur generating units for improving voltage profile in the area. However, the same is not being done and as a result drastically low voltages are being observed in these area during the day time as shown below:



In 215 OCC meeting,

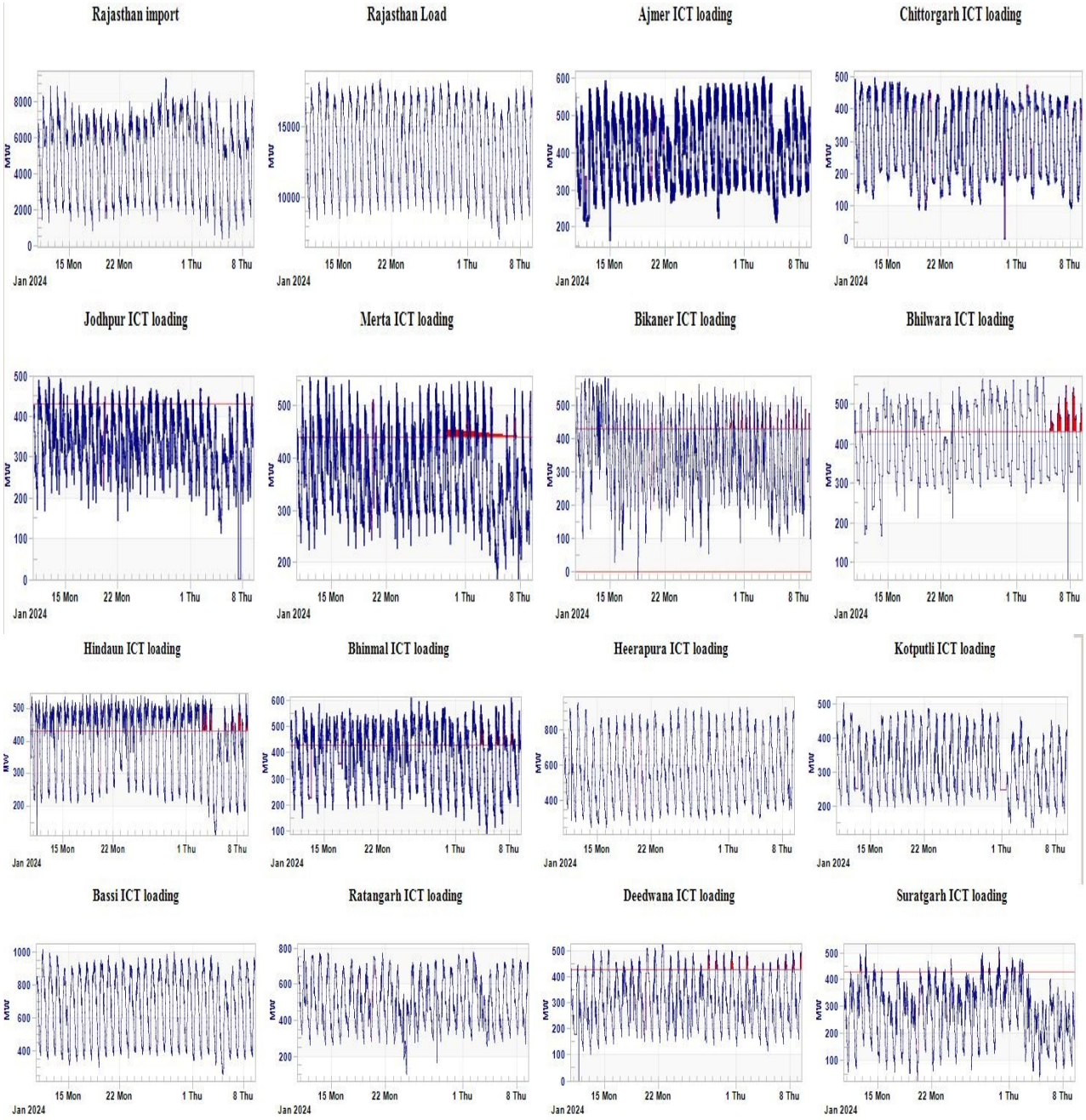
- RVPN representative stated that they have taken up the matter with higher officials for running Dholpur generation. Same is expected to be approved shortly. Further, works for 400kV Dholpur S/s are also under progress. Capacitors have been approved from PSDF side and final approval is awaited from MoP side. Further, proposal for LILO of 400kV Agra-Sikar has also been taken up internally from RVPN side.

- OCC forum asked to expedite actions for improving the voltage profile at 400/220kV Hindaun & Alwar and nearby area.

Similar voltage profile at Hindaun & Alwar was also observed in the month of Jan 2023. It is requested to expedite actions for improving the voltage profile at 400/220kV Hindaun & Alwar and nearby area. RVPN to provide update.

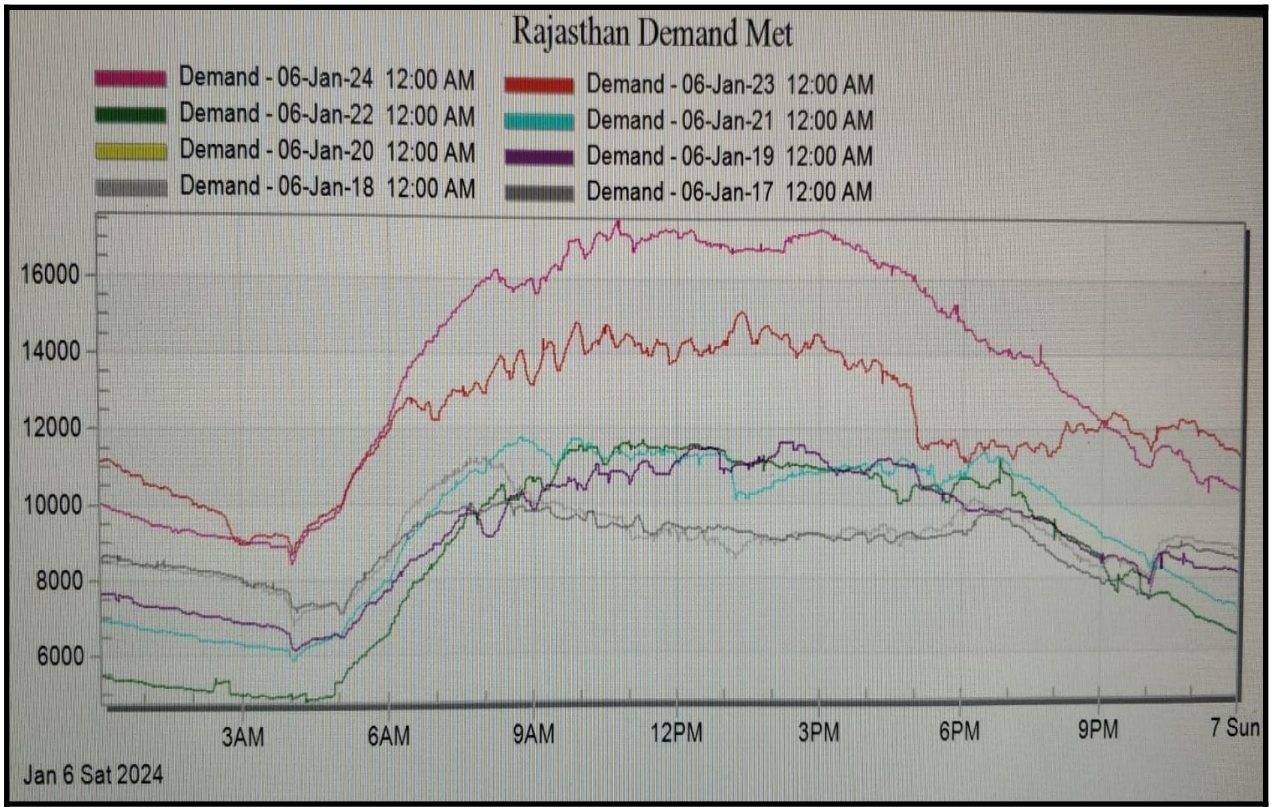
iii. Severe constraints in Rajasthan state

It is being observed that loading of 400/220kV ICTs at number of RVPN substations continue to be on the higher side. Some of the such stations are shown below along with loading of 400/220kV ICTs for last 30 days:



From the data available at NRLDC, it is being observed that the loading of almost all 400/220kV substations (intrastate as well as interstate) is beyond their N-1 contingency limit during day-time. Such situation may always load loss in particular area of N-1 non-compliance apart from possibilities of major grid disturbance in Rajasthan control area.

Moreover, from the data at NRLDC & past discussions in OCC, it is seen that there has been considerable shifting of load in day-time by Rajasthan.



From the graph above, it can be clearly seen that there has been considerable increase in demand of Rajasthan during day time for last 2 years and load is being shifted to daytime which has led to critical operation of Rajasthan grid. As requested earlier, Rajasthan SLDC is requested to take up the matter with Rajasthan DISCOM, STU and higher management and highlight the critical situation of Rajasthan grid.

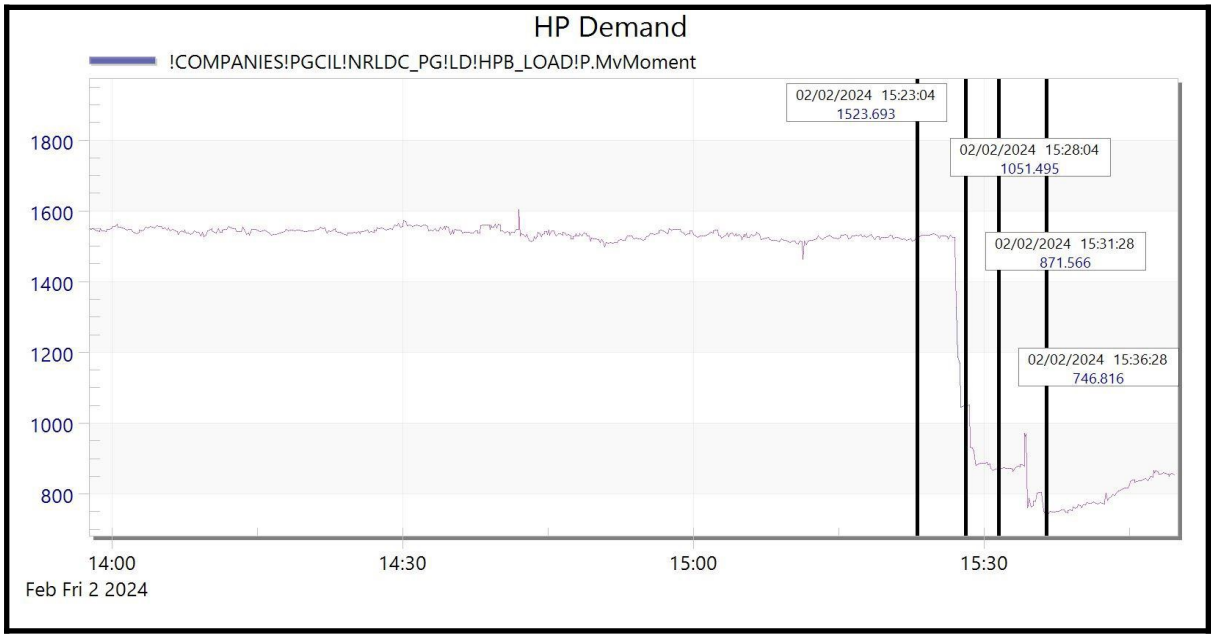
It is also requested to share any technical study done from RVPN side before shifting of load to day-time. Any assesments related to possible issues arising out of such change in supply hours such as low voltage, high reactive drawl, transmission system augmentation requirements etc.

Members may please discuss.

iv. Major grid disturbance in HP grid

On 02.02.2024, 220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-1 &2 tripped at 15:27 hrs due to R-Y fault & Distance protection Zone 1 Operated from Pinjore end, resulting in tripping of multiple elements at 220kV Baddi and 220kV Kunihar substation. Further 132 kV system also tripped at kunihar station at 15:34 hrs due to overloading of 132kv system.

During this event demand of HP state got reduced by nearly 750MW,(demand got reduced to nearly 50%) as shown below:



Following element outage was reported:

S. No	Element name	Out Time	Revival Time	Reason
1	220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-1	15:27	18:25	Tripped on R-Y Fault & Distance protection Zone 1 Operated from Pinjore end
2	220 KV Baddi(HP)-Pinjore (HV) (HPPTCL) Ckt-2	15:27	18:00	
3	220KV/132KV Bus 1 &2 at Baddi (HP) along with all line (ie 220 KV Upper nangal-Baddi , 220KV Mandhala-Baddi, 220 KV Wardthman–Baddi & 220/132 kv 100MVA ICTs 1,2,3 & 220/132 kv 31.5MVA ICTs 4)	15:27	16:08	Due to overloading of lines.
4	220kV UperNangal- Madhala Ckt 2	15:27	16:03	
5	220KV Bus 1 &2 at Kunihar(HP) along with all line (ie 220 KV Baddi –kunihar ckt1&2, 220KV Bhaba-Kunihar , 220 KV Jeori – Kunihar & 220/132 kv 200MVA ICTs 1 & 2)	15:28	16:17	
6	132 KV Bus 1&2 at kunihar along with all elements.	15:34	16:22	

HP SLDC is requested to provide details regarding the event and actions taken by STU/SLDC to avoid such instances in future. Members may please discuss.

iv. Long outage of Fixed Series Capacitors

Following FSCs are out of service since long time in Northern region:

Name of Elements (Owner: POWERGRID)	Outage time/date	Reason of tripping	Expected Revival time/date
FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-1 at Mainpuri (PG)	21.07/24.10.21	BHEL breaker hydraulic pressure could not be developed in B phase and (loss of N2 pressure) doesn't allow the FSC-1 taken into service as reported by CPCC3. OEM support stopped	--------
FSC of 400 KV Fatehpur-Mainpuri (PG) Ckt-2 at Mainpuri (PG)	08.25/29.01.22	VME protection system was blocking the FSC back in service as reported by CPCC3. OEM support stopped	--------
FSC (39%) of 765 KV Koteshwar-Meerut (PG) Ckt-2 at Meerut(PG)	12.30/18.04.23	Capacitor bank current imbalance protection	--------
FSC(39%) of 765 KV Koteshwar-Meerut (PG) Ckt-1 at Meerut(PG)	08.41/08.06.23	B-Phase to ground fault occurred in the line (Fault Current: 9.0 kA, Fault Location: 100.8 KM from Meerut End) fault. FSC1 failed	------
FSC(40%) of 400 KV Kanpur-Ballabhgarh (PG) Ckt-2 at Ballabhgarh(PG)	10.25/23.09.22	DC earth fault in main power supply. Safety clearance required.	------
FSC(40%) of 400 KV Kanpur-Ballabhgarh (PG) Ckt-3 at Ballabhgarh(PG)	05.43/23.09.22	Forced shut down taken to attend DC earth fault in ckt-2. Safety clearance required.	------
FSC(45%) of 400 KV Bareilly-Unnao (UP) Ckt-1 at Unnao(UP)	03.01.2023	Safety clearance is required	------
FSC(40%) of 400 KV Kala Amb(PKTL)-Sorang (Greenko) (Greenko) Ckt-1 at Kala Amb(PKTL)	09:47/26.09.2022	To attend unbalance current that is rapidly increasing in B-phase	------
FSC(40%) of 400 KV Kala Amb(PKTL)-Wangtoo(Greenko) (Greenko) Ckt-1 at Kala Amb (PKTL)	26.09.2022	Capacitor unbalance current alarm is persisting	------

Powergrid NR1/NR2/NR3 & U.P. are requested to provide update regarding status of restoration works and expected revival dates in the meeting.

B.3. Sharing of ATC/TTC assessment and base case with NRLDC

All NR states Chandigarh U/Ts are sharing base case and ATC/TTC assessment with NRLDC. OCC has advised all states to timely declare TTC/ATC for prospective months and revise the figures as per requirement.

CERC vide their order dated 29.09.2023 has granted approval of "'Detailed Procedure for Allocation of Transmission Corridor for Scheduling of General Network Access and Temporary General Network Access under Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2022".

Detailed roles and responsibilities for State Load Dispatch Centers in various timelines of the approved procedure are provided in the table below.

Purpose	***Sl No***	***Action of Stakeholder***	***Responsibility***	***Submission to***	***Data/ Information Submission Time line***
1. Revision 0 TTC/ATC Declaration for Month 'M'	*1(a)*	*Submission of node wise Load and generation data along with envisaged scenarios for assessment of transfer capability Assessment of TTC/ATC of the import/export capability of the state and intra-state system and sharing of updated network simulation models*	*SLDC*	*RLDC*	*10th Day of 'M-12' month*
	1(b)	*Declaration of TTC/ATC of the intra- state system by SLDC in consultation with RLDC*			*26th Day of 'M-12' month*
2. Interconnection Studies for elements to be integrated in the month 'M'	*2(a)*	*Submission of node-wise load and generation data & sharing of network simulation models for intra-state elements coming in the next six months*	*SLDC*	*RLDC*	*8th Day of 'M-6' month*
	2(b)	*Sharing of inter-connection study results*			*21st Day of 'M-6' month*
3.	*3(a)*	*Submission of node wise*	*SLDC*	*RLD*	*8th Day*

Month Ahead TTC/ ATC Declaration & Base case for Operational Studies for Month 'M'		*Load and generation data along with envisaged scenarios for assessment of transfer capability*		*C*	*of 'M-1' month*
		Assessment of TTC/ATC of the intra- state system and sharing of updated network simulation models			
	3(b)	*Declaration of TTC/ATC of the intra- state system in consultation with RLDC*	*SLDC*	*RLD*	*22nd Day of 'M-1' month*

To encourage participation from SLDCs with regard to basecase preparation and ATC/TTC assessment, two workshops have been conducted from Grid-India/NRLDC side. One workshop was conducted 31.08.2023 before the finalization of the procedure and another on 10.01.2024 recently to involve further participation from SLDCs.

Although all SLDCs are now involved in preparation of basecase & ATC/TTC assessment, it is seen that the timelines as per CERC approved procedure are not being followed and number of times basecases are not received from SLDC side.

B.3.1 ATC/TTC assessment sharing 11 months in advance

The procedure mentions that:

"SLDCs in consultation with RLDCs shall declare the import and export TTC, ATC, and TRM of the individual control/bid areas within the region in accordance with Regulation 44 (3) of the Grid Code 2023. RLDCs shall assess the import and export TTC, TRM and ATC for the group of control/bid areas within the region (if required). The computed TTC, TRM and ATC figures shall be published on the website of respective SLDCs and RLDCs, along with the details of the basis of calculations, including assumptions, if any, **at least eleven (11) months in advance**. The specific constraints indicated in the system study shall also be published on the website."

Accordingly, SLDCs are requested to send the PSSE cases for four scenarios for February'25 i.e. Morning Peak, Solar Peak, Evening Peak & Off-Peak hours as given below

S. No.	Scenario	Time of Scenario
1	Off-Peak	03:00 Hrs
2	Morning Peak	10:30 Hrs
3	Evening Peak	18:45 Hrs
4	Solar Peak	12:00 Hrs

It is requested that the basecases as well as ATC/TTC assessments may be shared with NRLDC as per CERC approved procedure. Further, above exercise needs to be carried out regularly on monthly basis.

Basecase & ATC/TTC assessment was received from only Haryana & J&K SLDC for M-11 scenarios.

It was discussed in last several OCC meetings & all states were requested to share basecase as well as ATC/TTC assessments for M-11 scenarios on monthly basis with NRLDC as per CERC approved procedure. Accordingly, it is requested to submit the basecase as well as ATC/TTC assessments.

Members may please discuss.

B.3.2 Sharing of Data and study results for interconnection studies

As per **Regulation 33 of IEGC 2023,**

(9) Each SLDC shall undertake a study on the impact of new elements to be commissioned in the intra-state system in the next six (6) months on the TTC and ATC for the State and share the results of the studies with RLDC.
(10) Each RLDC shall undertake a study on the impact of new elements to be commissioned in the next six (6) months in (a) the ISTS of the region and (b) the intra-state system on the inter-state system and share the results of the studies with NLDC.
(11) NLDC shall undertake study on the impact of new elements to be commissioned in the next six (6) months in (a) inter-regional system, (b) cross-border link and (c) intra-regional system on the inter-regional system.

In line with above, utilities are requested to share the list of **elements/LGB data/interconnection study results** etc as per the approved procedure which are expected to be commissioned up to **August 2024, before 8.2.2024. Above was also requested vide mails dated 01.02.2024 by NRLDC. This needs to be practised as monthly exercise on regular basis.**

Data received from only Haryana & J&K SLDC. Data regarding M-6 scenarios are pending from other utilities.

It was discussed in last several OCC meetings & all utilities were requested to share list of elements/LGB data/interconnection study results etc as per the approved procedure on monthly basis.

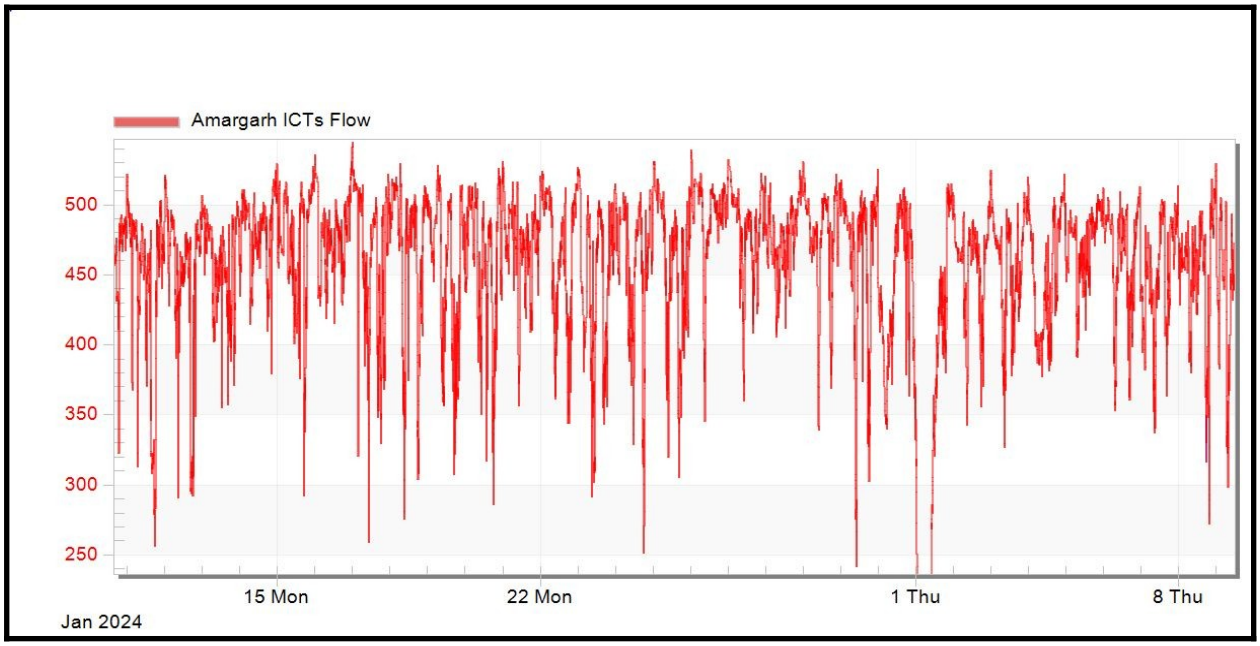
B.3.3 ATC/TTC of states for winter 2023-24 (M-1)

Latest ATC/TTC figures as available with NRLDC for the month of March 2024 is attached as **Annexure-B.I**. States are requested to go through these figures and provide any comments.

ATC/TTC assessment for winter 2023-24 has only been received from Rajasthan, HP, Haryana, J&K and Uttarakhand as of now.

B.3.4 Constraints observed during last month

Apart from various N-1 issues observed in Rajasthan as mentioned in previous agenda, loading above N-1 contingency limits was also observed for 400/220kV Amargarh ICTs. Plot of loading of 400/220kV 2*315MVA ICTs at Amargarh for last 30 days are shown below:



As discussed in 215 OCC meeting, it is requested that,

- Delhi, Punjab & UP SLDCs assess and share ATC/TTC assessment for February/ March 2024 at the earliest.
- All states to share data and base case for M-6 & M-11 timelines as discussed in the agenda.
- SLDCs to take actions to ensure that loading of ICTs and lines under their jurisdiction are below their N-1 contingency limits.
- Maximize internal generation in case of drawl near to the transfer capability limits.
- Forum agreed that in case no assessments for eleven months in advance are shared by SLDC, the existing ATC/TTC assessment could be published on website and considered for the said month.

Members may please discuss.

B.4. Frequent forced outages of transmission elements in the month of January'24:

The following transmission elements were frequently under forced outages during the month of **January'24**:

S. NO.	Element Name	No. of forced outages	Utility/SLDC
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	7	Rajasthan/ RAPS
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	3	Rajasthan/ RAPS
3	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	7	Rajasthan/ RAPS
4	220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1	3	Rajasthan/ RAPS
5	400 KV Akal-Barmer (RS) Ckt-1	3	Rajasthan
6	400 KV Bikaner-Bhadla (RS) Ckt-1	3	Rajasthan
7	400 KV Bikaner-Bhadla (RS) Ckt-2	3	Rajasthan

8	400 KV Agra-Unnao (UP) Ckt-1	5	UP
9	400 KV Bareilly-Unnao (UP) Ckt-1	3	UP
10	400 KV Bareilly-Unnao (UP) Ckt-2	3	UP
11	400 KV Muradnagar_2-Mathura (UP) Ckt-1	5	UP
12	400 KV Muktsar-Makhu (PS) Ckt-2	3	Punjab

The complete details are attached at **Annexure-B.II**.

It may be noted that frequent outages of such elements affect the reliability and security of the grid. Hence, utilities are requested to analyze the root cause of the tripping and share the remedial measures taken/being taken in this respect.

Members may like to discuss.

B.5. Multiple element tripping events in Northern region in the month of January '24:

A total of 21 grid events occurred in the month of Jan'24 of which **08** are of GD-1 category, **02** are of GI-1 Category and **11** are of GI-2 Category. The tripping report of all the events have been issued from NRLDC. A list of all these events is attached at **Annexure-B.III.**

Maximum delayed clearance of fault observed in event of multiple elements tripping at 400/220kV Akal(RS) on 02nd January, 2024 (As per PMU at Jodhpur(RS), two consecutive B-N phase to earth faults are observed with delayed fault clearance time of 320ms and 1400ms respectively.)

Delayed clearance of fault (more than 100ms for 400kV and 160ms for 220kV system) observed in total **05** events out of **21** grid events occurred in the month.

Remedial actions taken by constituents to avoid such multiple elements tripping may be shared.

As per IEGC clause 37.2 (c), Disturbance Recorder (DR), station Event Logger (EL), Data Acquisition System (DAS) shall be submitted within 24 hrs of the event and as per IEGC clause 37.2 (e), the user shall submit a detailed report in the case of grid disturbance or grid incidence within one (1) week of the occurrence of event to RLDC and RPC.

DR/EL of the following grid events not received till date:

a) 400/220kV Akal(RS) on 2nd Jan'24 (partial data received)
b) 400kV Koldam(NTPC) on 10th Jan'24
c) 220kV Jamalpur(BBMB) on 23rd Jan'24
d) 400/220kV Ratangarh(RS) on 28th Jan'24 (partial data received)
e) 400/220kV Chittorgarh(RS) on 30th Jan'24 (partial data received)
f) 220/132kV Pithoragarh(PG) on 31st Jan'24

Detail report of majority of the grid events not received yet.

Members may take necessary preventive measures to avoid such grid incidents / disturbances in future and report actions taken by respective utilities in OCC & PSC

forum. Moreover, utilities may impress upon all concerned for providing the Preliminary Report, DR/EL & Detailed Report of the events to RLDC in line with the regulations.

Members may like to discuss.

B.6. Details of tripping of Inter-Regional lines from Northern Region for January' 24:

A total of 13 inter-regional lines tripping occurred in the month of January'24. The list is attached at **Annexure-B.IV.** The status of receipt of preliminary reports, DR/EL within 24hrs of the event and fault clearing time as per PMU data has also been mentioned in the table. The non-receipt of DR/EL & preliminary report within 24hrs of the event from SLDCs / ISTS licensees / ISGSs is in violation of regulation 37.2(c) of IEGC and regulation 15(3) of CEA Grid Standards. As per regulations, all the utilities shall furnish the DR/EL, flag details & preliminary report to RLDC/RPC within 24hrs of the event. They shall also furnish the detailed investigation report within 7 days of the event if fault clearance time is higher than that mandated by CEA (Grid Standard) Regulations.

Members may please note and advise the concerned for taking corrective action to avoid such tripping as well as timely submission of the information.

Members may like to discuss.

B.7. Grid disturbance at RAPS, KTPS generation complex on 05th jan'24:

On 05th Jan'24, 05:16hrs, multiple elements tripping occurred at RAPS, KTPS generation complex. Multiple 220kV lines tripped from 04:00hrs onwards. Generation was evacuating through limited evacuating lines and connectivity to the grid was also very limited. Thereafter, few of the 220kV lines tripped on overloading and further cascade tripping occurred. RAPS, KTPS generation also tripped due to loss of evacuation path 9on over frequency).
A detailed comprehensive report prepared by NRLDC has been shared to constituents and also available on NRLDC website. Communication through webex meeting and through letter with Rajasthan and RAPS was also done. NRLDC letter regarding the same is attached as **Annexure-B.V.** Observations and remedial action desired agreed/discussed during the communication with RAPS and Rajasthan are as follows:

Actions to be taken by Rajasthan:

- STU need to carry out O&M measures to control frequent tripping of lines.
- Dedicated SCADA display need be made for major load- generation pockets to ensure effective monitoring.
- SLDC Rajasthan need to deploy additional manpower for close monitoring of such pockets and list out actions for immediate intervention in emergency situations.
- SPS may be implemented in RAPS, Debari, Chittorgarh to avoid overloading of line and further chance of cascade tripping.

- Necessary actions need to be taken for RTU healthiness at site to ensure healthiness of SCADA data. To ensure the healthiness of SCADA data, as a long term measure, STU shall explore to replace old RTUs which are beyond repair.

Actions to be taken by RAPS

- RAPS-C need to immediately explore the possibility to have complete auxiliary supply from 400 kV level. RAPS-C also need to review for necessary changes required in auxiliary supply switchover mechanism to avoid such grid incident in future. Possibility of connecting 220kV and 400kV part of RAPS-C via ICTs may be explored.
- It is requested to review the availability of SUTs at 400 KV RAPS-C & D station. As Unit-7&8 at RAPS-D is to be commissioned in near future, availability of SUTs at 400kV side is necessary to ensure the reliability of auxiliary supply.
- The tripping of SUTs of RAPS-C on high frequency need to be reviewed so that disturbance in 220 KV system should not affect unit operation at 400 KV system.
- An alarm system to flag any deficiency in wiring and control system need to be implemented. It will be helpful in early detection of discrepancy in system and further in decision making during real time scenario.

Link of report is:
https://nrldc.in/Websitedata/Docs/Documents/Tripping%20Report/Preminilary%20Report/2024/01%20Jan/2024_01_05_Grid%20event%20at%20%20KTPS_RAPS_Rajasthan.pdf

Rajasthan and RAPS are requested to share the status of remedial action taken / planned to be taken at their end.

Members may like to discuss.

B.8. Grid disturbance at Chittorgarh(RS) on 30th Jan'24:

On 30th Jan'24 at 08:15hrs & 09:00hrs, multiple elements tripping occurred at Chittorgarh(RS). During antecedent condition, ICTs at Chittorgarh were N-1 non-compliant. Triggering incident was tripping of 400/220kV 315MVA ICT-2 along with 220kV Chittorgarh-Sawa ckt-2. Fault occurred on Sawa feeder however, ICT tripped along with the line on LBB re-trip initiation which was not desired. Tripping of 220kV lines on overcurrent was also observed during the event. Thereafter, remaining system got overloaded and tripped subsequently. Detailed report of the tripping event prepared by NRLDC has already been shared and also available on NRLDC website. NRLDC communication to Rajasthan regarding expeditious action is attached as **Annexure-B.VI.**

Observation/point of discussion are as follows:

i) Proper operation of protection system need to be ensured. Protection operation at Chittorgarh S/s during the event need to be reviewed and necessary corrective actions need to be taken.

ii) Expeditious actions to enhance the transmission infrastructure to develop further connectivity to load stations is need of the hour. Limited connectivity is leading to overloading of multiple lines and tripping of few line is leading into major grid disturbance due to cascade tripping.

iii) Design logic and wiring of may be reviewed to avoid non-operation of SPS during desired condition.

Member may like to discuss

B.9. Grid disturbance at CCGT Bawana on 31st Jan'24 and 06th Feb'24:

Frequent events of multiple elements tripping has been observed in Delhi control area wherein significant quantum of load loss have been reported. Such frequent grid events are very detrimental to the safety and security of the state grid as well as to that of regional and national grid. The recent event of multiple elements tripping which occurred at 400/220kV CCGT Bawana and 220kV Narela is summarized below for ready reference, in this context:

i) On 31st January, 2024 at 03:17 Hrs, R-N phase to earth bus fault occurred at 400kV CCGT Bawana. On this fault, bus bar protection at CCGT Bawana didn't operate and fault cleared after tripping of 400kV transmission lines from remote end on back up protection. Complete blackout occurred at 400/220kV Bawana & CCGT Bawana. As reported, load loss of ~350MW and generation loss of ~260MW occurred in Delhi control area.

ii) On 06th February, 2024 at 10:10 Hrs, Y-N phase to earth occurred at 400kV CCGT Bawana, fault occurred due to snapping of Y-ph jumper of 400kV CCGT Bawana-Bahadurgarh ckt at CCGT Bawana end. Complete blackout occurred at 400/220kV CCGT Bawana. As reported, load loss of ~585MW and generation loss of ~475MW occurred in Delhi control area.

Observation/Point of discussion:

i) Bus bar protection at CCGT Bawana is not healthy. Therefore, any bus fault will lead to complete outage of 400/220kV CCGT Bawana as happened during grid event on 06th Feb'2024. As reported, only Main-2 bus bar protection was available during the event, main-1 protection was out since long. Expeditious restoration of bus bar protection is required to avoid such event in future and redundancy of protection system also need to be maintained.

ii) Frequency of bus fault has increased. During last week itself, four (04) number of grid events have occurred such as at 400kV CCGT Bawana on 31st Jan'24 & 06th Feb'24 respectively, at 220kV Badarpur on 31st Jan'24 and at 220kV Narela on 06th Feb'24. Main reasons were the snapping of jumper / conductor. Necessary operation & maintenance related remedial actions need to be taken to minimize the occurrence of such faults.

Therefore, it is requested that any shortcomings in the operation, maintenance and protection system may be rectified at the earliest. Necessary corrective actions may be taken to avoid such multiple elements tripping event in future.

Members may like to discuss.

B.10. Grid event in RE complex in Rajasthan:

On 17.12.23, 10.01.2024 & 15.01.2024, during fault on 400kV Bhadla-Bikaner(RS) ckts, RE generation dip in the range of 1500-2000MW observed, Due to significant dip in RE generation significant drop in frequency occurred. Asper analysis of PMU data of RE plants, some of the RE plants were found Non-compliant w.r.t CEA clause B2(3) and B2(7) (LVRT & HVRT requirement at Interconnection point). Details of the LVRT & HVRT response during the event is attached as **Annexure-B.VII**.

In view of above, RE plants were requested to share the root cause analysis (RCA report) of LVRT/HVRT Non-compliance at POI of their respective plants along with DR/EL & inverter logs data showing clearly the cause of generation loss/inverters tripping. Till date, preliminary analysis report received from ADANI and RENEW only. Root cause analysis report not received from any of the RE stations which are not complying during fault in grid.

Members may like to discuss.

B.11. Status of submission of DR/EL and tripping report of utilities for the month of January'24.

The status of receipt of DR/EL and tripping report of utilities for the month of January'24 is attached at **Annexure-B.VIII**. It is to be noted that as per the IEGC provision under clause 37.2 (c), tripping report along with DR/EL has to be furnished within 24 hrs of the occurrence of the event. However, it is evident from the submitted data that reporting status is not satisfactory and needs improvement. Also, it is observed that reporting status has improved however, reporting status from Punjab, Delhi, Rajasthan & J&K need further improvement.

Members may please note and advise the concerned for timely submission of the information. It is requested that DR/EL of all the trippings shall be **uploaded on Web Based Tripping Monitoring System "http://103.7.128.184/Account/Login.aspx"** within 24 hours of the events as per IEGC clause 37.2(c) and clause 15.3 of CEA grid standard. Apart from prints of DR outputs, the corresponding COMTRADE files may please also be submitted in tripping portal / through email.

Members may like to discuss.

B.12. Frequency response characteristic:

Two FRC based event occurred in the month of **August-2023**. Description of the event is as given below:
Table:

S. No.	Event Date	Time (In hrs.)	Event Description	Starting Frequency (in Hz)	Nadir Frequency (in Hz)	End Frequency (in Hz)	*Δf*	NR FRC during the event (%)
1	05-	05:16hr	On 5 January,					

	Jan-24	s	2024, at 05:10 hrs, multiple trippings were reported at Kota TPS and RAPP nuclear units. According to SCADA data, the total generation loss during the event was approximately 1726 MW, with a concurrent demand loss of 410 MW. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 1316 MW.	50.01	49.92	49.97	0.04	137
2	15-Jan-24	13:59hrs	On 15-Jan-2024, at 13:59 hrs phase-to-phase (R-B) fault occured on 400 kV Bhadla (Raj)-Bikaner (Raj)-1 line due to conductor snapping between tower location no. 456-457. This fault led to reduction in active power of RE plants connected to Bhadla, Bikaner, and Fatehgarh stations. As per the SCADA data, around 2000 MW generation reduction was observed in NR Solar generation. The net generation loss considered for Frequency	50.05	49.91	50.02	0.03	74

			Restoration Capability (FRC) computation is 2000MW.					
3	15-Jan-24	14:06hrs	On 15-Jan-24, at 14:06 hrs phase-to-phase (R-Y) fault occured on the 400 kV Bhadla (Raj)-Bikaner (Raj)-2 line due to conductor snapping between tower location no. 456-457. This fault led to reduction in active power of RE plants connected to Bhadla, Bikaner, and Fatehgarh stations. As per the SCADA data, around 1800 MW generation reduction was observed in NR solar generation. The net generation loss considered for Frequency Restoration Capability (FRC) computation is 1800MW.	50.05	49.84	50.01	0.04	23

Status of details/data received till date for aforementioned FRC events are as follows:

i) **05th Jan'24 event:** UP, NHPC, NTPC(Rihand TPS, Dadri TPS, Sungrauli TPS), Rajasthan only

ii) **15th Jan'24 event:** UP, HP, NTPC(Rihand TPS)

Memebers who haven't shared the data yet are requested to share the data and analysis of FRC of their control area.

Members may like to discuss.

B.13. Mock black start exercises in NR:

As per Indian Electricity Grid Code (IEGC) clause 34.3

" *Detailed procedures for restoration post partial and total blackout of each user system within a region shall be prepared by the concerned user in coordination with the concerned SLDC, RLDC or NLDC, as the case may be. The concerned user shall review the procedure every year and update the same. The user shall carry out a mock trial run of the procedure for different sub-systems including black-start of generating units along with grid forming capability of inverter based generating station and VSC based HVDC black-start support at least once a year under intimation to the concerned SLDC and RLDC. Diesel generator sets and other standalone auxiliary supply source to be used for black start shall be tested on a weekly basis and the user shall send the test reports to the concerned SLDC, RLDC and NLDC on a quarterly basis*".

Mock Black-start exercise of power stations therefore needs to be carried out in-order to ensure healthiness of black start facility.

The winter months are off peak hydro period and therefore good time to carry out such exercises. Therefore, the schedule of mock exercise dates for different hydro & Gas power station need to be finalized. The power stations may propose the tentative date for mock black start exercise of their generating units. Power stations may confirm and inform to all the concerned persons of control centre/ substations to facilitate the exercise.

Mock black start exercise conducted during 2023-24:

i) Teheri HEP: conducted on 07th Dec'23
ii) Dadri GPS: conducted on 15th Dec'23

Mock black start exercise planned to be conducted during 2023-24:

i) Obra, Rihand HEP: Feb'24 by UP
ii) Malana-II HEP: Feb'24 by HP
iii) Tanakpur HEP: Feb'24 by NHPC
iv) Anta GPS: Feb'24 (last week)

Members are requested to share the tentative schedule of mock black start exercise of generating stations in their respective control area. SLDCs shall submit the reports of black start exercise in their respective control area. SLDCs may also identify further generating stations/unit for black start exercise.

Members may like to discuss.

B.14. Revision of document: System Restoration Procedure and System Protection

I/33701/2024

Scheme:

NRLDC has been issuing 'System Restoration Procedure document of Northern Region' and details of System Protection Scheme in Northern Region on annual basis. Documents has been revised and updated. The document has been published on 31st Jan'24 and same is available on NRLDC website on below link:

System Restoration Procedure document:

https://nrldc.in/download/system-restoration-procedure-for nr_2024/?wpdmdl=13253&lang=en

System Protection Scheme in NR:

https://nrldc.in/download/nr-sps-2024/?wpdmdl=13255&lang=en

Document is password protected and password has already informed to all the NR constituents through letter dated 31st Jan 2024.

Follow up issues from previous OCC meetings

Annexure-A.I

<table>
<tr><td>1</td><td>Down Stream network by State utilities from ISTS Station</td><td>Augmentation of transformation capacity in various existing substations, addition of new substations along with line bays as well as requirement of line bays by STUs for downstream network are under implementation at various locations in Northern Region. Further, 220kV bays have already been commissioned at various substations in NR. For its utilization, downstream 220kV system needs to be commissioned.</td><td>List of downstream networks is enclosed in Annexure-A.I.I.</td></tr>
<tr><td>2</td><td>Progress of installing new capacitors and repair of defective capacitors</td><td>Information regarding installation of new capacitors and repair of defective capacitors is to be submitted to NRPC Secretariat.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Sep-2019
◎ DELHI — Sep-2023
◎ HARYANA — Sep-2023
◎ HP — Oct-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Dec-2023
◎ RAJASTHAN — Dec-2023
◎ UP — Dec-2023
◎ UTTARAKHAND — Jan-2024
All States/UTs are requested to update status on monthly basis.</td></tr>
<tr><td>3</td><td>Healthiness of defence mechanism: Self-certification</td><td>Report of mock exercise for healthiness of UFRs carried out by utilities themselves on quarterly basis is to be submitted to NRPC Secretariat and NRLDC. All utilities were advised to certify specifically, in the report that “All the UFRs are checked and found functional”.</td><td>Data upto following months, received from various states / UTs:
◎ CHANDIGARH — Not Available
◎ DELHI — Sep-2023
◎ HARYANA — Dec-2023
◎ HP — Oct-2023
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Sep-2023
◎ RAJASTHAN — Sep-2023
◎ UP — Dec-2023
◎ UTTARAKHAND — Dec-2023
◎ BBMB — Dec-2023
All States/UTs are requested to update status for healthiness of UFRs on monthly basis for islanding schemes and on quartely basis for the rest .</td></tr>
<tr><td></td><td></td><td>In compliance of NPC decision, NR states/constituents agreed to raise the AUFR settings by 0.2 Hz in 47th TCC/49th NRPC meetings.</td><td>Status:
◎ CHANDIGARH — Not Available
◎ DELHI — Increased
◎ HARYANA — Increased
◎ HP — Increased
◎ J&K and LADAKH — Increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased
◎ UTTARAKHAND — Increased
◎ BBMB — Increased
J&K and LADAKH were requested to update status for increasing settings of UFRs.</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>4</td><td>Status of FGD installation vis-à-vis installation plan at identified TPS</td><td>List of FGDs to be installed in NR was finalized in the 36th TCC (special) meeting dt. 14.09.2017. All SLDCs were regularly requested since 144th OCC meeting to take up with the concerned generators where FGD was required to be installed.
Further, progress of FGD installation work on monthly
basis is monitored in OCC
meetings.</td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td>◎</td><td>HARYANA</td><td>Sep-2023</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Oct-2023</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Jul-2023</td></tr><tr><td>◎</td><td>UP</td><td>Jan-2024</td></tr><tr><td>◎</td><td>NTPC</td><td>Feb-2023</td></tr></table>FGD status details are enclosed as Annexure-A.I.II.
All States/utilities are requested to update status of FGD installation progress on monthly basis.</td></tr>
<tr><td>5</td><td>Submission of breakup of Energy Consumption by the states</td><td>All states/UTs are requested to submit the requisite data as per the billed data information in the format given as under:
<table><tr><td>Category→</td><td>Consumption by Domestic Loads</td><td>Consumption by Commercial Loads</td><td>Consumption by Agricultural Loads</td><td>Consumption by Industrial Loads</td><td>Traction supply load</td><td>Miscellaneous / Others</td></tr><tr><td><Month></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table></td><td>Status of the information submission (month) from states / utilities is as under:
<table><tr><td></td><td>State / UT</td><td>Upto</td></tr><tr><td>◎</td><td>CHANDIGARH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>DELHI</td><td>Dec-23</td></tr><tr><td>◎</td><td>HARYANA</td><td>Nov-23</td></tr><tr><td>◎</td><td>HP</td><td>Dec-23</td></tr><tr><td>◎</td><td>J&K and LADAKH</td><td>Not Submitted</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Sep-23</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Oct-23</td></tr><tr><td>◎</td><td>UP</td><td>Jul-23</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Oct-23</td></tr></table>J&K and Ladakh and Chandigarh are requested to submit the requisite data w.e.f. April 2018 as per the billed data information in the given format</td></tr>
<tr><td>6</td><td>Information about variable charges of all generating units in the Region</td><td>The variable charges detail for different generating units are available on the MERIT Order Portal.</td><td>All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>7</td><td>Status of Automatic Demand Management Sysytem in NR states/UT's</td><td>The status of ADMS implementation in NR, which is mandated in clause 5.4.2 (d) of IEGC by SLDC/SEB/DISCOMs is presented in the following table:</td><td>Status:
<table><tr><td>◎</td><td>DELHI</td><td>Scheme Implemented but operated in manual mode.</td></tr><tr><td>◎</td><td>HARYANA</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>HP</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>PUNJAB</td><td>Scheme not implemented</td></tr><tr><td>◎</td><td>RAJASTHAN</td><td>Under implementation. Likely completion schedule is 31.12.2023.</td></tr><tr><td>◎</td><td>UP</td><td>Scheme implemented by NPCIL only</td></tr><tr><td>◎</td><td>UTTARAKHAND</td><td>Scheme not implemented</td></tr></table></td></tr>
</table>

8	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	500 MVAr TCR at Kurukshetra has been commissioned on dated 15th December 2023
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	1x50 MVAr Reactor at Peeragarhi has been commissioned on dated 18.09.2023
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	2x50 MVAR Reactor at Harsh Vihar has been commissioned on dated 31th March 2023.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work completed on 25.03.2023. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work completed on 07.11.2023. Reactor part tender is dropped and at present same is under revision.
vii	DTL	Electric Lane	1x50 MVAr at 220 kV	Under Re-tendering due to Single Bid
viii	PUNJAB	Dhuri	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	400kV Reactors - 1x125 MVAR Reactor at Dhuri has been commissioned on dated 30th March 2023. 220kV Reactors - 1x25 MVAR Reactor at Dhuri has been commissioned on dated 27th January 2023.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	1x25 MVAR Reactor at Nakodar has been commissioned on dated 13th February 2023.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	SLDC informed that PTCUL has intimated that tender has been scrapped. Retendering will
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	1x25 MVAR Reactor at Bikaner has been commissioned on dated 24th June 2023.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	1x25 MVAR Reactor at Suratgarh has been commissioned on dated 25th November 2022.
xiv	RAJASTHAN	Barmer & others	13x25 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. Out of 13 Nos. of reactors, 10 Nos. have been erected and three are under erection. Tentative charging plan is
xv	RAJASTHAN	Jodhpur	1x125 MVAr	Agreement signed on dt. 22.06.2020. Grant of Ist Instalment received on dt.19.02.21 & work order placed on dt. 7.04.2022 to M/s Kanohar Electricals Ltd. Schedule time is 18 months. 01 No. of 125 MVAR reactor is under final inspection. Tentaive charging plan is 31.03.2024.

Annexure-A-I.I

1. Down Stream network by State utilities from ISTS Station:

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
1	400/220kV, 3x315 MVA Samba	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24	02 No. of bays shall be utilized for LILO-II of 220kV Jatwal-Bishnah Transmission Line, the work of which is delayed due to severe ROW problem at Location No. 1 near Grid Substation Jatwal where the Land owner is not allowing erection of Tower. The Deputy Commissioner Samba has been approached for intervention and facilitating the erection of Tower. He is persuading the Land owner to get the work completed. Updated in 210th OCC by JKPTCL.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	Mar'25	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Alusteng D/c Line. RoW issues persisting; At present new-wampoh-mirbazar 5km and harwan-alstung 16km have been completed, expected date of completion is Mar 2025 subject to availability of funds and resolving of RoW issues), Updated in 214th OCC by JKPTCL.
				• 220 kV New Wanpoh - Mattan D/c Line	End of 2024	02 No. of bays are to be utilized for connecting 220kV New Wanpoh-Mattan D/c Line. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	End of 2024	02 No. of bays are proposed to be utilized for connecting 220/132 kV GSS Loolipora. The funding source for the project is being identified and the project is expected to be completed by ending 2024. Updated in 204th OCC by JKPTCL.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	Jul'24	Updated in 205th OCC by HVPNL
5	400/220 kV, 2x315 MVA Dehradun	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• Network to be planned for 4 bays	-	PTCUL to update the status.
6	Shahjahanpur, 2x315 MVA 400/220 kV	Commissioned: 6 Approved/Under Implementation:1 Total: 7	Utilized: 7	• 220 kV D/C Shahajahanpur (PG) - Gola line	Commissioned	Energization date: 26.10.2023 updated by UPPTCL in 215th OCC
				• LILO of Sitapur – Shahjahanpur 220 kV SC line at Shahjahanpur (PG)	Commissioned	Energization date: 25.02.2022 updated by UPPTCL in 196th OCC
7	Hamirpur 400/220 kV Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• 220 kV Hamirpur-Dehan D/c line	Commissioned	HPPTCL has commissioned the Planned 220kV Dehan-Hamirpur TL utilizing 2 No. 220kV Bays.Commisioned date: 09.06.2022. Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
8	Sikar 400/220kV, 1x 315 MVA S/s	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• LILO of 220 kV Sikar (220 kV GSS)-Dhod S/c line at Sikar (PG)	Commissioned	LILO of 220 kV S/C Sikar-Dhod line at 400 kV GSS PGCIL, Sikar has been charged on dt. 31.03.2022
				• Network to be planned for 2 bays.	-	Against the 3rd ICT at 400 kV GSS Sikar, only 2 bays were constructed and same has been utilized by RVPN by constructing LILO of 220 kV S/C Sikar – Dhod line as updated by RVPNL in 195th OCC
				• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Commissioned	Updated in 202nd OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 215th OCC by HVPNL.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC by HVPNL.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0	• LILO of both circuits of 220 kV Jind HVPNL to PTPS D/C line at 400 kV substation PGCIL Khatkar (Jind) with 0.5 sq inch ACSR conductor	May'24	Tender is under process Updated in 205th OCC by HVPNL.
11	400/220kV Tughlakabad GIS	Commissioned: 6 Under Implementation: 4 Total: 10	Utilized: 6 Unutilized: 0 Under Implementation:4	• RK Puram – Tughlakabad (UG Cable) 220kV D/c line – March 2023.	-	DTL to update the status.
				• Masjid Mor – Tughlakabad 220kV D/c line.	-	DTL to update the status.
12	400/220kV Kala Amb GIS (TBCB)	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 2 Under Implementation:2	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Jan'24	Updated in 214th OCC by HPPTCL
				• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Giri S/s	-	HPPTCL to update the status.
				• Network to be planned for 2 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur Sub-station	Commissioned: 8 Total: 8	Utilized: 0 Unutilized: 8	• LILO of both circuits of 220 KV Pali - Sector 56 D/C line at Kadarpur along with augmentation of existing conductor from 220 KV Sector-56 to LILO point with 0.4 sq inch AL-59 conductor.	Mar'24	Forest approval is pending for 220 KV Pali - Sector 56 D/C line. Updated in 215th OCC by HVPNL
				• LILO of both circuits of 220KV Sector 65 - Pali D/C line at Kadarpur along with augmentation of balance 0.4 sq. inch ACSR conductor of 220 kV Kadarpur - Sector 65 D/C line with 0.4sq inch AL-59 conductor	Mar'24	Updated in 205th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• LILO of both circuits of 220kV D/c Sohna-Rangla Rajpur at Roj Ka Meo line at 400kV Sohna Road	Jan'24	Updated in 208th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	-	The matter is subjudice in Hon'ble Punjab & Haryana High court, Chandigarh Updated in 205th OCC by HVPNL. **Status:-** Earlier 02 nos 220 kV line bays were to be utilized for the 220 kV GIS S/Stn. Sec-77, Gurugram but due to denotification of land of the 220 kV GIS S/Stn. Sec-77 the said substation is now going to be dismantled and a new substation is proposed at Sec-75A, Gurugram. Now, these 02 no. 220 kV line bays may be utilized at 220 kV GIS S/Stn Sec-75A, Gurugram.
15	400/220kV Prithla Sub-station	Commissioned: 8 Aprroved: 2 Total: 10	Utilized: 4 Unutilized: 4 Under Implementation:2	• 220kV D/C line from Prithla to Harfali with LILO of one circuit at 220kV Meerpur Kurali	31.03.2024	Updated in 205th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• 220kV D/C for Sector78, Faridabad	31.03.2024	Issue related to ROW and Pending crossing approval from Northern Railways and DFCCIL. as intimated in 205th OCC by HVPNL.
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Updated in 205th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	Feb'24	Updated in 205th OCC by HVPNL. **Status:** Work was held up due to ROW at T.L. No. 7,8,11,12 & 13 by the farmers of Jajji villagers during July'23 and now the matter has been resolve and work under progress from 01.08.2023. The erection work of T.no. 1 is pending due to non availability of shut down at 220KV Mohana-Smk line and 220KV Jajji-Mohana line. • PLCC protection coupler and Forest approval is also pending.
				• Sonepat - HSIISC Rai 220kV D/c line	Mar'24	Updated in 212th OCC by HVPNL. **Status:** Due to non-performance of work of 220KV GIS Rai S/Stn, the Contract has been terminated & blacklisted by O/o XEN/WB O/o CE/PD&C, HVPNL, Panchkula vide Ch-100/HDP-2418/REC-254/Xen(WB) Dated 24.02.2023. Now pending work will be caried out by HVPNL/ Departmentely. Now, the matter is under approval from competent authority of Nigam.,
				• Sonepat - Kharkhoda Pocket A 220kV D/c line	31.07.2024	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
17	400/220kV Neemrana Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• LILO of Bhiwadi - Neemrana 220kV S/c line at Neemrana (PG)	-	Work is under progres. Stub Setting: 02/2017. Permission for forest, Highway & pipeline crossing is awaited from concerned department as updated in 215th OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Date of bid opening has been extended up to 22.01.2024 as updated in 215th OCC by RVPNL.
19	400/220kV Jallandhar Sub-station	Commissioned: 10 Total: 10	Utilized: 8 Unutilized: 2	• Network to be planned for 2 bays	May'24	LILO of 220 kV BBMB Jalandhar - Butari line at 400 kV PGCIL Jalandhar being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.
20	400/220kV Roorkee Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Roorkee (PG)-Pirankaliyar 220kV D/c line	Commissioned	Roorkee (PG)-Pirankaliyar 220kV D/c line commissioned in 2020 as intimated by PTCUL in 197th OCC
21	400/220kV Lucknow Sub-station	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	Commissioned	• Lucknow -Kanduni, 220 kV D/C line work energized on 05.10.2023. Updated in 212th OCC by UPPTCL. _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Commissioned	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line energized on 27.09.2023 updated by UPPTCL in 212th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
23	400/220kV Fatehpur Sub-station	Commissioned: 8 Under Implementation:2 Total: 10	Utilized: 6 Unutilized: 2 Under Implementation:2	• Network to be planned for 2 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage. In 201st OCC, UPPTCL intimated that it is finalized that Khaga s/s will be connected (tentative time 1.5 years). • No planning for 2 no. of bays updated by UPPTCL in 196th OCC. The same has been communicated to Powergrid.
24	400/220kV Abdullapur Sub-station	Commissioned: 10 Under Implementation:2 Total: 12	Utilized: 10 Unutilized: 0 Under Implementation:2	• Abdullapur – Rajokheri 220kV D/c line	Mar'24	SCDA System & PLCC work pending at 220 KV S/stn. Rajokheri Updated in 215th OCC by HVPNL
25	400/220kV Pachkula Sub-station	Commissioned: 8 Under tender:2 Total: 10 Out of these 10 nos. 220kV Line Bays, 2 bays would be used by the lines being constructed by POWERGRID (Chandigarh-2) and balance 8 nos. bays would be used by HVPNL	Utilized: 2 Unutilized: 4 Under Implementation:2	• Panchkula – Pinjore 220kV D/c line	Jan'24	Updated in 211th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	Feb'24	Updated in 211th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL
				• Panchkula – Sadhaura 220kV D/c line: Sep'23	Jul'24	Updated in 205th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Under Implementation:2	• Amritsar – Patti 220kV S/c line	Jan'24	Work is near completion expected to be completed by January 2024. Updated in 215th OCC by PSTCL.
				• Amritsar – Rashiana 220kV S/c line (2 bays shall be required for above lines. However, 1 unutilized bay shall be used for Patti and requirement of one additional bay approved for Rashiana by NRPC)	Jan'24	Work is near completion expected tobe completed by January 2024. Updated in 215th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Commissioned	Updated in 201st OCC by UPPTCL
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Approved: 4 Total: 8	Utilized:2 Unutilized: 2	• LILO of 220 kV Nunamajra-Daultabad S/c line at 400 kV Bahadurgarh PGCIL	31.03.2024	Updated in 205th OCC by HVPNL. **Status:** Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - METL 220kV D/c line (Deposit work of M/s METL)	31.03.2024	Updated in 205th OCC by HVPNL. **Status:** Tentative route stands submitted by TS wing and accordingly BOQ has been submitted by design wing to contracts wing for award of work.
				• Bahadurgarh - Kharkhoda Pocket B 220kV D/c line	31.07.2024	Updated in 212th OCC by HVPNL. **Status:** Work order has been issued to M/s R.S Infra on dated 09.08.2023 by O/o CE/PD&C, Panchkula for construction of line. The Survey work has been completed.
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• LILO of 220 kV S/C Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG)	06.10.2025	Work order has been issued on 06.10.2023, work under progress as updated by RVPNL in 215th OCC
		Commissioned: 8	Utilized: 8	• Sohawal - Barabanki 220kV D/c line	Commissioned	Energization date: 14.04.2018 updated by UPPTCL in 196th OCC
				• Sohawal - New Tanda 220kV D/c line	Commissioned	Energization date: 28.05.2019 updated by UPPTCL in 196th OCC

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 8	Utilized: 8	• Network to be planned for 2 bays	Commissioned	• Sohawal - Gonda 220kV S/c line (Energization date: 27.04.2020) updated by UPPTCL in 196th OCC _____ • Sohawal - Bahraich 220kV S/c line (Energization date: 15.02.2021) updated by UPPTCL in 196th OCC
31	400/220kV, Kankroli	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• 220 kV D/C Kankroli(PG) - Nathdwara line	-	Technical bid for the line has been opened on 14.12.2023, under evaluation.
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 2 bays	-	Status:- 2nos bays are being utilised for 220 kV D/C Panchgaon (PGCIL)-Panchgaon Ckt-I & 220 kV D/C Panchagon (PGCIL)-Panchgaon Ckt-II, charged on dated 05.09.2022 & 20.10.2022 respectively. The 2nos bays may be utilised by HVPNL in future.
33	400/220kV, Saharanpur	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	Commissioned	Saharanpur(PG)-Devband D/c line (Energization date: 20.04.2023) updated by UPPTCL in 207th OCC
34	400/220kV, Wagoora	Commissioned: 10 Total: 10	Utilized: 6 Unutilized: 4	• Network to be planned for 4 bays	-	PDD, J&K to update the status.
35	400/220kV, Ludhiana	Commissioned: 9 Total: 9	Utilized: 8 Unutilized: 1	• Network to be planned for 1 bay	Feb'24	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work completed only jumpering reamins to be done.Updated in 215th OCC by PSTCL.
36	400/220kV, Chamba (Chamera Pool)	Commissioned: 3 Under tender:1 Total: 4	Utilized:3 Unutilized: 0 Under tender:1	• Stringing of 2nd ckt of Chamera Pool – Karian 220kV D/c line	-	Stringing of 2nd Circuit of Chamera Pool-Karian Tansmission line has been completed & terminal bay at 400/220 kV chamera pooling substation (PGCIL) is ready for commissioning. Case for Initial Charging is in process at NRLDC..Updated in 214th OCC by HPPTCL
37	400/220kV, Mainpuri	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 6 Unutilized: 0 Under Implementation:2	• Network to be planned for 2 bays	-	• 02 no. of bays under finalization stage updated by UPPTCL in 196th OCC. Mainpuri S/s planned. Land is not finalized, therefore timeline not available as intimated by UPPTCL in 201st OCC.
38	400/220kV, Patiala	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• Network to be planned for 2 bays	May'24	2 Nos. bays for 400 kV PGCIL Patiala - 220 kV Bhadson (D/C) line being planned. Work expected to be completed by May 2024. Updated in 198th OCC by PSTCL.

FGD Status

Updated status of FGD related data submission

NTPC (27.02.2023)
MEJA Stage-I
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.07.2023)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (18.07.2023)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (09.07.2023)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

Lalitpur Power Gen. Co. Ltd. (17.10.2022)
Lalitpur TPS
Lanco Anpara Power Ltd. (18.06.2022)
ANPARA-C TPS

HGPCL (14.09.2022)
PANIPAT TPS
RAJIV GANDHI TPS
YAMUNA NAGAR TPS

Adani Power Ltd. (18.02.2022)
KAWAI TPS

Rosa Power Supply Company (18.06.2022)
Rosa TPP Phase-I
Prayagraj Power Generation Company Ltd. (17.10.2022)
Prayagraj TPP
APCPL (25.02.2022)
INDIRA GANDHI STPP

Pending submissions

GVK Power Ltd.
GOINDWAL SAHIB

NTPC
DADRI (NCTPP)
Talwandi Sabo Power Ltd.
TALWANDI SABO TPP
L&T Power Development Ltd.
Nabha TPP (Rajpura TPP)

Target Dates for FGD Commissioning (Utility-wise)

Adani Power Ltd.	KAWAI TPS U#1 (Target: 31-12-2024), KAWAI TPS U#2 (Target: 31-12-2024)
APCPL	INDIRA GANDHI STPP U#1 (Target: 31-01-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2023), INDIRA GANDHI STPP U#3 (Target: 30-06-2023)
GVK Power Ltd.	GOINDWAL SAHIB U#1 (Target: 30-04-2020), GOINDWAL SAHIB U#2 (Target: 29-02-2020)
HGPCL	PANIPAT TPS U#6 (Target: 31-12-2022), PANIPAT TPS U#7 (Target: 31-12-2022), PANIPAT TPS U#8 (Target: 31-12-2022), RAJIV GANDHI TPS U#1 (Target: 31-12-2024), RAJIV GANDHI TPS U#2 (Target: 31-12-2024), YAMUNA NAGAR TPS U#1 (Target: 31-12-2024), YAMUNA NAGAR TPS U#2 (Target: 31-12-2024)

NTPC	DADRI (NCTPP) U#1 (Target: 31-12-2020), DADRI (NCTPP) U#2 (Target: 31-10-2020), DADRI (NCTPP) U#3 (Target: 31-08-2020), DADRI (NCTPP) U#4 (Target: 30-06-2020), DADRI (NCTPP) U#5 (Target: 30-06-2022), DADRI (NCTPP) U#6 (Target: 31-03-2023), RIHAND STPS U#1 (Target: 31-10-2025), RIHAND STPS U#2 (Target: 30-06-2026), RIHAND STPS U#3 (Target: 31-12-2024), RIHAND STPS U#4 (Target: 31-03-2025), RIHAND STPS U#5 (Target: 30-06-2025), RIHAND STPS U#6 (Target: 31-10-2025), SINGRAULI STPS U#1 (Target: 31-12-2024), SINGRAULI STPS U#2 (Target: 31-12-2024), SINGRAULI STPS U#3 (Target: 31-12-2024), SINGRAULI STPS U#4 (Target: 31-12-2024), SINGRAULI STPS U#5 (Target: 31-03-2025), SINGRAULI STPS U#6 (Target: 31-06-2024), SINGRAULI STPS U#7 (Target: 31-03-2024), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-09-2023), UNCHAHAR TPS U#4 (Target: 30-09-2023), UNCHAHAR TPS U#5 (Target: 30-09-2023), UNCHAHAR TPS U#6 (Target: 31-08-2022), MEJA Stage-I U#1 (Target: 31-10-2023), MEJA Stage-I U#2 (Target: 30-06-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-03-2023), TANDA Stage-II U#4 (Target: 30-09-2023)

L&T Power Development Ltd (Nabha)	Nabha TPP (Rajpura TPP) U#1 (Target: 30-04-2021), Nabha TPP (Rajpura TPP) U#2 (Target: 28-02-2021)
Lalitpur Power Gen. Company Ltd.	LALITPUR TPS U#1 (Target: 31-12-2026), LALITPUR TPS U#2 (Target: 30-09-2026), LALITPUR TPS U#3 (Target: 30-06-2026)
Lanco Anpara Power Ltd.	ANPARA C TPS U#1 (Target: 31-12-2023), ANPARA C TPS U#2 (Target: 31-12-2023)
Prayagraj Power Generation Company Ltd.	PRAYAGRAJ TPP U#1 (Target: 31-12-2024), PRAYAGRAJ TPP U#2 (Target: 31-12-2024), PRAYAGRAJ TPP U#3 (Target: 31-12-2024)
PSPCL	GH TPS (LEH.MOH.) U#1 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2026), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2026), GGSSTP, Ropar U#3 (Target: 31-12-2026), GGSSTP, Ropar U#4 (Target: 31-12-2026), GGSSTP, Ropar U#5 (Target: 31-12-2026), GGSSTP, Ropar U#6 (Target: 30-12-2026)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2026), ROSA TPP Ph-I U#2 (Target: 31-12-2026), ROSA TPP Ph-I U#3 (Target: 31-12-2026), ROSA TPP Ph-I U#4 (Target: 31-12-2026)
RRVUNL	KOTA TPS U#5 (Target: 31-08-2024), KOTA TPS U#6 (Target: 31-08-2024), KOTA TPS U#7 (Target: 31-08-2024), SURATGARH TPS U#1 (Target: 31-12-2026), SURATGARH TPS U#2 (Target: 31-12-2026), SURATGARH TPS U#3 (Target: 31-12-2026), SURATGARH TPS U#4 (Target: 31-12-2026), SURATGARH TPS U#5 (Target: 31-12-2026), SURATGARH TPS U#6 (Target: 31-12-2026), SURATGARH SCTPS U#7 (Target: 28-02-2025), SURATGARH SCTPS U#8 (Target: 28-02-2025), CHHABRA TPP U#1 (Target: 31-12-2026), CHHABRA TPP U#2 (Target: 31-12-2026), CHHABRA TPP U#3 (Target: 31-12-2026), CHHABRA TPP U#4 (Target: 31-12-2026), CHHABRA SCPP U#5 (Target: 28-02-2025), CHHABRA SCPP U#6 (Target: 28-02-2025), KALISINDH TPS U#1 (Target: 28-02-2025), KALISINDH TPS U#2 (Target: 28-02-2025)
Talwandi Sabo Power Ltd.	TALWANDI SABO TPP U#1 (Target: 28-02-2021), TALWANDI SABO TPP U#2 (Target: 31-12-2020), TALWANDI SABO TPP U#3 (Target: 31-10-2020)
UPRVUNL	ANPARA TPS U#1 (Target: 31-12-2023), ANPARA TPS U#2 (Target: 31-12-2023), ANPARA TPS U#3 (Target: 31-12-2023), ANPARA TPS U#4 (Target: 31-12-2023), ANPARA TPS U#5 (Target: 31-12-2023), ANPARA TPS U#6 (Target: 31-12-2023), ANPARA TPS U#7 (Target: 31-12-2023), HARDUAGANJ TPS U#8 (Target: 31-12-2024), HARDUAGANJ TPS U#9 (Target: 31-12-2024), OBRA TPS U#9 (Target: 31-12-2024), OBRA TPS U#10 (Target: 31-12-2024), OBRA TPS U#11 (Target: 31-12-2024), OBRA TPS U#12 (Target: 31-12-2024), OBRA TPS U#13 (Target: 31-12-2024), PARICHHA TPS U#3 (Target: 30-04-2022), PARICHHA TPS U#4 (Target: 31-12-2024), PARICHHA TPS U#5 (Target: 31-12-2024), PARICHHA TPS U#6 (Target: 31-12-2024)

MIS Report for Status of Islanding Schemes

Implemented Schemes

Sl. No.	Islanding Scheme	SLDC	Status	Submission of Self Certification of Healitheness	SOP	SCADA Display Page	Remarks
1	NAPS IS	UP	Implemented	Yes (08-10-2021)	Yes	Yes	-
2	RAPS IS	Rajasthan	Implemented	16-Aug-21	Yes	Yes	List of officials in-charge, format for generation, islanding scheme sld and relays in RAPP IS submitted by RVPN on 04.12.2021.

Under Implementation/ Newly Proposed/Under Discussion

Sl. No.	Islanding Scheme	SLDC	Status	Details of progress	DPR for PSDF funding (Require	Timelines Status - Proposed/Actual									
						Study		Design		Approval		Procurement		Commissioning	
						Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
1	Lucknow-Unchahar IS	UP	Under Implementation	Scheme has been approved in 59th NRPC meeting held on 31.10.2022. Installation of Ufrs is complete expect at NTPC Unchahar end .		-		-	-	-	-	-	-	-	-
2	Agra IS	UP	Under Study	Lalitpur TPS has has some observations on CPRI report and same is under examination.		-		-	-	-	-	-	-	-	-
3	Jodhpur-Barmer-Rajwest IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022.Preparation of DPR is under finalization. Timeline to be intimated by RVPN	-	-		-	-	-	-	-	-	-	-
4	Suratgarh IS	Rajasthan	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Preparation of DPR is under finalization. Timeline to be intimated by RVPN	-	-		-	-	-	-	-	-	-	-
5	Patiala-Nabha Power Rajpura IS	Punjab	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Punjab SLDC informed that their management has decided to go for PSDF funding for its implementation Implementation timeline: March,2025		-		-	-	-	-	-	-	-	-
6	Pathankot-RSD IS	Punjab	Implemented	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Scheme has been implemented in April 2023 as informed by Punjab in 206th OCC. Testing Reports submitted by Punjab.		-		-	-	-	-	-	-	-	-
7	Kullu-Manali-Mandi IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC		-		-	-	-	-	-	-	-	-
8	Shimla-Solan IS	HP	Under Implementation	Scheme has been approved in 60th NRPC meeting held on 30.11.2022. Timeline to be intimated by HPSLDC											
9	Delhi IS	Delhi	Implemented	Revised Delhi islanding scheme has been implemented as informed by DTL in 48th TCC and 70th NRPC meeting.											

Status of availability of ERS towers in NR

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
1	PTCUL	400kV	418.394	NIL	1		DPR Under preparation.
		220kV	1045.135	NIL	1		DPR Under preparation.
2	Powergrid NR-1	220 KV	1842.88	NIL	1		
		400 KV	11074.26	12 Towers	3	All 400kV ERS at Ballabhgarh	make-Lindsey
		765 KV	4721.85	15 Towers	1	All 765kV ERS at Meerut	Make-SBB
		500 KV HVDC	653.88	NIL	1		
		800 KV HVDC	416.58	NIL	1		
3	Powergrid NR-2	66 KV	37.56	Nil	1		ERS tower available for 400KV rating can be used in place of lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can be erected will reduce due to increase in Tower Hight.
		132 KV	262.7	Nil	1		
		220 KV	2152	Nil	1		
		400 KV	8097.3	02 Set (32 Towers)	2	Kishenpur & Jalandhar	
		765 KV	337.5	Nil	1		
4	Powergrid NR-3	800KV HVDC	2205	NIL	1		400KV ERS will be also be used in other voltage level lines
		500KV HVDC	2566	NIL	1		
		765KV	4396	NIL	1		
		400KV	12254	26 Towers	3	Kanpur	
		220KV	1541	NIL	1		
		132KV	207	NIL	1		
5	PARBATI KOLDAM TRANSMISSION COMPANY LIMITED	400kV	457	NIL	1		Procurement under process.
6	PATRAN TRANSMISSION COMPANY LTD	400kV	0.4	NIL	1	It is kept in Bhopal and on need basis is moved across region	Not available, will tie up based on the requirements in future. However the parent company IndiGrid owns one set of ERS for all five regions.
7	NRSS-XXIX TRANSMISSION LTD	400kV	853	NIL	1		
8	GURGAON PALWAL TRANSMISSION LTD	400kV	272	NIL	1		
9	RAPP Transmission Company Limited.	400kV	402	NIL	1		
10	NRSS XXXVI Transmission Limited	400kV	301.924	NIL	1		Element I - Operational comprising of 3 kms. Element II - Work Under Progress comprising of 221.924 kms. Element II - Work Under Progress comprising of 77 kms.
11	HPPTCL	220 kV	659	NIL	1		
		400 kV	75.7	NIL	1		
12	RVPN	132 kV	18969.958	1	4	01 No. ERS available at 220 kV GSS Heerapura, Jaipur	ERS proposed : 01 Set at 400 kV GSS, Jodhpur. 01 set at 400 kV GSS Bikaner
		220 kV	16227.979		3		
		400 kV	6899.386		2		
		765 kV	425.498		1		
13	DTL	220kV	915.498	NIL	1	400kV Bamnauli Sub station	ERS tower available for 400KV rating can also be used for lower voltage lines as well
		400kV	249.19	02 Sets (32 towers)	1		
14	JKPTCL						

Sl. No.	Transmission Utility	Voltage Level (220kV/400kV/765kV/ 500 kV HVDC etc.)	Length of the transmission lines owned by the Utility (Ckt. Kms.)	Number of ERS Sets (towers) available (Nos.)	ERS Set (towers) required as per the Govt. norms.	Location	Remarks
15	HVPN						HVPN does not have ERS Set. Technical Specifications have been finalized
16	PSTCL	400 kV	1666.43	2	2		
		220 kV	7921.991				
17	UPPTCL 1- Meerut	132KV	27508.321	24 Nos(15 Running+9 Angle)		400 kV S/s Gr. Noida	ERS will be also be used in other voltage level lines.
		220KV	14973.453				
		400KV	6922.828				
	UPPTCL 2-Prayagraj	765KV	839.37	24 Towers		220 kv S/s phulpur	ERS will also be used in other voltage lines.
		400KV	1804.257				
		220KV	2578.932				
		132KV	4714.768				
18	POWERLINK						
19	POWERGRID HIMACHAL TRANSMISSION LTD						
20	Powergrid Ajmer Phagi Transmission Limited						
21	Powergrid Fatehgarh Transmission Limited						
22	POWERGRID KALA AMB TRANSMISSION LTD						
23	Powergrid Unchahar Transmission Ltd						
24	Powergrid Khetri Transmission Limited						
25	POWERGRID VARANASI TRANSMISSION SYSTEM LTD						
26	ADANI TRANSMISSION INDIA LIMITED		2090	1 Set (12 towers)	1 set (12 towers)	Sami (Gujarat)	Make-Lindsey ERS set available for 400KV & 500KV rating can be used for lower as well as higher voltage Towers. In case used for 765KV Line, No of towers can reduce due to increase in Tower Height & nos of conductors.
27	BIKANER KHETRI TRANSMISSION LIMITED		482				
28	FATEHGARH BHADLA TRANSMISSION LIMITED	500 kV HVDC 400 kV HVAC	291				
29	NRSS-XXXI(B) TRANSMISSION LTD	400 kV	577.74	Not Available	Not Available		In the advance stage of process of finalising arrangement for providing ERS on need basis with other transmission utility (M/s INDIGRID).
30	ARAVALI POWER COMPANY PVT LTD	765 kv HVAC					

*The transmission Utility with line length less than 500 ckt kms (of 400 KV lines) may be given option either to procure ERS or have agreement with other transmission utilities for providing ERS on mutually agreed terms, when need arises. (As per MoP directions)

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

Date: 23.01.2024

सेवा में,
NRLDC/NLDC and SLDCs as per attached list (via e-mail)

Sub: Furnishing of substation details for implementation of Centralized Database for Protection Settings in Northern Region-reg.
Ref: Minutes of 48th TCC and 70th NRPC meeting held on 17th and 18th Nov 2023.

Reference is invited to implementation of Centralized Database for Protection Settings in Northern Region as discussed and approved in 48th TCC & 70th NRPC meeting (held on 17-18 Nov 2023).

In view of preparation of estimate of work for implementation of the same, it is required to know the number of sub-stations and elements for which relay details shall be modelled in Centralized Database.

Therefore, it is requested that following details of all elements connected at 220 kV and above, in your control area, may kindly be provided as under-

	Substations		**Transmission lines**		**ICTs/GT**		**Reactors**	
Voltage Level	No. of Substations	No of Relays in substations	No. of Transmission lines	No of Relays	No. of ICTs	No of Relays	No. of Reactors	No. of Relays
765kV								
400kV								
220kV								
HVDC S/s								

It is requested to provide the above details **latest by 30.01.2024.**

(डी. के. मीणा)
अधीक्षण अभियंता (संरक्षण)

I/33303/2024

Addressee list				
S. No.	**NRPC Member**	**Category**	**Nominated/ Notified/ Delegated Member**	**E-mail**
1	NLDC	National Load Despatch Centre	Executive Director	scsaxena@grid-india.in
2	NRLDC	Northern Regional Load Despatch Centre	Executive Director	nroy@grid-india.in
3	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
4	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
5	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
6	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
7	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
8	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
9	Himachal Pradesh SLDC		Chief Engineer	cehpsldc@gmail.com
10	J&K SLDC		Chief Engineer, JKPTCL	jksldc4@gmail.com; sojpdd@gmail.com

भारत सरकार/Government of India
विद्युत मंत्रालय/Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/Central Electricity Authority
एन.पी.सी. प्रभाग/National Power Committee Division
Ist Floor, Wing-5 ,West Block-II, RK Puram, New Delhi-66

No.4/MTGS/SG/NPC/CEA/2023/ 353 Date: 18.09.2023

Subject: Standard Operating Procedure for Protection System Audit- reg.

Standard Operating Procedure (S.O.P) for Protection System Audit is enclosed herewith for your kind information and necessary action.

Enclosure: As above

Yours faithfully,

सत्येंद्र 18.09.23

(सत्येंद्र कु. दोतान / **Satyendra Kr. Dotan)**
Director, NPC & Member Convener (Sub-group)

Standard Operating Procedure for Protection System Audit

A protection system audit is a review and evaluation of the protection systems of a substation with an objective to verify whether required protection systems have been put in place at station by the concerned utility, and to recommend suitable measures to provide for the same.

Ministry of Power, had constituted a Committee under the Chairmanship of Chairperson CEA to examine the grid disturbances on the 30th and the 31st July 2012. One of important recommendation of the committee was conducting of extensive audit of protection system. List of sub-stations where protection audit is to be undertaken on priority basis was prepared and audited across the country. This was the beginning of protection audit across the country and large number of important 400 and 220kV substations were audited.

Keeping in view the importance of Protection System Audit, Standard Operating Procedure has been prepared for the reference purpose. It will provides a step-by-step guide for RPCs to follow during the audit process.

1. All users shall conduct third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) once in five years or earlier as advised by the respective RPC.
2. After analysis of any event, each RPC shall identify a list of substations / and generating stations where third-party protection audit is required to be carried out and accordingly advise the respective users to complete third party audit within three months.
3. The third-party protection audit report shall contain information sought in the format as per IEGC 2023 and its further amendments.
4. Annual audit plan for the next financial year shall be submitted by the users to their respective RPC by 31st October. The users shall adhere to the annual audit plan and report compliance of the same to their respective RPC.

5. Criteria for choosing substations for third party protection audit:

The following criteria are generally applied during choosing a substation for protection audit.

i. Substations/ Generating (SS/ GS) stations with frequent grid incidences or frequent maloperations or any grid occurrence in any substation which affected supply to large number of substations and caused significant load loss. In this case, third-party protection audit may be carried out within three months or as decided in the Protection sub-Committee Meeting of the RPC.

ii. Based on request received from utilities for arranging protection audit in certain stations (e.g. for availing PSDF funding for Renovation and Upgradation of Protection system). In this case, preferably third-party protection audit may be carried out within three months.

iii. Important 400kV and 765kV substations (SS) / Generating stations (GS) including newly commissioned SS/ GS. In this case, third-party protection audit may be carried out at a frequency decided in the Protection sub-Committee Meetings of respective RPCs.

6. Protection audit Procedure:

i. After identification of stations for protection audit, the same is communicated to the owner utility seeking nomination of one nodal officer for each Station.
ii. The nodal officer shall provide the details of substation for preparation of protection audit format (in line with IEGC and subsequent amendments).
iii. Meanwhile nominations shall be sought from all utilities to form regional teams for audit. Regional teams comprising of engineers from various utilities /utility (other than the team of host State) of the region shall be formed based on the no. of SS to be audited. (Each team may consists of 3 or 4 engineers from utilities other than the host utility and at the maximum a team will be able to audit 3 to 4 stations in 7-9 days or so)
iv. Once the team details and list of stations to be audited is finalised the details of nodal officers, team members , list of stations to be audited by each team is shared to all for further coordination regarding planning and conduction of audit.
v. Based on the inputs received from nodal officer regarding the list of elements in the substation to be audited, protection audit formats shall be prepared by RPC (in line with IEGC) and circulated to nodal officer. The nodal officer along-with the substation engineers shall fill the audit format and furnish the same along-with various attachments sought as part of the audit format within a week or so. List of attachments shall be given in the covering page of audit format.
vi. The filled in audit format along-with the received annexures shall then forwarded to the audit team by the nodal officer and any further clarification regarding the format or attachments shall be taken up by the audit team with the nodal officer under intimation to RPC.
vii. The SS/ GS shall be audited based on the data filled in audit format checking for compliance of Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) Regulations, 2022, Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 & CEA (Measures relating to Safety and Electric Supply) Regulations, 2010, CERC regulations and amendments to the same, approved guidelines of RPC, best practices in industry, report of the Task Force on Power System Analysis Under Contingencies and as per the "Model Setting Calculations For Typical IEDs Line Protection Setting Guide Lines Protection System Audit Check List Recommendations For Protection Management Sub-Committee on Relay/Protection Under Task Force For Power System Analysis Under Contingencies" etc.
viii. After conduct of audit, the shortcomings observed in the audit shall be discussed in detail with the nodal officer and substation engineers and recommendations are finalised.
ix. The filled in audit format along-with the recommendations and attachments shall be finalised and final protection audit report RPC (in line with IEGC) shall be compiled.
x. Final protection audit report shall be discussed in Protection Coordination Committee and recommendations may be accepted/deleted/modified as per the scope of audit and compliance of various regulations/guidelines etc.
xi. The recommendations of all SS audited shall be inserted into audit recommendations database and update regarding recommendations shall be sought from respective utilities.
xii. Action plan for rectification of deficiencies detected, if any, shall be submitted to the respective RPC and RLDC and monthly progress will be submitted.

xiii. The travel expense from place of duty to Substation/Generating Station to be audited shall be borne by respective Auditor (Parent Organisation). The expense for boarding, lodging any travel of the team during the audit period shall be borne by the organisation owning the Substation/Generating Station.

*****

भारत सरकार
Government of India
विद्युत मंत्रालय
Ministry of Power
उत्तर क्षेत्रीय विद्युत समिति
Northern Regional Power Committee

दिनांक: 06 फ़रवरी, 2024

सेवा में / To,

उ.क्षे.वि.स. के सभी सदस्य (संलग्न सूचीनुसार)
Members of NRPC (As per List)

Subject: Nomination of officer(s) for conducting Third Party Protection Audit of substations in Northern region-reg.

Ref:

1. IEGC 2023
2. Discussion in 48th Protection Sub-Committee (PSC) meeting, held on 11th Oct 2023.

In compliance to clause 15 of IEGC 2023, third party protection audit of each sub-station at 220 kV and above (132 kV and above in NER) is to be conducted once in five years or earlier as advised by the respective RPC. The same was also discussed in 48th Protection Sub-Committee (PSC) meeting, held on 11th Oct 2023.

As per Standard Operating Procedure (S.O.P.) of Protection System Audit circulated (enclosed) by NPC division of CEA, there is requirement for formation of committee at regional level that can do the third party protection audit in Northern region.

In view of above, it is requested to send the nomination of officer(s) related to protection domain (at seo-nrpc@nic.in) with details as below:

Name of officer	Designation	Mobile No.	E-mail Id	Present Posting location

The above nominated officer shall be intimated for 3rd party protection audit of substation of other utilities, as and when required.

Encls: As above

Signed by D. K. Meena
Date: 07-02-2024 10:29:31
Reason: Approved

(डी. के. मीणा)
अधीक्षण अभियंता (संरक्षण)

List of addressee (via mail)

NRPC Members for FY 2023-24

S. No.	NRPC Member	Category	Nominated/ Notified/Delegated Member	E-mail
1	Member (GO&D), CEA	Member (Grid Operation & Distribution), Central Electricity Authority (CEA)	Member (GO&D), CEA	member.god@cea.nic.in
2	Member (PS), CEA	Nodal Agency appointed by the Government of India for coordinating cross-border power transactions	Member (PS), CEA	memberpscea@nic.in
3	CTUIL	Central Transmission Utility	Chief Operating Officer	pcgarg@powergrid.in
4	PGCIL	Central Government owned Transmission Company	Director (Operations)	tyagir@powergrid.in
5	NLDC	National Load Despatch Centre	Executive Director	scsaxena@grid-india.in
6	NRLDC	Northern Regional Load Despatch Centre	Executive Director	nroy@grid-india.in
7	NTPC	Central Generating Company	Director (Finance)	jaikumar@ntpc.co.in
8	BBMB		Chairman	cman@bbmb.nic.in
9	THDC		CGM (EM-Design)	akghildiyal@thdc.co.in
10	SJVN		CMD	sectt.cmd@sjvn.nic.in
11	NHPC		Director (Technical)	rajkumar0610.rkc@gmail.com
12	NPCIL		Director (Finance)	df@npcil.co.in
13	Delhi SLDC	State Load Despatch Centre	General Manager	gmsldc@delhisldc.org
14	Haryana SLDC		Chief Engineer (SO&C)	cesocomml@hvpn.org.in
15	Rajasthan SLDC		Chief Engineer (LD)	ce.ld@rvpn.co.in
16	Uttar Pradesh SLDC		Director	directorsldc@upsldc.org
17	Uttarakhand SLDC		Chief Engineer	anupam_singh@ptcul.org
18	Punjab SLDC		Chief Engineer	ce-sldc@punjabsldc.org
19	Himachal Pradesh SLDC		Chief Engineer	cehpsldc@gmail.com
20	DTL	State Transmission Utility	CMD	cmd@dtl.gov.in
21	HVPNL		Managing Director	md@hvpn.org.in
22	RRVPNL		CMD	cmd.rvpn@rvpn.co.in
23	UPPTCL		Managing Director	md@upptcl.org
24	PTCUL		Managing Director	md@ptcul.org
25	PSTCL		CMD	cmd@pstcl.org
26	HPPTCL		Managing Director	md.tcl@hpmail.in
27	IPGCL	State Generating Company	Managing Director	md.ipgpp@nic.in
28	HPGCL		Managing Director	md@hpgcl.org.in
29	RRVUNL		CMD	cmd@rrvun.com
30	UPRVUNL		Director (Technical)	director.technical@uprvunl.org
31	UJVNL		Managing Director	mdujvnl@ujvnl.com
32	HPPCL		Managing Director	md@hppcl.in
33	PSPCL	State Generating Company & State owned Distribution Company	CMD	cmd-pspcl@pspcl.in
34	DHBVN	State owned Distribution Company (alphabetical rotaional basis/nominated by state govt.)	Director (Projects)	directorprojects@dhbvn.org.in
35	Jaipur Vidyut Vitran Nigam Ltd.		Managing Director	md@jvvnl.org
36	Madhyanchal Vidyut Vitaran Nigam Ltd.		Managing Director	mdmvvnl@gmail.com
37	UPCL		Managing Director	md@upcl.org
38	HPSEB		Managing Director	md@hpseb.in
39	Prayagraj Power Generation Co. Ltd.	IPP having more than 1000 MW installed capacity	Head (Commercial & Regulatory)	sanjay.bhargava@tatapower.com
40	Aravali Power Company Pvt. Ltd		CEO	SRBODANKI@NTPC.CO.IN
41	Apraava Energy Private Limited		CEO	rajneesh.setia@apraava.com
42	Talwandi Sabo Power Ltd.		COO	Vibhav.Agarwal@vedanta.co.in
43	Nabha Power Limited		CEO	sk.narang@larsentoubro.com
44	Lanco Anpara Power Ltd		President	sudheer.kothapalli@meilanparapower.com
45	Rosa Power Supply Company Ltd		Station Director	Hirday.tomar@relianceada.com
46	Lalitpur Power Generation Company Ltd		Managing Director	vksbankoti@bajajenergy.com
47	MEJA Urja Nigam Ltd.		CEO	hopmeja@ntpc.co.in
48	Adani Power Rajasthan Limited		COO, Thermal, O&M	jayadeb.nanda@adani.com
49	JSW Energy Ltd. (KWHEP)		Head Regulatory & Power Sales	jyotiprakash.panda@jsw.in
50	RENEW POWER	IPP having less than 1000 MW installed capacity (alphabetical rotaional basis)	CEO	sumant@renew.com
51	UT of J&K	From each of the Union Territories in the region, a representative nominated by the administration of the Union Territory concerned out of the entities engaged in generation/ transmission/ distribution of electricity in the Union Territory.	Chief Engineer, JKPTCL	sojpdd@gmail.com
52	UT of Ladakh		Chief Engineer, LPDD	cepdladakh@gmail.com
53	UT of Chandigarh		Executive Engineer, EWEDC	elop2-chd@nic.in
54	BYPL	Private Distribution Company in region (alphabetical rotaional basis)	CEO	Amarjeet.Sheoran@relianceada.com
55	Bikaner Khetri Transmission Limited	Private transmission licensee (nominated by cetral govt.)	Vice-President	nihar.raj@adani.com
56	Adani Enterprises	Electricity Trader (nominated by central govt.)	Head Power Sales & Trading	anshul.garg@adani.com
57	Ajmer Vidyut Vitran Nigam Ltd.	Special Invitee	Managing Director	md.avvnl@rajasthan.gov.in

Special Invitees:

RE Holding companies in NR with installed capacity of more than 1000 MW (provsional members as decided in 59th NRPC meeting)

SRPC Guidelines for furnishing the data by the generating stations regarding their primary response

1. Background:

Clauses (1)a of Regulation 12 of the Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) (First Amendment) Regulations, 2023 mandates RPC for issuing of necessary guidelines for furnishing the data by the generating stations regarding their primary response.

Quote

Provided further that transmission deviation charges shall not be levied for the quantum of over-injection for providing primary response by a generating station, subject to verification of such over-injection by concerned RPC:

Provided also that each RPC shall issue necessary guidelines for furnishing the data by the generating stations regarding their primary response.

Unquote

Regulation 30 (8) of CERC IEGC Regulation 2023 states

Quote

The primary response of the generating units shall be verified by the Load Despatch Centres (LDCs) during grid events. The concerned generating station shall furnish the requisite data to the LDCs within two days of notification of reportable event by the NLDC.

Unquote

2. Applicability:

The guidelines shall be applicable to all regional generators of Southern Region.

3. Guidelines:

The following guidelines shall be followed by the respective entities

a. The generator shall submit the claim for RTDA exemption by 5th of the month for the previous month to SRLDC & SRPC. Provided that in case of no data/claim is received by the 5th of the month, it shall be treated as no claim for the previous month.

b. The following data will be furnished by generator:

- **i.** Date & Start Time & End Time of the primary response event
- **ii.** Frequency profile (clearly indicating triggering of Primary Response) at Generator Terminal with smallest scan rate (say, 500 msec intervals) available with generator one minute prior to Start Time and one minute beyond End Time
- **iii.** Generation profile at Generator Terminal of all the units with smallest scan rate available with generator one minute prior to Start Time and one minute beyond End Time
- iv. Primary Response Input to Governor of Generator for all the units with smallest scan rate available with generator for the above period.
- **v.** Energy claim for RTDA exemption for the 15-minute Block due to primary response along-with computations. The claim at Generator Terminal of all the units would be translated to Ex-bus by the Generator by using the normative/declared Aux Con to SRLDC.

vi. SCADA data viz Time, Frequency, and actual MW at Generator Terminal. The SCADA data shall be submitted for 15 minutes duration covering 5 minutes before the Start Time, Actual minutes of Primary Response (5 minutes) and 5 minutes beyond End Time.

Note: The time between start and end frequency for primary response triggering shall not exceed 15 seconds for the purpose of computing the response.

c. SRLDC shall check the frequency pattern from the nearest PMU and confirm the time of the event, frequency dip, and rate of change of frequency. SRLDC shall check the FGMO/RGMO status as per SCADA & confirm the status. SRLDC would verify the claim keeping in view all the inputs received from Generator. SRLDC would recommend the energy which can be exempted along-with reasons for deduction in claim, if any by 15th of the month.

d. SRPC & SRLDC shall consider the effect of primary response in RTDA only if the following is satisfied. Let us consider the 't' as the time block in which the primary response claim is made by the generator.
   i. Generator has submitted the claim with full details as envisaged on time.
   ii. SRLDC has confirmed the primary response event and the dip in frequency is more than 0.03Hz.
   iii. FGMO is in enabled condition as per SRLDC SCADA data & confirmed by SRLDC.

e. The energy claim by the generator due to the primary response shall be limited to 5 %/ 10 % of MCR (Ex-bus), as applicable, for the purpose of RTDA as area under the curve approximated by the formula below:

$$[0.5 * (5/10)] * \frac{\text{Total MCR(Ex-bus)} * \text{Change in frequency} * 100}{(\text{Droop} * 50)}$$

f. SRPC would consider the SRLDC recommended energy for RTDA exemption.

*****

RAJASTHAN RAJYA VIDYUT PRASARAN NIGAM LTD
[Corporate Identity Number CIN: U40109RJ2000SGC016485]
(AN ISO 9001:2015 CERTIFIED COMPANY)
Regd. Office: VidyutBhawan, Janpath ,Jyoti Nagar, Jaipur 302005

OFFICE OF THE SUPERINTENDING ENGINEER (Automation, N/M &SP)
Rom No.323, VidyutBhawan, Janpath ,Jyoti Nagar, Jaipur (Tel.No. 2740752 / Fax No. 2740794)
Email: se.pp@rvpn.co.in, website: www.http://emergy.rajasthan.gov.in/rvpnl

No. RVPN/ SE(AUTOMATION)/ XEN(PP&D)/ AE-2(P&P)/ D. 137 Jaipur Date 18.01.2024

The General Manager (NRLDC)
Grid Controller of India Limited,
18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai
New Delhi-110016.

Sub:-Proposed SPS for 2x500 MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh.

On the above captioned subject, please find attached the proposed SPS for 2x500 MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh with request to please include in the next meeting of OCC for discussion and necessary approval of the OCC forum. This SPS has been finalized after detailed deliberations with the officers of RVPN, and RVUN in a meeting held on dated 09.01.2024.

Encl: As above

(S.C. Meena)
Chief Engineer (PP&D)
RVPNL, Jaipur.

Copy to the following for information and necessary action please-

1. The Member Sceratry (NRPC), 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016
2. The Chief Engineer (LD/T&C/MPT&S/O&M), RVPN, Jaipur/Jodhpur/Jodhpur/RVUN-RGTPP.
3. The Chief Engineer, Power System Planning & Appraisal-I Division, CEA, Sewa Bhawan, RK Puram-I, New Delhi-110066
4. The Superintending Engineer (Operation), NRPC, 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016.
5. The System Operator-2, NRLDC, 18-A, Shaheed Jeet Singh Marg, Katwaria Sarai, New Delhi-110016

Encl: As above

Chief Engineer (PP&D)
RVPNL, Jaipur

Signature valid
RajKaj Ref 5349257
Digitally signed by S[illegible]sh Chand Meena
Designation : [illegible] Engineer
Date: 2024.01.[illegible]0:38:18 IST
Reason: Approved

Proposed SPS for 2x500 MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh

1. Details of Installed ICTs and Transmission Lines

- There are 2x500MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh. These ICTs are used to stepped up the RE power to evacuate through 400 kV lines to Bhadla and Jaisalmer during the RE generation hours. These ICTs are used to step down the power during off RE generation hours to meet load demand in the Ramgarh, Amarsagar and Dechu region.
- Peak loads are observed on the 2x500MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh during the peak RE generation hours.
- Load sharing on both the ICTs is almost equal and each ICT is loaded near to 360 MVA.
- Power map of transmission system at 400 kV GSS Ramgarh is shown in Figure 1.

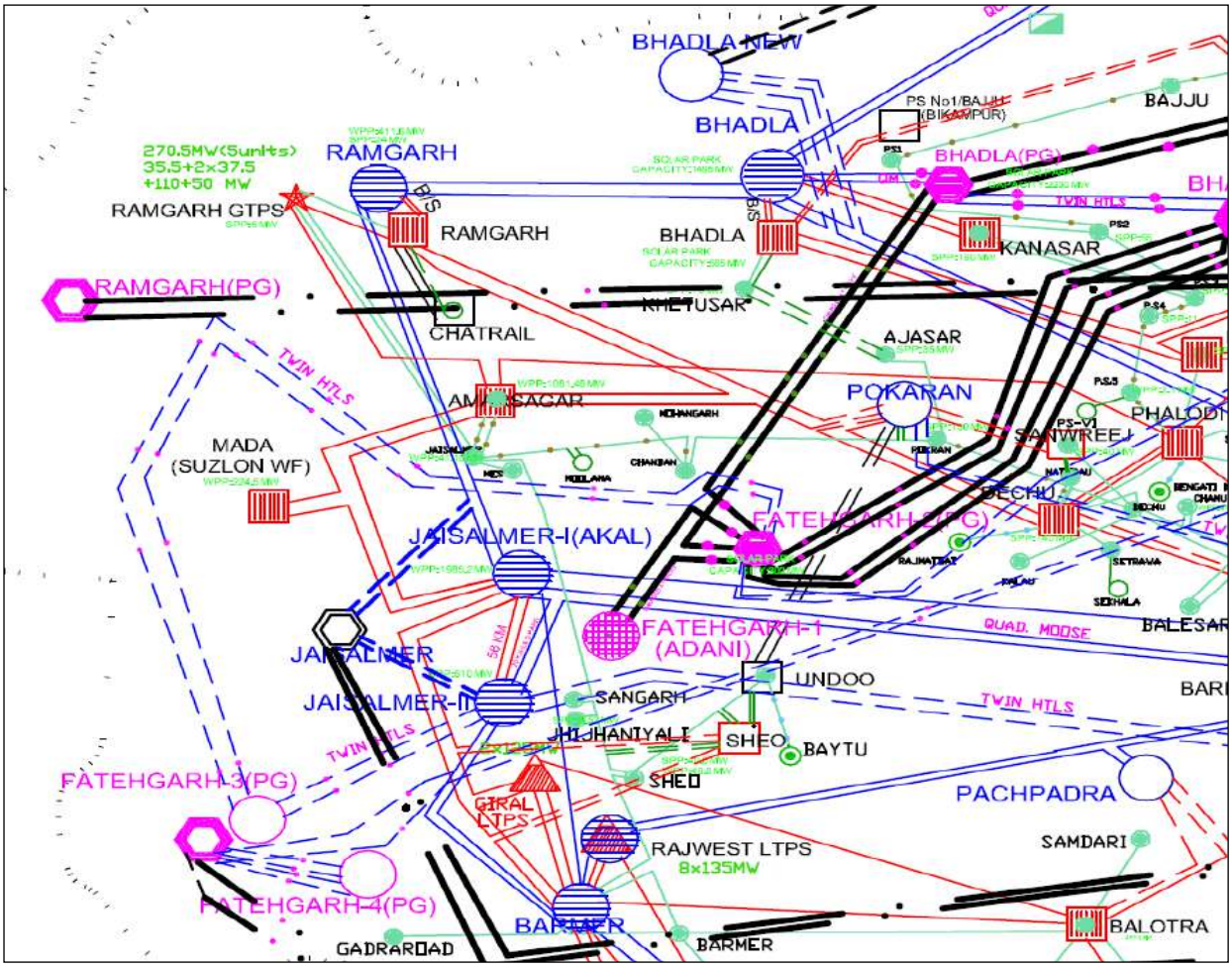


Fig. 1 Power map of Ramgarh region

2. Load Details on ICTs and Transmission Lines Associated with 400 kV GSS Ramgarh

- 220 kV Main Bus of the 400 kV GSS Ramgarh is common with the 220 kV GSS Ramgarh and integrated through Bus-sectionalizer. There is no outgoing 220 kV feeders from the 400kV GSS Ramgarh. RE generators are not connected on 400 kV GSS Ramgarh.

- Peak Loads recorded on the 400/220 kV ICTs and 220 kV lines associated with 400 kV GSS Ramgarh and 220 kV GSS Ramgarh are detailed below in Table 1. RE power injected by the lines to 220 kV Bus of 220 kV GSS Ramgarh is also mentioned in the Table 1.

Table 1: Load Details on ICTs and Transmission Lines Associated with 400 kV GSS Ramgarh and 220 kV GSS Ramgarh

S. No.	Name of 220 kV line/ILTs	Peak Load (MVA)	RE Generation	SPS Groups	Remark
1	500 MVA, 400/220 kV ICT-II	364			
2	500 MVA, 400/220 kV ICT-III	361			
3	400 kV Ramgarh-Bhadla Ckt-I Line	532			
4	400 kV Ramgarh-Bhadla Ckt-II Line	530			
5	400 kV Ramgarh -Akal Ckt-I Line	531			
6	400 kV Ramgarh -Akal Ckt-II Line	490			
7	220 kV Ramgarh (220 kV GSS)-Dechu line	244			
8	220 kV Ramgarh (220 kV GSS)-Amarsagar line	220		**SPS Group-2**	
9	220 kV Ramgarh (220 kV GSS)-RGTPS line	311			Thermal Generation line
10	132 kV Ramgarh (220 kV GSS)-RGTPS line	84			
11	220 kV Ramgarh (220 kV GSS)-TEJWA (Suzlon) line	204	201 MW	**SPS Group-1**	
12	220 kV Ramgarh (220 kV GSS)-Greenko (Tanoto) line	120	121 MW		
13	132 kV Ramgarh (220 kV GSS)-Nidhi (Mytra) line-I	39	90.1 MW		
14	132 kV Ramgarh (220 kV GSS)-Nidhi (Mytra) line-II	50			
15	160 MVA, 220/132 KV Transformer	114			
16	20/25 MVA, 220/132 kV Transformer	16			

- 220 kV Ramgarh (220 kV GSS)-RGTPS line and 132 kV Ramgarh (220 kV GSS)-RGTPS line evacuate power from RGTPS to 220 kV GSS Ramgarh during the period of high RE generation scenario.

3. Proposed SPS for ICTs at 400 kV GSS Ramgarh

- One tripping has been observed on 2x500MVA, 400/220kV at 400 kV GSS Ramgarh for the period of last one year.
- After detailed analysis of above loading conditions, RE power injection & grid interconnection issues, following lines are considered for tripping as soon as any one of the 2x500 MVA, 400/220 kV ICTs is tripped on fault/protection or overloading of the ICTs is observed:-

1. **SPS Group-1: Trip command is generated to trip the following lines when 100% loading of the ICT-1 or ICT-2 is reached due to tripping of any one of the ICT or**

overloading of the ICTs when power is stepping up from 220 kV voltage level to 400 kV voltage to evacuate the generation:-

- **220 kV Ramgarh (220 kV GSS)-TEJWA (Suzlon) line**
- **220 kV Ramgarh (220 kV GSS)-Greenko (Tanoto) line**

Implementation of SPS Logic-1:- This command will be implemented by taking reference from directional overcurrent relays of the 400/220 kV ICTs at 400 kV GSS Ramgarh. Trip command will be initiated if current flows from LV side to HV side and exceed 100% loading of the ICTs.

2. **SPS Group-2: Trip command is generated to trip the following lines when 105% loading of the ICT-1 or ICT-2 is reached due to tripping of any one of the ICT or overloading of the ICTs when power is stepping down from 400 kV voltage level to 220 kV voltage to cater load demand in the region:-**

   - **220 kV S/C Ramgarh (220 kV GSS)-Amarsagar line**

   Implementation of SPS Logic-2:- This command will be implemented by taking reference from directional overcurrent relays of the 400/220 kV ICTs at 400 kV GSS Ramgarh. Trip command will be initiated if current flows from HV side to LV side and exceed 105% loading of the ICTs.

- Tripping commands for 220 kV lines are to be taken from directional overload relay/over current back up relay on 400 kV and/or 220 kV Side of ICTs considering 100% loading during the condition of stepping up the power and 105% loading of the ICTs (500 MVA) during the condition of stepping down the power with appropriate time delay (3 to 5 second) to avoid tripping during the through faults. Further, time grading of the backup elements may also be correlated for time delay of overloading.
- Schematic diagram for tripping of 220 kV lines included in SPS for 2x500 MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh is shown below in Figure 2.

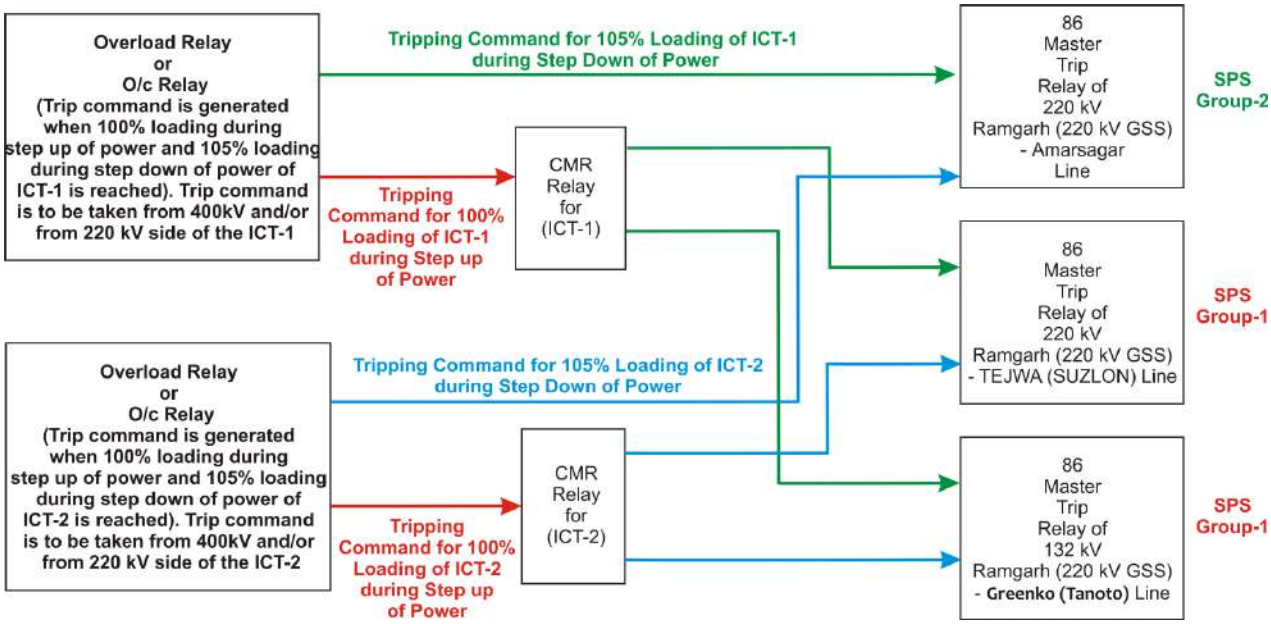


Fig. 2 Schematic diagram of proposed logics for SPS of 2x500 MVA, 400/220 kV ICTs at 400 kV GSS Ramgarh

- To facilitate the RE generators for evacuation of RE powers of all generators in proportionate quantum, the tripped RE lines may be re-connected after curtailing the RE generation from all generators in such a quantum to maintain loadings on the healthy 400/220 kV ICTs within permissible limits.

REQUEST FOR PROPOSAL DOCUMENT

FOR

SELECTION OF TRANSMISSION SERVICE PROVIDER

THROUGH TARIFF BASED COMPETITIVE BIDDING PROCESS

TO

ESTABLISH TRANSMISSION SYSTEM

FOR

"Construction of 765/400/220 kV GIS Substation, Meerut with associated lines and 400/220/132 kV GIS Substation, Simbhaoli with associated Transmission lines"

ISSUED BY

PFC CONSULTING LTD.
(A wholly owned subsidiary of Power Finance Corporation Ltd.)

PFC CONSULTING LIMITED
(A wholly owned subsidiary of Power Finance Corporation Ltd.)

Corporate Office:
9th Floor, A-Wing, Statesman House
Connaught Place, New Delhi – 110 001

June 17, 2019

1. INTRODUCTION

1.1 U.P Power Transmission Corporation Ltd. (UPPTCL) vide its letter no. 62/PS/DIR(W&P)/PTCL/Meerut&Simbhavali dated March 06, 2019 has notified PFC Consulting Limited as Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish transmission system for "**Construction of 765/400/220 kV GIS Substation, Meerut with associated lines and 400/220/132 kV GIS Substation, Simbhaoli with associated Transmission lines**" through tariff based competitive bidding process.

1.2 The BPC now invites Bids for selection of Transmission Service Provider to establish the Transmission System as detailed below in the table for**"Construction of 765/400/220 kV GIS Substation, Meerut with associated lines and 400/220/132 kV GIS Substation, Simbhaoli with associated Transmission lines"**(hereinafter referred to as 'Project') on build, own, operate and maintain basis, and to provide transmission service on a long term basis to the Long Term Transmission Customers, as listed out in Annexure-1 of this RFP. The BPC reserves the right to add, delete or replace any Long Term Transmission Customer(s) to the list.

(A) 765/400/220kV GIS substation, Meerut with associated lines :-

Sl. No.	Name of the transmission element	Completion Target	Conductor per phase
1.	Construction of 765/400/220kV GIS substation (2x1500+2x500MVA),Meerut with following Bays :- (i) 765kV, 1500MVA ICT Bay - 02 nos. (ii) 765kV, 240MVAR Bus Reactor Bay - 01 no. (iii) 400kV, 1500MVA ICT Bay - 02 nos. (iv) 400kV, 500MVA ICT Bay - 02 nos. (v) 400kV, 80MVAR Bus Reactor Bay - 01 no. (vi) 220kV, 500MVA ICT Bay - 02 nos. (vii) 765kV Feeder Bay - 02 nos. (viii) 400kV Feeder Bay - 04 nos. (ix) 220kV Feeder Bay - 06 nos.	31.08.2021	
2.	Construction of following additional bays for future extension :- (i) 765kV Feeder Bay - 02 nos. (ii) 400kV Feeder Bay - 02 nos. (iii) 220kV Feeder Bay - 04 nos. (iv) 765kV T/F Bay - 01 no. (v) 400kV T/F Bay - 02 nos. (vi) 220kV T/F Bay - 01 no.		

3.	LILOof 765kV S/C Gr. Noida (765kV) – Hapur (765kV) (WUPPTCL) at 765kV substation, Meerut	31.08.2021	**Quad BERSIMIS ACSR** The transmission lines shall have to be designed for a maximum operating conductor temperature of 85 deg C for ACSR.

B) 400/220/132kV GIS substation, Simbhaoli with associated lines:-

Sl. No.	Name of the transmission element	Completion Target	Conductor per phase
1.	Construction of 400/220/132kV GIS substation (2x500+2x200MVA), Simbhaoli with following Bays:- i. 400kV ICT Bay - 02 nos. ii. 400kV, 80MVAR Bus Reactor Bay - 01 no. iii. 220kV ICT Bay - 04 nos. iv. 132kV ICT Bay - 02 nos. v. 400kV Feeder Bay - 04 nos. vi. 220kV Feeder Bay - 02 nos. vii. 132kV Feeder Bay - 02 nos.	31.05.2021	
2.	Construction of following additional bays for future extension :- i. 400kV Feeder Bay - 02 nos. ii. 220kV Feeder Bay - 04 nos. iii. 132kV Feeder Bay - 04 nos. iv. 400kV T/F Bay - 01 no. v. 220kV T/F Bay - 02 nos. vi. 132kV T/F Bay - 01 no.		
3.	Simbhaoli (400kV) – Muradnagar-II (Ghaziabad) 400kV DC Line (Twin Moose)	31.05.2021	**Twin Moose**
4.	Simbhaoli (400kV) – Meerut (765kV) 400kV DC Line (Twin Moose)	31.08.2021	**Twin Moose**

Note:

(1) In case of any augmentation work in future at the substation/line being developed by the TSP, no supervision charges shall be payable to TSP.

(2) Land of 765kV Meerut and 400kV Simbhaoli substation shall be arranged by the developer at its own cost, keeping following points in consideration:-

TRANSMISSION SERVICE AGREEMENT

FOR

PROCUREMENT OF TRANSMISSION SERVICES

FOR

TRANSMISSION OF ELECTRICITY THROUGH TARIFF BASED COMPETITIVE BIDDING

FOR

"Construction of 765/400/220 kV GIS Substation, Meerut with associated lines and 400/220/132 kV GIS Substation, Simbhaoli with associated Transmission lines"

BETWEEN

Pashchimanchal Vidhut Vitran Nigam Limited

AND

Purvanchal Vidhut Vitran Nigam Limited

AND

Dashinanchal Vidhut Vitran Nigam Limited

AND

Madhyanchal Vidhut Vitran Nigam Limited

AND

Kanpur Electricity Supply Co. Limited

AND

Meerut-Simbhavali Transmission Limited

Schedule : 3

Scheduled COD

[Note: As referred to in the definition of "Element", "Scheduled COD", and in Articles 3.1.3 (c), 4.1 (b) and 4.3 (a) of this Agreement]

All Elements of the Project are required to be commissioned progressively as per the schedule given in the following table;

Sl. No.	Name of the Transmission Element	Scheduled COD from Effective Date	Percentage of Quoted Transmission Charges recoverable on Scheduled COD of the Element of the Project	Element(s) which are pre-required for declaring the commercial operation (COD) of the respective Element
A. 765/400/220kV GIS substation, Meerut with associated lines :-				
(1)	Construction of 765/400/220kV GIS substation, Meerut with following Bays :- (i) 765kV, 1500MVA ICT Bay - 02 nos. (ii) 765kV, 240MVAR Bus Reactor Bay - 01 no. (iii) 400kV, 1500MVA ICT Bay - 02 nos. (iv) 400kV, 500MVA ICT Bay - 02 nos. (v) 400kV, 80MVAR Bus Reactor Bay - 01 no. (vi) 220kV, 500MVA ICT Bay - 02 nos. (vii) 765kV Feeder Bay - 02 nos. (viii) 400kV Feeder Bay - 04 nos. (ix) 220kV Feeder Bay - 06 nos.	31.08.2021	41.49%	Elements at Sl. No. 1 &3 shall be required simultaneously.

Pashchimanchal Vidyut Vitran Nigam Limited

Madhyanchal Vidyut Vitran Nigam Limited

Purvanchal Vidyut Vitran Nigam Limited

Dashinanchal Vidyut Vitran Nigam Limited

Kanpur Electricity Supply Co. Limited

Meerut-Simbhavali Transmission Limited

(2)	Construction of following additional bays for future extension :- (i) 765kV Feeder Bay - 02 nos. (ii) 400kV Feeder Bay - 02 nos. (iii) 220kV Feeder Bay - 04 nos. (iv) 765kV T/F Bay - 01 no. (v) 400kV T/F Bay - 02 nos. (vi) 220kV T/F Bay - 01 no.			
(3)	LILO of 765kV S/C Gr. Noida (765kV) – Hapur (765kV) (WUPPTCL) at 765kV substation, Meerut		18.91%	
B. 400/220/132kV GIS substation, Simbhaoli with associated lines:-				
(1)	Construction of 400/220/132kV GIS substation, Simbhaoli with following Bays:- vii. 400kV ICT Bay - 02 nos. viii. 400kV, 80MVAR Bus Reactor Bay - 01 no. ix. 220kV ICT Bay - 04 nos. x. 132kV ICT Bay - 02 nos. xi. 400kV Feeder Bay - 04 nos. xii. 220kV Feeder Bay - 02 nos. xiii. 132kV Feeder Bay - 02 nos.	31.05.2021	20.79%	Elements at Sl. No. 1 &3 shall be required simultaneously.

Pashchimanchal Vidyut Vitran Nigam Limited

Madhyanchal Vidyut Vitran Nigam Limited

Purvanchal Vidyut Vitran Nigam Limited

Dashinanchal Vidyut Vitran Nigam Limited

Kanpur Electricity Supply Co. Limited

Meerut-Simbhavali Transmission Limited

(2)	Construction of following additional bays for future extension :- vii. 400kV Feeder Bay - 02 nos. viii. 220kV Feeder Bay - 04 nos. ix. 132kV Feeder Bay - 04 nos. x. 400kV T/F Bay - 01 no. xi. 220kV T/F Bay - 02 nos. xii. 132kV T/F Bay - 01 no.			
(3)	Simbhaoli (400kV) – Muradnagar-II (Ghaziabad) 400kV DC Line (Twin Moose)		13.24%	
(4)	Simbhaoli (400kV) – Meerut (765kV) 400kV DC Line (Twin Moose)	31.08.2021	5.57%	

The payment of Transmission Charges for any Element irrespective of its successful commissioning on or before its Scheduled COD shall only be considered after successful commissioning of the Element(s) which are pre-required for declaring the commercial operation of such Element as mentioned in the above table.

Note:

(1)In case of any augmentation work in future at the substation/line being developed by the TSP, no supervision charges shall be payable to TSP.

(2)Land of 765kV Meerut and 400kV Simbhaoli substation shall be arranged by the developer at its own cost, keeping following points in consideration:-

(d) Land for 765kV substation Meerut shall be procured in the vicinity of village Asifabad, Kila Parikshitgarh under Hastinapur Vidhan Sabha area.

(e) Land for 400kV substation Simbhavli shall be procured in the vicinity of village Nawada Khurd Khadar under Garh Mukteshwar Vidhan Sabha area.

Pashchimanchal Vidyut Vitran Nigam Limited

Madhyanchal Vidyut Vitran Nigam Limited

Purvanchal Vidyut Vitran Nigam Limited

Dashinanchal Vidyut Vitran Nigam Limited

Kanpur Electricity Supply Co. Limited

Meerut-Simbhavali Transmission Limited

(f) Selection of land should be such that the variation in line lengths of different voltage level should not exceed ±10%.

(3)The developer shall complete the substation in all respect with main bays including ICT's, PLCC & FOTE equipments.

(4) 765kv LILO Line shall be constructed as 2No.765kv single circuit lines.

However construction of future additional bays shall be in the scope of developer and shall complete the bays in all respect except ICT's and PLCC equipment.

Scheduled COD for overall Project : August 31, 2021.

Pashchimanchal Vidyut Vitran Nigam Limited

Madhyanchal Vidyut Vitran Nigam Limited

Purvanchal Vidyut Vitran Nigam Limited

Dashinanchal Vidyut Vitran Nigam Limited

Kanpur Electricity Supply Co. Limited

Meerut-Simbhavali Transmission Limited

E-Mail /Website

भारत सरकार केंद्रीय विद्युत प्राधिकरण दक्षिण क्षेत्रीय विद्युत समिति 29, रेसकोर्स क्रास रोड बेंगलूर- 560 009		Government of India Central Electricity Authority **Southern Regional Power Committee** 29, Race Course Cross Road Bengaluru-560 009
Email:mssrpc-ka@nic.in		Phone: 080-22287205

सं/No.	SRPC/42(SRPC)/2022/ 1668-1716	दिनांक/ Date	**30th June 2022**

सेवा में / To:

(वितरण सूची के अनुसार / *As per the distribution list)*

विषय : एस आर पी सी की 42 वी / टी सी सी की 40 वी बैठकों के संबंध मे ।

Subject: Minutes of the 42nd Meeting SRPC/ 40th Meeting of TCC-reg.

महोदय /महोदया
Sir/Madam,

दिनांक 4 जून 2022 को एस आर पी सी की 42 वीं बैठक एवं 3 जून 2022 को टीसीसी की 40 वीं बैठक बेंगलुरु में आयोजित के कार्यवृत संगलग्न हैं । द क्षे वि स के वेबसाईट (https://www.srpc.kar.nic.in) में कार्यवृत अपलोड किए गए हैं । अनुसंगलक वेबसाईट से डाउनलोड किए जा सकते हैं।

Please find enclosed Minutes of 42nd Meeting of SRPC held on 4th June 2022 and 40th Meeting of TCC on 3rd June 2022 at Bengaluru. The MoM is uploaded on SRPC website (https://www.srpc.kar.nic.in). The Annexure may please be downloaded from the SRPC website.

धन्यवाद / Thanking you,

भवदीय/Yours faithfully,

(**असित सिंह /Asit Singh**)
सदस्य सचिव/Member Secretary

वितरण सूची / *Distribution List:*

A. Members of SRPC:

1) Shri D Prabhakar Rao, Chairperson SRPC, CMD, TSTRANSCO & TSGENCO, Hyderabad
2) Shri B K Arya, Member (GO & D), CEA, New Delhi.
3) Dr Srikanth Nagulapalli, CMD, APTRANSCO, Vijayawada
4) Shri B Sreedhar, Managing Director, APGENCO, Vijayawada
5) Shri AKV Bhaskar, Director (Grid &Tr.Mgmt), APTRANSCO, Vijayawada
6) Shri Haranatha Rao, CMD, APSPDCL, Tirupati
7) Dr N Manjula, Managing Director, KPTCL, Bengaluru
8) Shri V Ponnuraj, Managing Director, KPCL, Bengaluru
9) Shri V Krishnappa, Managing Director, PCKL, Bengaluru
10) Shri G R Chandrashekaraiah , Director (Transmission), KPTCL, Bengaluru
11) Shri James Philip, Chief Engineer (E), SLDC, KPTCL, Bengaluru
12) Dr B Ashok,CMD, KSEBL, Thiruvananthapuram
13) Dr S R Anand (T, SO, P & S)), KSEBL, Thiruvananthapuram
14) Shri C Suresh Kumar, Director (Distribution & SCM), KSEBL, Thiruvananthapuram
15) Shri Siji Jose, Director (Generation -Electrical), KSEBL, Thiruvananthapuram
16) Shri Rajesh Lakhoni, CMD, TANGEDCO, Chennai
17) Shri R Ethiraj, Managing Director, TANTRANSCO, Chennai
18) Shri M Senthilvel, Director (Operation), TANTRANSCO, Chennai
19) Shri M Ramachandran, Director (Transmission Projects), TANTRANSCO, Chennai
20) Shri M Sivalingarajan, Director (Distribution), TANGEDCO, Chennai
21) Shri T Jagath Reddy, Director(Tr), TSTRANSCO, Hyderabad
22) Shri G Raghuma Reddy, CMD, TSSPDCL, Hyderabad
23) Dr T Arun, Secretary (Power), Govt. of Puducherry, Puducherry
24) Director (Operation), PGCIL, Gurugram
25) Shri P C Garg, COO, CTUIL, Gurugram
26) Shri C K Mondal, Director (Commercial), NTPC, New Delhi
27) Director (Power), NLCIL, Neyveli
28) Shri M Sankaranarayanan, Director (Finance), NPCIL, Mumbai
29) Shri Kedar Ranjan Pandu, CEO, NTECL, Vallur
30) Shri Jayadeb Nanda, Chief Operating Officer (O&M), UPCL, Bengaluru
31) Shri Jyotiprakash Panda, Head-Regulatory & Power Sales, JSWEL, New Delhi
32) Shri Kondas Kumar, CEO, NTPL, Tuticorin
33) Shri Vipul Tuli, Managing Director, SEIL, Gurugram
34) Shri Bhavani Prasad, Business Head,, ITPCL, Chennai
35) Shri Venugopal Keshanakurthy, CEO, HNPCL, Hyderabad
36) Shri Rajib K Mishra, CMD (Addl Charge) and Director, PTC India Ltd., New Delhi
37) Shri S S Barpanda, Director (Market Operations), POSOCO, New Delhi
38) Shri S P Kumar, Executive Director, SRLDC, POSOCO, Bengaluru

B. Members of TCC:

1) Shri T Jagath Reddy, **Chairperson (TCC) &** Director (Tr.), TSTRANSCO, Hyderabad
2) Shri AKV Bhaskar, Director (Grid &Tr.Mgmt), APTRANSCO, Vijayawada
3) Shri G Chandrasekhara Raju, Director (Thermal), APGENCO, Vijayawada
4) Shri N V S Subbaraju, Director (Operations), APSPDCL, Tirupati
5) Shri G R Chandrashekaraiah, Director (Transmission), KPTCL, Bengaluru
6) Shri James Philip, Chief Engineer (E), SLDC, KPTCL, Bengaluru
7) Shri K S Prasanna, Additional Director (Projects), PCKL, Bengaluru
8) Shri Narendra Kumar, Technical Director, KPCL, Bengaluru
9) Shri S R Anand (T, SO, P & S)), KSEBL, Thiruvananthapuram
10) Shri C Suresh Kumar, Director (Distribution & SCM), KSEBL, Thiruvananthapuram
11) Shri Siji Jose, Director (Generation -Electrical), KSEBL), KSEBL, Thiruvananthapuram
12) Shri R Ethiraj, Managing Director, TANTRANSCO, Chennai
13) Shri M Senthilvel, Director (Operation), TANTRANSCO, Chennai
14) Shri M Ramachandran, Director (Transmission Projects), TANTRANSCO, Chennai
15) Shri M Sivalingarajan, Director (Distribution), TANGEDCO, Chennai
16) Shri B Narsinga Rao, Director (Grid Operations), TSTRANSCO, Hyderabad
17) Shri B Lakshmaiah, Director (Thermal),TSGENCO, Hyderabad
18) Shri T Srinivasa, Director (Projects), TSSPDCL, Hyderabad
19) Shri T Chanemougam, Superintending Engineer-cum-HOD, Elec. Dept., Puducherry
20) Shri Naresh Anand, , Regional Executive Director, SRHQ, NTPC, Secunderabad
21) Shri Ashok Pal, Dy.COO, CTUIL, Gurugram
22) Shri Anoop Kumar, Executive Director (SR- I), PGCIL, Secunderabad
23) Shri Anoop Kumar, Executive Director (SR- II), PGCIL, Bengaluru
24) Shri A Ravindran, Executive Director (Thermal), NLCIL, Neyveli.
25) Shri Sandeep Sarwate, Addl. Chief Engineer(Transmission & Electrical), NPCIL, Mumbai
26) Shri P Siva Ramakrishnan, General Manager(O&M), Vallur TPS,NTECL, Vallur
27) Shri K Suryaprakash, VP and Head of Plant, JSWEL
28) Shri Uday Trivedi, Vice President (P & M), UPCL, Bengaluru
29) Shri Ramachandra Bhat, Station Head, IL&FS Tamil Nadu Power Company Limited
30) Shri Kondas Kumar, Chief Executive Officer, NTPL, Tuticorin
31) Shri Raghav Trivedi, Business Head -Thermal, SEIL, Gurugram
32) Shri S Mukharjee, Sr VP (O & M), & Plant Head, HNPCL, Hyderabad
33) Shri Harish Saran, Executive Director(Marketing), PTC India Ltd., New Delhi
34) Shri Hemant Jain, Chief Engineer (GM), CEA, New Delhi
35) Ms Rishika Sharan, Chief Engineer (NPC), CEA, New Delhi
36) Shri S P Kumar, Executive Director, SRLDC, POSOCO, Bengaluru

Copy to

1) Shri Mohit Sighal, Vice President, Coastal Energen Pvt Ltd., Chennai
2) M/s Arunachal Pradesh Power Corporation (P) Ltd (APPCPL), New Delhi

***

भारत सरकार

Government of India

विद्युत मंत्रालय

Ministry of Power

केंद्रीयविद्युत प्राधिकरण

Central Electricity Authority

दक्षिण क्षेत्रीय विद्युत समिति

Southern Regional Power Committee

तकनीकी समन्वय उप समिति एवं दक्षिण क्षेत्रीय विद्युत समिति की बैठकों की कार्यवृत

Minutes of 40th Meeting of TCC / 42nd Meeting of SRPC

Held on

03.06.2022 (TCC) & 04.06.2022 (SRPC)

CONTENTS

Southern Regional Power Committee (SRPC)
Bengaluru

Minutes of the 40th Meeting of TCC & 42nd Meeting of SRPC held at Bengaluru

1. Introduction

1.1 The 40th Meeting of the Technical Coordination Sub-Committee (TCC) of SRPC was held on 03rd June 2022. The meeting was chaired by Shri T Jagath Reddy, Chairperson, TCC & Director (Transmission), TSTRANSCO. The list of participants is at **Annexure-1a.**

1.2 The 42nd Meeting of Southern Regional Power Committee (SRPC) was held on 04th June 2022. The meeting was chaired by Shri D Prabhakar Rao, Chairperson, SRPC and CMD TSTRANSCO & TSGENCO. The list of participants is at **Annexure-1b.** MD, KPTCL vide letter dated 02.06.2022 (**Annexure-1c**) had expressed inability to attend the meeting due to court related exigency works.

1.3 Both the Meetings were under the aegis of M/s JSWEL.

Welcome Address:

I. 40th Meeting of TCC (03rd June 2022)

a) On behalf of JSWEL, **Shri Pritesh Vinay, Director (Finance) JSWEL** welcomed all the delegates to the 40th Meeting of TCC. He mentioned that it is honour and privilege to get an opportunity to host the 40th Meeting of TCC and 42nd Meeting of SRPC. Due to restrictions of COVID-19 pandemic there were no physical meetings since long and this meeting could array a platform for all of us to meet each other and share experiences and provide memorable moments.

He gave a brief outline of the JSWEL Group. JSW Group, is a leading business conglomerate in India with an annual turnover of 13 billion USD having presence in various sectors including Steel, Energy, Infrastructure, Cement, Paints, Sports and Venture Capital is helping the Group play an important role in driving India's economic growth. JSW Group has presence across India as well as globally.

JSW Energy Limited, the power business arm of JSW Group, since its inception in year 1994 has grown at CAGR of 35% with current installed operational capacity of 4,784 MW comprising of three thermal power plants of 3,158 MW, two hydro power plants of 1,391 MW and 235 MW Solar Power projects.

JSWEL is also the largest private sector hydro power generator in India and operates two hydropower projects with aggregate capacity of 1391 MW (300 MW Baspa II Hydro Project and 1091 MW Karcham Wang too Hydro Project) situated in Himachal Pradesh.

JSWEL has set a vision of becoming a 10 GW company by 2025 and 20 GW Company by 2030 in India, with all the incremental capacity additions coming predominantly from the Renewable Energy sources.

JSWEL through its subsidiaries is also developing around 1.9 GW of Renewable Power Project awarded by SECI and for Captive purpose. Most of this capacity is being set up in renewable rich southern states of India.

JSW Energy (Kutehr) Ltd, subsidiary of JSWEL is developing 240 MW Kutehr Hydro Electric Project in state of Himachal Pradesh.

JSWEL operates 860 MW Vijayanagar Thermal Power Plant situated in the Southern region of India which is always pioneer in supplying power to southern states in crisis situation.

JSWEL has recently commenced supply of power from its one of largest Renewable Captive power plant of 225 MW Solar capacity.

JSWEL is the first IPP in the southern region started its operation from year 2000 and has been instrumental in extending power supply to all the southern states. The home state Karnataka has always been helpful to provide all kind of support to the plant. JSWEL is spreading its presence in all the states in the southern region, recently JSW is executing 1260 MW wind power project in TN and 2000 MW Renewable project in Karnataka. JSW has also signed an agreement with Government of Telangana to develop 1500 MW Komram Bheem PSP. Similar efforts are being made for investment in AP & Kerala.

SRPC has been instrumental in facilitating the stable and smooth operation of the integrated grid and economy & efficiency in the operation of power system in the region. JSWEL look forward to play elemental role in southern India power sector in future as well.

b) **Shri T Jagath Reddy, Chairperson, TCC & Director (Transmission), TSTRANSCO** extended heartfelt greetings and welcome to all Members and Participants to the 40th Meeting of TCC. He articulated that after a gap of about two years, we are able to conduct physical meetings and appreciated Member Secretary, SRPC who is instrumental in making these physical meetings a ground reality at this garden city of Bengaluru. The Secretarial staff of SRPC has put relentless efforts in making this meeting a great success. The hospitality of JSW Energy Ltd has been excellent and hoped that everyone is enjoying the pleasant atmosphere here. Further, he conveyed his sincere thanks to all delegates from constituents of Southern Region for making it convenient to attend the 40th meeting of TCC. He said that it is his pleasure to interact with the officers from different utilities on this occasion. All are aware that, the Technical Coordination Committee (TCC) is the Key Sub-Committee of SRPC, which thoroughly deliberates on all the technical issues of Southern Region and recommends resolutions to highest Forum of SRPC. In fact, TCC is foundation of SRPC which gives valuable insights for economic and stable operation of the system. This is the forum where all the aspects of efficient and effective functioning

of Southern Region are discussed at length in a systematic manner which shows the way forward to other forums in the Region.

It is pertinent to note that several conclusions arrived at TCC meetings in the past have led to formulation of many regulations and reference points. He expressed happiness to note that, under the able guidance of Member Secretary, the Southern Region is progressing in a smooth and efficient manner.

He added that, we should never forget the lessons learnt from unfortunate events like Grid Disturbance (collapse) in 2012 and strive hard to take every possible step to strengthen the grid stability and security. During the recent critical phase of power crisis, frequency excursions have increased and have come to below operating band and touched 49.45. Hence, it is essential for all states to continuously monitor and take necessary steps for ensuring the grid discipline with scrupulous implementation of grid defence mechanism. There is lot of technical expertise available in power sector, however conducting regular trainings to engineers and staff plays a key role in updating them with latest developments in the field. During the COVID-19 pandemic, TSTRANSCO have started conducting virtual online training and realized the fruits of technology. Due to the pandemic restrictions, they have imparted online training to about 1,000 members of newly recruited operation and maintenance staff simultaneously through Zoom and Webex platforms, which was appreciated by CEA & MoP also. During such trainings, they have observed that, there are several fundamental doubts about various equipment as well as terminology used in power sector and their functioning. Hence, they constituted a committee consisting of expert engineers from all wings of O&M, MRT, SLDC, IT & Telecom etc and conducted several brain storming sessions. As a result, a HAND BOOK on "*Frequently Asked Questions on EHT Substations and Lines*" has been prepared for the benefit of all the O&M staff and the engineers. The objective of this Hand Book is to create awareness and to give first-hand information about all the equipment used in EHV substations and lines such as Power Transformers, Circuit Breakers, Isolators, Lightning Arrestors, CTs & PTs etc. The Hand Book has been printed in English as well as Telugu. The hand book covering aspects of Shift Operations, Maintenance of Equipment, Gas Insulated Substations, LC Procedures, MRT Procedures, Substation Automation Concepts, Hotline Techniques, has been prepared with all the required information in a nut shell. This Hand Book depicts a good account of functioning of transmission sector and would go a long way in enriching knowledge of all employees, especially the newly recruited AEs and O&M staff. For ready reference, TSTRANSCO has brought some Hand Books for sharing with all our entities of SR.

He stated that this TCC meeting will pave way for constructive deliberations which will lead to eventful decisions on techno commercial issues in a much disciplined manner. He requested Member Secretary, SRPC to take up the agenda.

c) **Shri Asit Singh, Member Secretary SRPC** welcomed Shri Jagath Reddy Chairperson TCC & Director (Transmission), TSTRANSCO to the 40th meeting of TCC. He extended warm welcome to all the TCC members and esteemed officials from various organizations to the Meeting. He observed that due to COVID-19

pandemic, Meetings were being convened virtual mode since around two years. He thanked Shri Prabhakar Rao, Chairperson, SRPC for consenting for conducting 40th TCC and 42nd SRPC Meetings physically. He expressed that physical meetings will help in solving the issues more effectively since face to face discussions are happening and over and above it gives opportunity of interaction among power utilities.

He thanked JSWEL for hosting the 40th TCC and 42nd SRPC Meetings and appreciated for the wonderful arrangements made for smooth conduct of the meeting and also to make officers stay most comfortable and cheerful. He informed that JSWEL has been planned the Meeting venue at Coorg, however due to some logistic issues it didn't work out. He thanked Shri Pratesh Vinay, Director (Finance), Shri K Surya Prakash, Executive VP & Head Thermal, Shi Anoop Vaish, Sr VP and Shri Jyotiprakash Panda, Head Regulatory & Power Sales who were putting their maximum effort to make these Meetings happen in a memorable manner. He observed that Shri Sam Devadas, GM and Shri Chandan Singh (AGM) who are the coordinators for the meeting are putting their best effort.

MS, SRPC observed that past few months Grid Operation passed through a difficult period. All India demand crossed 207 GW and SR Grid had crossed 61 GW. The criticality of the situation was aggravated by low coal stock in many of the Generating Stations in SR. Power price in the Market gone up to 20 Rs/Unit which was brought down to 12 Rs/unit afterwards by favorable intervening by the Commission. However, this difficult face had paved way for many lessons and he appreciated all the states to meet the peak demand through some innovative interventions. Telangana was optimally using the pump mode operation facility at their N'sagar units using the differential prices in the market. All the thermal units in TS were operating at a PLF of more than 70-75 %. Tamil Nadu was operating their Thermal Units on daily basis (taking out/in the units on daily basis) to conserve the coal. Weekend outages also were adopted. Kerala using its expertise was utilizing the market intelligently. APTRANSCO despite of unit outages and precarious coal position at thermal stations could manage the grid in a secure manner. KPTCL had operated the grid very well, meticulously utilized the market. KPCL had a very good generation portfolio and it was noted that all the KPCL thermal units were on bar simultaneously, which happened after 7-8 years. The record generation was noted by KPCL during the year 2021-22. Outages were monitored on daily basis and all the entities had put maximum effort to bring back the units at the earliest after forced outages. Maintenance schedules were reviewed and shifted accordingly to support the grid. He appreciated SRLDC for operating the grid in a secure manner and appreciated that it is a joint effort by all system operators. He thanked all the constituents of Sothern Region for their outstanding support and cooperation extended for smooth operation of the grid and hoped for the same in future too.

He highlighted w.r.t JSWEL that they have a significant role in SR Grid since long. Not only Karnataka, all the SR states had benefited with their power. At present they have an Installed Capacity of around 4,784 MW comprising thermal, hydro and solar

plants. JSWEL is targeting significant RE portfolio and Southern Region is key focus area for them. He recalled the support extended by JSWEL to SR Grid and hoped it will continue and enhance further.

d) TCC welcomed the following new Members to the forum:

i. Shri A V K Bhaskar, Director (Grid & Tr. Mgmt.), APTRANSCO
ii. Shri N V S Subbaraju, Chief General Manager (HRD), APSPDCL
iii. Shri James Philip, Chief Engineer (E), SLDC, KPTCL
iv. Dr S R Anand (T, SO, P & S), KSEBL
v. Shri T Srinivasa, Director (Projects), TSSPDCL
vi. Shri Naresh Anand, Regional Executive Director, SRHQ, NTPC
vii. Shri Kondas Kumar, Chief Executive Officer, NTPL
viii. Shri S P Kumar, Executive Director, SRLDC, POSOCO

e) TCC also placed on record the excellent services rendered by the following outgoing Members:

i. Shri K Praveen Kumar, Director (Grid & Tr. Mgmt.), APTRANSCO
ii. Shri B Ramesh Prasad, Director (Operation), APEPDCL
iii. Shri Rajan Joseph (Transmission & System Opn), KSEBL
iv. Shri S Shanmugam, Managing Director, TANTRANSCO
v. Shri S Shanmugam, Director (Transmission Projects), TANTRANSCO
vi. Shri Sunil Kumar Satya, Regional Executive Director, SRHQ, NTPC
vii. Shri P Mohan Reddy, Director (Projects), TSNPDCL
viii. Shri S Ravi, Executive Director (SR- II), PGCIL
ix. Shri K S Gopalakrishnan, Chief Executive Officer, NTPL
x. Shri Bikram Singh, Chief-Marketing, TPTCL
xi. Shri V Suresh, Executive Director, SRLDC, POSOCO

II. 42nd Meeting of SRPC (04th June 2022)

a) **Shri Pritesh Vinay, Director (Finance) JSWEL** extended warm welcome to SRPC members and all the dignitaries present in the 42nd SRPC Meeting hosted by JSWEL.

b) **Shri D Prabhakar Rao, Chairperson SRPC and CMD, TSTRANSCO & TSGENCO** expressed pleasure to welcome the participants for the 42nd SRPC Meeting and extended warm greetings to all. He stated that he was sure that TCC had detailed deliberations in yesterday's meeting and have come to some conclusions. All aware of critical power supply position in the country and when the entire nation is passing through critical power situation, the southern states are able to counter the challenges and have met an all-time peak demand of 60,876 MW in the month of April 2022. The Southern Region has handled the situation very deftly with minimum deviations and strived hard to extend quality and reliable power to all

categories of consumers to the maximum extent possible. Despite facing many constraints, all constituents of SR have met their respective peak demands such as Tamil Nadu has met 17,563 MW, Karnataka recorded 14,818 MW. Telangana has touched 14,160 MW, AP has met 12,293 MW, Kerala recorded 4,385 MW & Puducherry at 467 MW (in different months of 2021-22). The Covid-19 pandemic has affected all sectors and power sector is no exception. Several projects of Generation, Transmission & Distribution have slowed down and adversely affected the finances of power sector. Despite facing tough challenges on several fronts, the installed capacity of Southern Region has been increased to 1,18,313 MW (as on 31.03.2022) with capacity addition of 3,148 MW during the last financial year. Simultaneously, the transmission network is further strengthened for effective evacuation of power and 400 kV lines to an extent of 1862 circuit kms were commissioned in Southern Region during last FY 2021-22 alone. Recently TSTRANSCO has commissioned a unique 400/220/132/33 kV Rayadurg GIS Substation (having 4 voltage levels) along with connected network in a record time to provide reliable & quality power directly to five 220 kV substations and four 132 kV substations and to cater to the growing needs of IT hub at Hyderabad.

With the increased penetration of Renewable Energy Sources, there are several challenges on the part of system operation in balancing the Load-Generation. The wide variation in demand during peak and off-peak hours has been posing a big challenge not only to the system operator but also to the generator. There is an urgent need to adopt latest automation techniques in Load-Generation Balance for effective economic operations and to avoid any possible human errors. Bringing in newer technologies, process automation, innovation and creativity are the way forward for fool proof grid stability. It is envisaged to harness 500 GW of renewable energy by 2030. Hence, to handle this massive scale of renewable energy, adequate balancing needs such as usage of Batteries, Pumped Storage, Hybrid models are to be introduced for integrating the RE with Grid in a safe and secured manner. It is imperative to plan the transmission system in a very meticulous way duly minimising the redundancy of transmission elements to avoid the burden on all states.

Number of thermal power stations in the region have faced critical coal stock situation in the past few months. SRPC has taken up the issue with CEA and in turn CEA has assured to pursue with concerned ministries for ensuring the adequate coal supplies to all thermal stations. Flexibilisation is another important factor to be considered by all the thermal plants to meet the grid requirements and to take care of the units. OEMs (of Boilers) have to modify the boilers as per the requirements of flexibility.

Some past instances indicate, power sector is also vulnerable to cyber-attacks, but if a structured approach is applied, cyber-risks can be significantly reduced. Adoption of digital technologies and implementation of various communication modes for real time operations, are the main reasons for increase in cyber risks in power sector. In view of increasing incidents of cyber-attacks and threat to integrated grid operation, all utilities need to monitor the action taken with regard to identification of critical

infrastructure and its preparedness of crisis management plan as well as carrying out mock trial activities. CEA has recently (February 2022) issued detailed guidelines on this significant aspect to all stakeholders to have a comprehensive cyber security plan which shall be followed scrupulously.

The Southern Region has been in the forefront in maintaining grid discipline and taking lead role in scrupulous implementation of CERC, CEA and MoP Guidelines. He placed on record that, all the constituents of SRPC have been carrying out the third party protection audit and implementing the same in a very commendable manner. These accomplishments have been possible only with the dedication, hard work and commitment of all constituents of SR.

Currently, Electric Vehicle industry in India has picked up and set an ambitious target of having 100% electric vehicles for public transport and 40% electric vehicles for personal mobility by 2030. In an effort to enhance the energy security and to mitigate the adverse environmental impacts from road transport vehicles, all the states of Southern Region, are fully geared up to supply the required bulk power to the upcoming charging agencies.

All the entities have to counter the challenges in reactive power management in curtailing the over voltages in southern network to reduce the equipment stressing to avoid possible failure of EHV equipment.

SRPC will continue to take lead role in resolving the challenges faced by all states duly taking the views of all the constituents into consideration. He requested all the delegates to express their views on the agenda points, which helps us to take pro-active decisions on various aspects in the interest of all southern states. SRPC is thankful to JSW Energy Ltd for organizing this meeting here at Garden City of Bengaluru in a grand way. This 42nd SRPC meeting at Bengaluru will become fruitful in evolving the important decisions on the current issues of power sector in general and of Southern Region in particular.

He requested Shri Asit Singh, Member Secretary to explain the status of various issues of the agenda points in detail.

c) **Shri Asit Singh, Member Secretary SRPC** welcomed Shri D Prabhakar Rao, Chairperson, SRPC & CMD, TSTRANSCO to the 42nd SRPC Meeting. He narrated him as a highly goal oriented man. He stated that in his tenure as CMD TSTRANSCO & CMD TSGENCO, significant capacity addition in transmission and generation side had been taken place. He observed that he is the right person to lead the SRPC forum to further heights. On behalf of SRPC forum he thanked Chairperson, SRPC for inspiring the forum and also for providing valuable guidance in approaching many crucial issues. He extended his welcome to all he esteemed members of SRPC/TCC Forum and other delegates from various sectors of power system like generation, distribution, transmission, system operators etc.

d) SRPC welcomed the following new Members to the forum:

   i. Shri A K V Bhaskar, Director (Grid &Tr. Mgmt), APTRANSCO

ii. Shri H Harnath Rao, CMD, APSPDCL
iii. Dr S R Anand (T, SO, P & S), KSEBL
iv. Shri G Raghuma Reddy, CMD, TSSPDCL
v. Shri T Jagath Reddy, Director (Transmission), TSTRANSCO
vi. Shri Rajib K Mishra, Director (Commercial), PTC India Ltd
vii. Shri S P Kumar, Executive Director, SRLDC

e) SRPC also placed on record the excellent services rendered by the following outgoing Members:

i. Shri K Praveen Kumar, Director (Grid & Tr Mgmt), APTRANSCO
ii. Shri J Padma Janardhana Reddy, CMD, APCPDCL,
iii. Shri Rajan Joseph (Transmission & System Opn), KSEBL
iv. Shri S Shanmugam, Managing Director, TANTRANSCO
v. Shri S Shunmugam, Director (Transmission Projects), TANTRANSCO
vi. Shri A Gopal Rao, CMD, TSNPDCL
vii. Shri B Narsinga Rao, Director (Grid Operations), TSTRANSCO
viii. Shri Ajit Kumar, Director (Commercial), PTC India Ltd
ix. Shri Amit Garg, Chief Executive Officer, TPTCL
x. Shri V Suresh, Executive Director, SRLDC

Member Secretary, SRPC took up the agenda.

2. Confirmation of the Minutes of 41st Meeting of SRPC

2.1 The Minutes of 41st Meeting of SRPC held on 02.03.2022 were circulated vide letter dated 07th March 2022.

2.2 CTU vide letter dated 10.03.2022 (**Annexure-2)** had sought amendment in respect of '**Conclusion and Recommendation of SRPC'** at item no 4 (xv) of 'Inter-state transmission system planned by CTU' of the Minutes.

2.3 Deliberation:

i) MS, SRPC informed that CTUIL had sought amendment in the Minutes of 41st Meeting of SRPC reflecting the consolidated views of SRPC in respect of WR-SR Interregional link. The views expressed by CTUIL have been recorded appropriately in the Minutes. The observation is on the conclusion and recommendation part only.

ii) CTUIL stated that that the system is very much required for grant of LTAs for transfer of power from Southern Region to the beneficiaries in the Western Region. NLDC and SRLDC also had recommended the system. Accordingly, in the conclusion and recommendation also views of CTUIL/POSOCO needed to be incorporated.

iii) MS, SRPC mentioned that the conclusion is the views of the constituents/states with respect to the recommendations to NCT and in the conclusion part it is clearly

mentioned that views of the Southern Region States not the views of SRPC forum. Whatever views expressed by CTUIL is recorded in the discussion part of the Minutes.

iv) Chairperson, SRPC mentioned that the views of states are not appropriately considered. Decisions are taken even by the Ministry, without consulting states, though it is a concurrent subject.

v) After deliberation, it is decided that CTU letter dated 10.03.2022 seeking revision in the conclusion and recommendation of SRPC would be made as a part of the Minutes. Accordingly, the Minutes of the 41st meeting of SRPC approved.

2.4 SRPC (Conduct of Business) Rules 2022

(i) In the 41st meeting of SRPC, **SRPC has approved the Southern Regional Power Committee (Conduct of Business) Rules 2022.** But the Members were allowed to submit any comments in writing also before confirmation of the Minutes.

(ii) MS, SRPC informed that so far no comments received on the approved SRPC (Conduct of Business) Rule 2022. As such, the same may be treated as final.

(iii) The Committee agreed that the SRPC **(Conduct of Business) Rules 2022 approved in the 41st meeting of SRPC as final.**

The CBR is made available on SRPC website.

3. Inter-state transmission system planned by CTU

3.1 One of the functions of SRPC is to provide views on the inter-state transmission system planned by CTU within 45 days of receipt of the proposal by the concerned RPC. The views of RPC will be considered by National Committee on Transmission for sending their recommendation to Ministry of Power for approval of new inter-state transmission system.

3.2 MoP vide letter dated 10th January 2022 informed that it has been decided that views of RPCs regarding any new ISTS expansion must be recorded in the Minutes of NCT meeting and in case RPC does not agree with the new ISTS, then justification for recommending the same for implementation should also be recorded in the MoM, so that appropriate decision can be taken by Ministry of Power while approving the ISTS project.

3.3 No proposal has been received from CTUIL on the inter-state transmission system planned by CTUIL for consideration by SRPC.

3.4 TCC Deliberation

(i) MS, SRPC informed that no proposal has been received from CTUIL on the inter-state transmission system planned by CTUIL for consideration by SRPC since last SRPC meeting and the same was confirmed by CTUIL.

(ii) On receipt of proposal on new interstate transmission system from CTUIL for consideration of SRPC, Meeting will be convened to finalise the views within the stipulated time frame.

SRPC noted the above

4. Membership in RPC forum

4.1 Membership for RE Generators in RPC forum

Government of India has a vision of achieving Renewable Energy installation target of 175 GW and 500 GW by 2022 and 2030 respectively. The major challenge before the government is the RE integration to the Indian Electricity Grid and smooth running of the Grid in the Real Time operation. For resolving the issues of RE generators, smooth integration and proper real time dispatch of RE generation, ***ERPC had proposed a suitable provision for inclusion of RE generators with threshold of 200 MW and above as a membership of RPC forum***.

In the 11th meeting of NPC (28.02.2022), it was observed that the issue needs deliberation at the RPC level first and afterward may be discussed at NPC level.

TCC Deliberation

(i) MS, SRPC briefing on the agenda issue requested all the beneficiaries to express their views on the ERPC proposal of adding a suitable provision for inclusion of RE generators with threshold of 200 MW and above as a member of RPC forum. He observed that 200 MW is on lower side when the generator portfolio as per Notification itself is 1000 MW and above.

(ii) Director (Grid & Tr. Mgmt), APTRANSCO mentioned that in case RE generators are included as Member, they will be more concerned to raise about curtailment and payment issues. All technical issues with RE generators are being discussed/resolved through various forums involving/taking views from them directly/indirectly. He opined that in such a scenario there is no need of RE generator Membership in RPC.

(iii) Director (Transmission), KPTCL endorsed the views of APTRANSCO in regard to the contribution of RE generators in the SRPC forum. However he opined that in line with MoP Resolution, RE generators with 1000 MW and above may be allowed as a Member of RPC.

(iv) KSEBL & TANTRANSCO endorsed the view of KPTCL.

(v) TSTRANSCO observed that 60 % of RE installed capacity is in Southern Region. Representation from RE generators in various forums of SRPC will help in day to day system operation. The threshold value for entering as a member of RPC forum may be based on the study on the current/future installed capacity of RE in SR and may be decided in the next SRPC Meeting. While deciding on threshold value number of members added also needed to be looked into. RE being green energy and having high influx and holding crucial role in managing the SR Grid, it is inevitable and may be considered for participation in various SRPC forums.

(vi) ED, SRLDC endorsed the views of TSTRANSCO. He clarified that the benchmark installed capacity for entering as a member of RPC is w.r.t a single entity. In SR there is no RE generator with 1000 MW installed Capacity and opined that entry as a member may be on rotational basis.

(vii) CTUIL informed that as per the revised notification on constitution of RPC, the installed capacity is defined as 1000 MW which is region specific. MNRE and Government of India have come up with a potential and it has to be harnessed, 86 GW (in SR) as part of the 500 GW RE/non fossil fuel based by 2030. The RE potential will be at huge level in near future than witnessing at present and opined that in view of system improvement and their contribution, it is worth to include RE generators in the RPC forum, however the number of members may be decided after deliberations.

(viii) APTRANSCO further added that in case SRPC forum is consenting for entry of RE generator to RPC forum, the terms and reference may be limited only to Technical Issues. Curtailment of RE and payment issues cannot be raised/discussed in the forums.

(ix) TSTRANSCO opined that number of representatives may be limited to a maximum of two. KPTCL suggested that state wise one RE Generator can represent the entire state and by rotation can be made as member.

(x) **TCC Recommendation**

Maximum two (02) RE generators having capacity more than 1000 MW in the region on yearly rotation basis could be a Member of RPC. Terms of Reference of RE to be restricted to the matters pertaining to technical and operational issues.

SRPC Deliberation

After detailed deliberation, it was decided that, as recommended by the TCC, SRPC would recommend membership of two RE generators with a threshold of 1000 MW (and above) installed capacity in the region on rotational basis. The participation of such generators would be limited to technical and operational issues.

4.2 Membership of CEPL to SRPC

CEPL vide letter dated 18.05.2022 (**Annexure-4a)** have stated that in view of cost optimisation during the CIRP process, it is decided not to utilise the membership services from the FY 2022-23.

TCC Deliberation

(i) MS, SRPC observed that since CEPL is under Corporate Insolvency Resolution Process (CIRP) and they are not able to pay the charges as mandated as a Member of SRPC, the request of CEPL to exit as a Member of SRPC may be considered. Audit objection also may arise if they continue as a member and defaults in paying the Membership charges. Their re-entry may be allowed to SRPC as and when they approach the forum with the request, once the things are settled. Since CEPL units are connected to SR Grid and also have MTOA contracts with SR beneficiaries, the regular interaction will continue as earlier.

(ii) The members were also of the view that since CEPL is under NCLT proceedings, it is appropriate to accept the request of CEPL and not to be treated as a member of SRPC

from the year 2022-23. However, CEPL is bound to follow the decision of SRPC and continue to furnish the data to SRPC/SRLDC as being followed.

(iii)**TCC Recommendation**

a) CEPL may be allowed to exit as Member of SRPC. However, SRPC would take a call on re-entry as member of CEPL whenever request from CEPL is received.

b) CEPL is bound to follow the decision of SRPC and continue to furnish the data to SRPC/SRLDC and required to attend the meetings on specific issues related to the generator.

SRPC Deliberation:

The Committee decided that CEPL, which is under Corporate Insolvency Resolution Process (CIRP) as directed by NCLT, shall be allowed to exit Membership of SRPC from the year 2022-23 considering their request. However, CEPL would do the required coordination with SRPC, SRLDC and Tamil Nadu for system operational requirement. When they apply for formal membership again, the matter would be brought to SRPC for concurrence.

4.3 Trader Member for 2022-23

CEA has nominated Electricity Trader M/s Arunachal Pradesh Power Corporation (P) Ltd. (APPCPL) as Member of SRPC for the year 2022-23. SRPC vide letter dated 21st March 2022 sought suitable nominations for SRPC/Sub-Committees of SRPC. APPCPL has not responded. As such, there may not be Trader representation in SRPC during the Year 2022-23.

TCC Deliberation

(i) MS, SRPC intimated the forum that despite of continuous follow up, APPCPL has not come up with their Nominations. As APPCPL has not replied on the Membership in SRPC for 2022-23, APPCPL may not be considered as a member of SRPC for 2022-23 and in the computation of sharing of establishment charges etc. CEA would be informed this accordingly.

(ii) **TCC Recommendation:**

APPCPL (Trader) may not be considered as a member of SRPC for 2022-23. As such, there is no trader representation in SRPC for the year 2022-23. CEA may be informed accordingly.

SRPC agreed the recommendation of TCC and decided not to consider the membership of APPCPL (Trader Member) for 2022-23. CEA may be informed accordingly.

4.4 Indian Wind Power Association(IWPA): Request for Membership in SRPC

IWPA vide letter dated 02.05.2022**(Annexure-4b)** has requested for formal induction as a full-fledged member of SRPC. The following were mentioned:

- IWPA is not for profit all India Association focussed on creating an enabling regulatory and policy environment, conducive to investment in the wind industry. Its members collectively own around 26,000 MW of the installed wind energy capacity in the country.
- The installed capacity of wind energy in SR region is around 18,000 MW in which around 10,000 MW is of IWPA ie IWPA represents 55 % of installed Wind Capacity in SR.
- IWPA clearly qualifies the requirement as per "*As a representative of the generating companies having power plants in the region (not covered under (ii) to (iv)".*
- IWPA used to be invited to OCC meetings of SRPC in the past which was stopped over the last three years.

TCC Deliberation

(i) MS, SRPC informed that IWPA had made two requests, one for formal induction as a full-fledged member of SRPC and the other for regular representation in monthly OCC meetings of SRPC. The issue of Membership of IWPA in SRPC was deliberated in the 37th Meeting of SRPC (01.02.2020) wherein the following has been noted:

- Ministry of Power Resolution establishing the Southern Regional Power Committee (SRPC) does not comprises IWPA as member of SRPC.
- IWPA has taken up the issue of Membership in SRPC with MoP.
- SRPC opined that it would be prudent to wait for MoP directives**.** SRPC has decided that Membership of IWPA in SRPC would be based on the MoP decision.

Subsequently, MoP has issued Resolution dated 3rd December 2021 in respect of establishment of Southern Regional Power Committee (superseding the Principal Resolution dated 25th May, 2005 and subsequent amendments dated 29th November 2005, 9th May 2008, 5th May 2017 and 21st December 2017). However, IWPA has not been included as Member of SRPC despite the number of representations by IWPA directly with MoP.

IWPA was participating as special invitee for OCC meetings (3 years back). However, some state utilities had objected to IWPA participation in OCC Meetings as they were not regular member of SRPC and accordingly it was discontinued.

(ii) All the members were of the opinion that IWPA should not to be included as member of SRPC as MoP Resolution do not envisage Associations as members of SRPC. Their regular representation in monthly OCC meetings is not required. Issue based representation in meetings may be considered as and when required.

(iii) **TCC Recommendation**

a) MoP Resolution do not envisage Associations as members of SRPC. As such, IWPA shall not to be included as member of SRPC.

b) IWPA may not be invited to attend monthly OCC meetings of SRPC.

SRPC decided not to consider the membership of Associations, as the Ministry of Power Resolution 3rd December 2021 constituting SRPC did not envisage the same.

5. Up gradation / Replacement of SCADA/EMS Systems in SR

5.1 SRLDC had intimated that the existing SCADA/EMS system in SRLDC and SLDCs of SR were commissioned in 2015-16 and will be completing tenure of five years. POSOCO had proposed to go ahead with upgradation/replacement of existing SCADA system at RLDCs with a commissioning time frame of early 2023. All SLDCs are invited to partner with POSOCO and together implement a unified upgradation/replacement of the existing SCADA/EMS system.

5.2 In the 39th meeting of SRPC (06.12.2021), the following had been noted:

a) The following project implementation schedule presented by SRLDC:

Sl No.	Activity	Time (Month)	Start Date	End Date
1	Signing of MoU with SLDCs & nomination of Nodal Member of all SLDCs & RLDC	1	1-Nov-2021	30-Nov-2021
2	Finalisation of Technical Specifications and BOQ for all SLDCs & RLDC through the committee of Nodal Members	2	1-Nov-2021	31-Dec-2021
3	Finalisation of Tender Documents by POSOCO	2	1-Nov-2021	31-Dec-2021
4	Approval of Project, Estimate, Tender Document etc.	2	1-Jan-2022	28-Feb-2022
5	Tendering Process	2	1-Mar-2022	30-Apr-2022
6	Tender Evaluation process, issue of NOA by POSOCO	2	1-May-2022	30-Jun-2022
7	Signing of Contract Agreement by SLDCs & RLDC	1	1-Jul-2022	31-Jul-2022
8	Execution of ULDC including SAT & taking Over	20	1-Aug-2022	31-Mar-2024
	Total Months	**30**		
New System ready for operation from			**1st April 2024**	

b) SRLDC had informed that MoU had been signed with SLDCs of Telangana, Tamil Nadu and Kerala. MoU with Puducherry would be in place in a week. Willingness of AP SLDC to join with POSOCO was also received on 26.11.2021. DPR (in respect of Telangana, Tamil Nadu & Kerala) is under preparation for seeking PSDF support. DPR for Puducherry also would be prepared. Implementation period would be around 20 months from the date of LoA. The scheme would be in place by March 2024. POSOCO is hand-holding the respective states in finalizing the Technical Specifications uniformly across the country and processing the tender to arrive at an optimal cost beneficial to states. Accordingly, contract will be awarded by respective states; once

awarded, the ownership/ AMC responsibility would be with states. Main contract will also include an additional contract for AMC meeting all technical standards/ operational requirements and the cost of AMC would also be frozen while awarding the main contract itself. The DPR itself will have an inbuilt component of AMC. The maintenance would be for the life circle of the contract ie 1+6 years. POSOCO will support States in obtaining PSDF funding from NLDC.

c) APTRANSCO had confirmed that they have informed their willingness to join with POSOCO/other states in up-gradation/replacement of the SCADA.

d) KPTCL had informed that the scheme under tendering stage. Negotiations going on with PGCIL for consultancy and the same would be finalized shortly.

e) SRLDC and SLDCs were advised to implement the scheme at an optimal cost and to have best system in place by 2024.

5.3 MoP vide letter dated 25.04.2022 (**Annexure-5**) has communicated the following two possible mode for replacement/upgradation SCADA/EMS at SLDCs:

(i) Through self-funding mode under consultancy of POSOCO/ POWERGRID.

(ii) Through levilized tariff mode in execution by POWERGRID.

The mode of upgradation needed to be finalised at the earliest to ensure upgradation of all LDCs for smooth grid operation.

5.4 TCC Deliberation

(i) MS, SRPC briefed on the status w.r.t SR constituents and also appraised the forum on the recent MoP communication regarding two possible modes for replacement/up gradation of SCADA/EMS at SLDCs.

(ii) ED, SRLDC informed that POSOCO has initiated process for upgradation of SCADA/EMS system in a collaborative approach on the regional basis in unified mode. All SLDCs in the Southern Region (except Karnataka), signed MoU with POSOCO for upgrading the SCADA system with consultancy from POSOCO. A Committee has been constituted from all the SLDCs & POSOCO for finalization of technical specifications, BoQ, detailed Terms and Conditions, etc. Committee has discussed and finalised technical specification by taking input from all SLDCs. POSOCO has requested detail of BoQ, RTU, Training & system size from all SLDCs, as these are specific to SLDC and SLDCs have provided the details as requested above and the same had been compiled and Final Tech specification including comments from WR will be circulated to all SLDCs by this week end. Subsequently, Technical specification & BoQ will be shared with prospective bidders for budgetary estimate & other processes regarding tendering will be done. Tendering part will be completed by November 2022. Execution of ULDC including SAT and taking over would take 20 months from signing of Contract agreement of SLDCs and RLDCs. By end of the December 2024 commissioning is planned, 3 months parallel operation will be carried out before commissioning.

(iii) TSTRANSCO expressed that the existing AMC contract validity of the states will be expiring before the new system in place as w.r.t TSTRANSCO the AMC validity is till

February 2023. There is a provision for extension of AMC contract on the same terms and conditions. TSTRANSCO observed that commonly if all the states extend two years, seamless change over to new system will be possible. States may approach GE for two years extension.

(iv) SRLDC updated the status of existing contract validity and maximum extension possible as below :

Sl No	State/SO	Existing Contract validity	Maximum Extension Possible as per Contract
1	SRLDC	31st May 2023	31st May 2025
2	Andhra Pradesh	3rd Dec 2022	3rd Dec 2024
3	Telangana	15th Feb 2023	15th Feb 2025
4	Kerala	30th June 2023	30th June 2025
5	Tamil Nadu	1st Sep 2024	1st Sep 2024
6	Puducherry	23rd Feb 2022	23rd Feb 2024

W.r.t Puducherry maximum extension possible is up to February 2024 and there would be a gap between initiating parallel operation which needed to be taken care of by Puducherry. All other states have enough margins.

(v) TANTRANSCO informed that they are approaching for PSDF funding for this upgradation/replacement project. Observing that this project is a common up gradation for all the SR beneficiaries, SRPC may recommend NLDC to approve the PSDF funding. All SR states are facing financial constraints.

(vi) TSTRANSCO requested NLDC/POSOCO to give their view on the request and let states know whether there is possibility of funding, if so how long it will take to approve and disbursement of fund etc. It was noted that waiting for funding etc will extend the tendering process and delay in project commissioning which cannot be possible in this project.

(vii) NLDC informed that the request had already been taken up with MoP**,** and Ministry have already communicated the funding pattern. SLDCs may approach MoP directly with the request.

(viii) MS, SRPC stated that SCADA is an essential requirement for System Operation without which Grid Operation is not possible. Individual States may approach NLDC for PSDF funding since orders are placed individually. Earlier also it was recorded that POSOCO will facilitate states to approach NLDC for PSDF funding. Sanctioning of PSDF find is based on certain Guidelines and MoP has communicated the modes of funding.

(ix) ED, SRLDC also expressed that since all the states existing SCADA life/AMC contract is ending, waiting for funding etc will end up in delay and will have impact on system operation.

(x) Director (Grid & Tr. Mgmt.), APTRANSCO felt that considering the emergent requirement, MoP may approve the scheme for PSDF funding on post facto basis.

(xi) Director (T, SO, P & S), KSEBL observed that MoP Guidelines does not mention that self-funding projects should not be funded from PSDF. NLDC may be approached for PSDF funding. NLDC may appreciate the importance and being the Nodal Agency for PSDF may recommend for PSDF funding.

(xii) NLDC further clarified that normally business as usual related activities are not funded through PSDF and also the timeline limitations/critical nature of the works also stands as restriction for approval/sanction of the Funding. Still NLDC/MoP may be approached for PSDF funding.

(xiii) KPTCL informed that they are executing self funding basis with PGCIL as a consultant. Approval is expected within a fortnight and DPR is finalised. Technical Specifications are also vetted by POSOCO. SRLDC confirmed that there are no integration issues. SRLDC will share the updated technical specifications.

(xiv) ED (AM), PGCIL observed that they have finalised the common specifications for the scheme which is applicable to all the states including KPTCL. It is prudent to note that the same specification may be adopted by all to facilitate smooth integration. POSOCO had agreed to share their specifications also. Common specifications may be finalised accordingly.

(xv) SRLDC, w.r.t KPTCL, suggested that provision for integration may be kept in the contract itself to avoid payment issues while taking up integration. MS SRPC suggested that payment/integration terms and conditions may be finalised in mutual coordination among KPTCL/PGCIL & SRLDC. If required a Meeting may also be convened.

(xvi) ED (AM), PGCIL informed that there is a significant increase in cost in the budgetary offers received from vendors compared to previous offers in 2015-16. He suggested that tendering may be done jointly which may reduce the cost of the upgradation project; however PO may be placed individually.

(xvii) **TCC Recommendation**

a) Chairperson, SRPC may be requested to take up with MoP for PSDF funding. However being an issue of secure grid operation requirement all SLDCs need to proceed with SCADA up graduation/replacement requirements.

b) All the SLDCs to extend the AMC with M/s GE for another 2 years.

c) SLDCs may tender jointly which could ensure competitive rate.

d) Coordination meeting of KPTCL, PGCIL and POSOCO may be convened. SRLDC will share the updated technical specifications to KPTCL.

5.5 SRPC Deliberation

(a) MS, SRPC mentioned that the State utilities are of the view that the proposed upgradation/replacement of SCADA at SLDCs and PSDF funding may be sought.

(b) Chief Engineer (NPC), CEA informed that the Ministry of Power has decided that upgradation/replacement of SCADA, being business as usual, not to be funded through PSDF.

(c) The State utilities requested Chairperson, SRPC to take up the matter of PDSF funding of the scheme with Ministry of Power/NLDC to enable SLDCs to go ahead with the implementation, expeditiously.

(d) **Since the AMC for the existing system would be expiring soon, all states were requested to extend the AMC for a further period of two years on the same terms and conditions**. It was noted that there would be parallel operation of the existing and new system, after commissioning, for a period of three months

(e) After deliberation, it was decided that Chairperson, SRPC would address to Secretary (Power), MoP seeking funding from PSDF for implementation of the upgradation/replacement of SCADA at SLDCs.

6. CEA (Cyber Security in Power Sector) Guidelines, 2021

6.1 IT and CS Division, CEA vide letter no. CEA-CH-13-12/04/2021-IT Division/25 dated 08.02.2022 (**Annexure-6**) has informed that the Guidelines on Cyber Security in Power Sector prepared by CEA, have been issued under the provision of Regulation 10 of the "*Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019*". These Guidelines are applicable to all Responsible Entities (as defined in the guidelines) as well as System Integrators, Equipment Manufacturers, Suppliers/Vendors, Service Providers, IT Hardware and Software OEMs engaged in the Indian Power Supply System.

6.2 Power Sector is vulnerable to cyber-attacks, but if a structured approach is applied to communication, organizational, and process frameworks, cyber-risks can be significantly reduced. Following aspects of Digitalization & Decentralization are the driving forces for increase in cyber risks in the Power Sector. (i) Growth in the adoption of digital technologies enabling communication and data across the grid (e.g., smart meters, Internet of Things sensors, remote controls and automation etc.) (ii) Increased adoption of distributed energy resources (DERs), distributed storage, energy efficiency and demand response.

6.3 Salient features of the Cyber security Guidelines issued by CEA are:

Objective

- ✓ Layout a cyber-assurance framework
- ✓ Strengthen the regulatory framework
- ✓ Implement various mechanisms for cyber security threat early warning
- ✓ Vulnerability management
- ✓ Respond to security threats
- ✓ Secure remote operations and services for value chain including the smart grids

Applicability

- ✓ Relevant Entities
- ✓ System Integrators

- ✓ Equipment Manufacturers
- ✓ Suppliers and Vendors
- ✓ IT Hardware and Software OEMs

Governance

- ✓ Cyber Security Requirements
- ✓ Appointment of CISO, its roles and responsibilities as defined by CERT-In.
- ✓ Cyber Security Policy considering guidelines issued by NCIIPC
- ✓ Define Cyber Risk Assessment Methodology, Mitigation Plan
- ✓ Annual Cyber Security Training & Awareness Program and Domain Specific Courses by NPTI.
- ✓ Bi-Annual Cyber Security Audit

Asset Management

- ✓ Identification of Critical Information Infrastructure (CII) as per NCIIPC Template
- ✓ Security and Testing of Cyber assets by NABL Accredited Labs
- ✓ Management of EOL and EOS of IT/ OT Systems
- ✓ SOP for Secure Disposal of Asset
- ✓ Phasing out of Legacy systems
- ✓ Incident Management
- ✓ Incident Response (IR) Plan and reporting of incidents to CERT-In for IT/ OT Systems
- ✓ Root Cause Analysis for the incidents
- ✓ Appointment of Designated Officer to manage Cyber Crisis Management Plan
- ✓ Annual Review and Mock Drill of Cyber security IR Plan in consultation with CERT-In
- ✓ CISO to be responsible for Cyber Incident Management
- ✓ Sabotage reporting within stipulated time to CERT and CERT-In

Physical Security

- ✓ Identification of Electronic Security Perimeter (ESP) and all Access Points
- ✓ Periodic and Need- Basis Cyber VA of Electronic Access Points of ESPs
- ✓ Critical Systems to reside inside ESP
- ✓ Identification and hardening of Physical Security Perimeter

Trusted Supplier

- ✓ Procurement from Trusted Sources.
- ✓ Testing of Devices when procured from other than Trusted Sources
- ✓ OEMs to provide Certificate for Equipment/ Systems supplied
- ✓ Secure Disposal Mechanism for obsolete/unserviceable devices

6.4 In the 11th meeting NPC forum requested RPCs to sensitize the matter with the power utilities in their respective regions to follow the CEA (Cyber Security in Power Sector) Guidelines, 2021 to safeguard the utilities/power system to enable them to prevent from cyber-attacks.

6.5 TCC deliberation

i) MS, SRPC highlighted the Salient features of the Cyber security Guidelines issued by CEA and urged for the compliances of the same by all the entities. He mentioned that

although CE (IT), CEA & CISO - MoP was requested to attend the Meeting due to some urgent works he couldn't attend this meeting. He requested all the concerned to look into this sensitive issue with adequate priority and expedite the action for compliance of the Guidelines.

ii) TSTRANSCO informed that as per the Guidelines most of the activities are being carried out. Many committees have been formed and report as mandated are being sent regularly. 12 officers have been nominated for training. All the critical infrastructure had been identified and submitted. Separate cells are operating and SCADA team is being attached to this. Continuous follow ups are made with NCIIPC to update on the requirement and actions to be taken.

iii) ED, SRLDC informed that all the CCMP documents w.r.t SR constituents (SO) have been approved by CERT-In. W.r.t NCIIPC identification/accreditation KAR-SLDC had issued notification while for other states it is under process at NCIIPC/Sate end. As far as the Information Security Policy and Certification is concerned w.r.t ISO certification Telangana, Karantaka & Kerala SLDCS have awarded the contracts to consultants for certification, while at AP- SLDC it was at tendering stage and TN & Puducherry SLDCs were collecting budgetary estimates from vendors. Also FOLD have formed one Group for which nominations are being received.

iv) APTRANSCO informed vendor had been finalized for ISO certification.

v) TANTRANSCO informed that they have received approval from management and consultancy services are to be finalised, and budgetary offers are to be received.

vi) CTUIL informed the compliance of CEA Guidelines have been included in the RFP for future TBCB projects. CTUIL is sensitizing for the compliance of the guidelines and for future projects and this is being perused.

vii) Puducherry informed that Government approval is awaited and as and when approval received action will be taken.

viii) ED (AM), PGCIL informed that CEA Guidelines Article 7 tells that all communicable equipment are to be phased out when OEM is not supporting regarding cyber security. The life of the Communication equipment is 15 years as per CERC, whereas w.r.t Cyber security and IT infrastructure it is 7 years. These aspects also needed to be looked into.

ix) MS SRPC suggested that a virtual meeting may be convened for all Utilities with CISO-MoP.

x) **TCC Recommendation**

- All Utilities to ensure Compliance of CEA (Cyber Security in Power Sector) Guidelines, 2021.
- SRPC Secretariat to arrange Video Conference (VC) for all Utilities with CISO-MoP in which the queries may be addressed.

6.6 SRPC Deliberation

It was noted that all guidelines issued in this respect, viz., Cyber Security Policy, NCIIPC, MoP, CEA, CERT-In, Sectoral CERTs etc. need to be followed and adhered by

all utilities. **A meeting with Chief Engineer (IT), CEA & CISO-MoP would be arranged through VC. A presentation regarding cyber security in power sector would be made in the next SRPC meeting.**

7. Recommendation of NCT for the Narendra-Pune 765 kV line

7.1 The views of SRPC on CTU Inter Regional link proposal were communicated to CTU 07.03.2022 as discussed in the 41st SRPC meeting held on 02.03.2022. Subsequently NCT in its 8th Meeting (25.03.2022) MoM issued on 05.05.2022 had recommended the scheme.

7.2 TANGEDCO vide letter dated 16.05.2022 (**Annexure-7**) has furnished the following:

a) The proposal for up-gradation of Narendra (PG) SS to 765 kV level and establishment of new 765 kV line between Narendra - Pune for export of surplus RE power from SR to WR was deliberated in the 39th and 40th SRPC meetings. TANGEDCO raised strong objections against the proposal due to the following technical flaws in the proposal:

- Different diversity factors adopted for different States,
- 100% RE dispatch along with full thermal generation in Karnataka state
- Huge mismatch in Load-Generation Balance in Maharashtra – Considering the projected demand of 26,853 MW, only 10,272 MW of State generations has been considered.
- The projected RE capacity addition in Maharashtra is not matching with the State's RE installed capacity and anticipated capacity addition as well as CTU's approved plans for RE capacity addition by 2023-24
- Lumped loads assumed to be connected in various substation in Maharastra (Pune GIS- 400 kV bus- 450 MW, NDIL 230 kV bus- 900 MW, Aray- 33 kV bus -437 MW etc)
- In the worst case scenario data base, many 230 kV lines are overloaded (IPCL-WADKHAL- 465 MW, IPCL- NAGOTHA- 485 MW, IPCL- SPCL- 443 MW, NDIL-WADKHA- 290 MW) due to the fictitious addition of loads, while in real time, there is no overloading of these lines as per the data of SRLDC for June 2022 peak scenario.
- Skewed up generation in all other States except Maharashtra resulting in a scenario of overload beyond Kolhapur.

b) CTU was requested to bring on record the following details:

- ISTS connected RE in Maharashtra considered for the study and approval obtained from CERC.
- Need for reducing the internal generation of Maharashtra to **10273 MW** under a huge deficit condition of Maharashtra.
- Study considerations/ assumptions in the 28 GW RE capacity addition study in WR
- Study considerations /assumptions in the 8 GW RE study in SR (as per the approval of CERC)
- TTC/ATC between WR-SR both under import and export scenario

- Justification for the investment of huge public money to the tune of Rs 2347 Crore to avoid over loading of 400 kV Kolhapur-Kolhapur (PG) 400 kV line (being strengthened as per the plan of CTU) when number of alternate economical options are available.

c) Further, it was requested to conduct a revised joint study espousing the above vital inputs. All the Discoms supported the views of TANGEDCO. SRPC also has not recommended the scheme to NCT.

d) However, without addressing the issues raised by TANGEDCO and other beneficiaries, the proposal was approved and recommended by NCT during the 8th meeting of the NCT.

e) In this regard, it is essential to deliberate the unilateral decision taken by NCT violating the CEA planning criteria and the provisions of Transmission Planning Regulations, 2018 which will impose tariff burden on Discoms on account of redundant scheme. Hence, SRPC may deliberate the issue and take up with MoP requesting to direct the NCT/CEA/CTU to conduct revised study.

7.3 TCC Deliberation

i) MS, SRPC informed that views of SRPC in the 41st SRPC Meeting on the CTUIL proposal for up-gradation of Narendra (PG) SS to 765 kV level and establishment of new 765 kV line between Narendra - Pune for export of surplus RE power from SR to WR were communicated to CTUIL. The Southern Regional States, viz. Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Kerala and Puducherry had stated that the proposal is not required and there were many issues in the studies. While CTUIL & POSOCO were in favour of the scheme. NCT in its 8th Meeting held on 25.03.2022 had recommended the scheme.

ii) TANGEDO informed that they have expressed their views/objections on the proposals in the various forums/joint studies and the same have been recorded also. Chairperson, SRPC himself has strongly objected the proposal based on his observation that the study assumptions/scenarios were unrealistic and not in line with CEA Planning Criteria. During the deliberations all the states had endorsed the views of TANGEDCO and the consolidated views of SR beneficiaries were put forth to CTUIL on which CTUIL had raised some objections. All the states had desired for conducting the joint study based on realistic assumptions/scenario which has not taken place. NCT despite SR states concern have recommended the scheme and all the states need to respond on this decision which will impose huge tariff burden on Discoms on account of redundant scheme.

iii) CTUIL informed that the decision of recommending the scheme was not taken unilaterally by NCT. Further the deliberations on the approval of the proposal had started in December 2021 in a transparent way when joint study was carried out with CEA, CTUIL & SR/WR beneficiaries. Subsequently the same was discussed in second consultative meeting of WR and SR and further in SRPC meeting in January 2022. The issues raised by beneficiaries in the meeting were clarified by CTUIL and further discussed in the 41st SRPC Meeting held in February 2022. Based on the diversified

views of beneficiaries as advised by NCT, CEA had carried out separate study and had strongly recommended the proposal. SRLDC and POSOCO/NLDC also had observed that this line is highly required.

iv) Director (Grid & Tr. Mgmt), APTRANSCO observed that the study was carried out by CEA alone and there was no involvement of beneficiaries. States desired for joint study (physical) involving all, CEA, CTUIL & SR/WR beneficiaries. TANTRANSCO also reiterated the same and observed that even basic apprehensions of states have not been considered.

v) MS, SRPC informed that studies were carried out by CEA independently as advised by NCT. The following were observed :

- Government of India has set a target of achieving 500 GW of non-fossil installed capacity by 2030.
- MNRE has identified potential RE zones totalling to 181.5 GW to be added till 2030. This includes additional 17 GW potential (solar-9 GW, wind-8 GW) is the state of Karnataka.
- The identified potential zones in Karnataka are Koppal (4 GW), Gadag (4 GW), Davangere /Chitradurga (4 GW), Bijapur (2 GW), Bellary (1.5 GW) and Tumkur (1.5 GW).
- These are in addition to the RE capacity totalling to 18.5 GW in Southern Region being integrated to ISTS network.
- The "*Narendra (New) – Pune (GIS) 765 kV D/C line*" would also help in evacuation of power from the additional identified RE zones, particularly Koppal & Gadag RE Zones.
- With high RE generation at Koppal and Gadag, and dispatch beyond 60 % from Kudgi TPS, several lines are overloaded and become 'N-1'non-compliant.

vi) On the observation that CEA Planning criteria was not followed CTUIL clarified that CEA themselves have carried out the studies for WR and SR region and all the observations/study by CTUIL etc were considered and had strongly recommended the scheme. CTUIL is required to function as a part of Nodal Agency for grant of connectivity and LTA Applications within a stipulated time frame. However if states desires for joint study for any scheme except this would be facilitated by CTUIL during this month or on a date as convenient to all the entities. This proposal is already cleared by NCT and had recommended to MoP and CTUIL would not review the proposal.

vii) TANGEDCO further highlighted that as per the Transmission Planning Regulations 2018 of CERC, if RPC is not approving the proposal, CTUIL need to approach CERC for approval and this Regulation is violated in this case.

viii) CTUIL clarified that with the Notification of Electricity Rules 2021 by the Government of India, Transmission Planning Regulations have been overridden.

CTUIL would have approached CERC for Regulatory approval, but the Regulations on Regulatory approval also stands withdrawn. As part of the process, which is redefined by Government of India under the Electricity Rules 2021 and as per the revised TOR of NCT and RPC, CTUIL have complied with all the directions, functions and rules as mandated.

ix) Director (Grid & Tr. Mgmt), APTRANSCO opined that a dissent note on behalf of SR beneficiaries may be put up to MoP from Chairperson SRPC. All other State utilities endorsed the same.

x) TANGEDCO further observed that in the 7th consultation meeting, CTUIL have proposed a scheme in which they have considered only 55 % of RE despatch wherein in this case they have considered 100 %. Also in the Ministry Notification of Trajectory for replacement of Thermal Generation, a number of thermal generators are identified for replacement of RE, and those scenarios needed to be considered in the study. Already it had been observed that around 30,000 MW LTA had been relinquished by the generators already and the entire burden had been fallen on states. Any transmission system needed to be planned optimally in such scenario and redundant capacity needed to be avoided.

xi) MS, SRPC stated that the states concern may be apprised to Chairperson, SRPC in tomorrow's meeting. He observed that SR would be getting additional import ATC of 3000 MW through this link. Even four peak months if SR is able to make use of the import capability it will ease the crisis of import constraints and would take care of load growth. There is huge price differential of power in SR and the price of power available in other regions.

xii) **TCC Recommendation**

Chairperson, SRPC may be requested to take up the concern of SR states with MoP.

7.4 SRPC Deliberation

(a) COO, CTUIL stated that the recommendation was submitted to the NCT as per the stipulated time line and were not inclined to reopen the studies in this regard. It was also mentioned by CTUIL that online studies were conducted during the COVID-19 Pandemic restriction; however, from now on offline studies would be arranged for such projects.

(b) It was decided that Chairperson, SRPC may take up the concern of SR states on behalf of SR States with MoP as the views of states are not appropriately considered.

8. Operational and Implementation Issues with NPCIL Stations in SR

8.1. Prolonged outage of MAPS Unit-1 (220 MW)

(i) MAPS Unit 1 (220MW) is under shutdown from 30th January 2018 due to reactor side issues. In the 190th OCC meeting (09.05.2022), MAPS had informed that technical issues are resolved and once the approval AERB is received the unit will be brought back on bars.

(ii) CMD, TANGEDCO vide letter dated 30.04.2022 (**Annexure-8a**) had taken up the issue CMD NPCIL for probable date of revival.

(iii) TCC Deliberation:

(a) MS, SRPC informed that on 02.06.2022 CMD **(Annexure-8b)** NPCIL have replied to CMD, TANGEDCO and informed that MAPS Unit I will not be available for 2022-23.

(b) ACE (Tr.), NPCIL informed that being one of the oldest units, the unit has some technical issues. Unit is unlikely to revive during 2022-23. Hence, generation from the unit should not be considered by the beneficiaries in LGB for 2022-23.

(c) MS, SRPC opined that advance information flow needed to be there regarding the outage/revival of the units. TANTRANSCO was planning their LGB considering MAPS Unit 1 from July 2022 which was based on the latest information from NPCIL regarding the revival.

(d) TNSLDC stated that the revival date of MAPS Unit 1 is still uncertain and NPCIL keeps on changing the reviving date. Expressed concern on the low generation level of Unit 2 i.e in the range of 150-180 MW, which is creating network constraints in that area. NPCIL was requested to furnish advance information regarding the revival of Unit 1 and generation level of Unit 2 so that they can plan LGB and line loading accordingly. Biennial shutdown of Unit 2 is planned during April/May 2023. Requested NPCIL to review the same and prepone to January/February 2023 or carry out after summer period.

(e) ED, SRLDC pointed out that to maintain line loading in South Chennai, MAPS full generation is very much required. In peak period the units were very much required when all the ICTs at Chennai area were heavily loaded. He requested NPCIL to expedite the actions for bringing back the unit at the earliest.

(f) MS, SRPC requested NPCIL to consider favourably the outage proposal of Unit 2 as suggested by TANTRANSCO who is the major beneficiary. ACE (Tr.), NPCIL agreed to take up the concern with higher management for review of the outage plan.

(g) TCC Recommendation

- NPCIL to expedite actions to revive MAPS Unit 1 at the earliest which will not be available for 2022-23.
- NPCIL to look into the low generation level at Unit 2 and to increase the generation to the maximum.
- NPCIL to give timely intimation regarding the outage/revival/generation level of the unit well in advance to beneficiaries/SRLDC.
- NPCIL to review the Outage Plan of MAPS Unit 2 which is planned for April/May 2023 and to carry out during January/February 2023 or after summer.

(iv) SRPC Deliberation

- Chairperson, SRPC suggested NPCIL to avoid outages during peak period. NPCIL stated that all possible actions had been taken in this regard as per the Codes and Regulations. The outage period was reduced to less than 70 days (for KKNPP) and further endeavor to reduce the same.
- **The forum reiterated the request of making available the Nuclear Generating Units during peak demand period and avail shutdown during off-peak/monsoon/high RE period.**
- **It was decided that Chairperson, SRPC to take up the matter again with CMD, NPCIL & MoP.**

8.2. **Restoration of 400/220 kV ICT at KGS**

The 400/220 kV ICT I at Kaiga is out from 28.01.2022 due to Buchholz relay operation alarm at Y phase. SRLDC had observed that due to the prolonged outage of this ICT there is no N-1 for Kaiga GS Stage 1 evacuation. Due to the outage of ICT at KGS, outage proposals for maintenance works of transmission lines in and around Kaiga area were deferred.

- MS, SRPC vide letter dated 22.04.2022 (**Annexure-8c**) had taken up with Additional Chief Engineer (Transmission & Electrical), NPCIL regarding the delay in restoration of ICT which was out from 28.01.2022.

  NPCIL vide letter dated 27.04.2022 (**Annexure-8d**) had informed that Spare ICT from PGCIL Bengaluru installed at location. Presently transformer overhauling and radiator bank replacement is in progress and it is expected that the job will be completed by 10.05.2022**.**

TCC Deliberation

i) KPTCL informed that due to non-availability of ICT, many outage proposals are being deferred.

ii) ACE (Tr.), NPCIL informed that single phase ICT borrowed from PGCIL was put in service.

SRPC noted the above.

8.3. **Commissioning of 2x125 MVAr Bus Reactors at KGS**

(i) Two numbers 125 MVAR Bus Reactors at KGS have been approved in 37th SCPSPSR held on 31.04.2014. The delay in commissioning of the reactor has been taken up in various forum of SRPC and even in the Special Meeting convened by Chairperson, CEA on 22.11.2019. It is a matter of concern that KGS units are not absorbing MVAR as per capability and not expediting actions for procuring/commissioning of reactor and always seeking support from SRLDC/KAR SLDC for voltage control at Kaiga. MVAR testing at KGS was never facilitated by KGS citing various issues.

(ii) OCC had expressed concern that the proposal approved long back (2013) and still it is not tendered. KGS had stated that they will appraise HQ in this regard. Since this is through public procurement some delay in processing is being faced.

(iii) MS, SRPC vide letter dated 22.04.2022 (refer Annexure-8c) had taken up with Additional Chief Engineer (Transmission & Electrical), NPCIL regarding the delay in commissioning of reactors. NPCIL vide letter dated 27.04.2022 (refer Annexure-8d) had informed that Technical evaluation meting done and financial bids are proposed to be opened on 13.05.2022.

(iv) TCC Deliberation:

(a) MS, SRPC expressed that the reactor is approved in 2014 and delay in commissioning is being followed in various forums. He pointed out for NPCIL to note that Kaiga station is located in a generation pocket and voltage/reactive issues are prone to happen. He recalled that earlier Kadra and Kodasalli units were also injecting MVAr to Grid and after MVAR testing and proper sensitisation at present those units are absorbing MVAR.

(b) SRLDC highlighted the high voltage issues in Kaiga area and intimated that many lines are being opened to mitigate high voltage which may even affect evacuation of Kaiga units connected at 220 kV level. Adding to severity of the issues Kaiga units are not absorbing MVAr and sometimes even injects to the grid. Kaiga is not allowing for MVAR testing also.

(c) KPTCL also expressed their concern regarding the HV at Kaiga and opined that NPCIL should understand the criticality of non availability of recommended reactor for the past 8 years and on the onset of Monsoon KPTCL is facing HV issues and are forced to switch off even evacuation lines. Synchronisation of Hydro Units is also affected by HV issues at Kaiga.

(d) APTRANSCO expressed concern that non absorption of MVAR by NPCIL units will over burden State generators.

(e) KSEBL mentioned that all are working in a system comprising of generators, transmission and distribution entities, beneficiaries etc where secure power system operation is the requirement. All individual element of the system are bound to work adopting the system requirement. It is not appreciable to hear from a generator that bidding is not successful for a single element for the past 8 years after approval of the Standing Committee. System Operators should look into whether the element needed to be allowed to be in the system.

(f) NPCIL informed that Financial Bids were opened; Purchase Order would be placed within one month and would take 18 months (one year for delivery and 6 months or commissioning) for commissioning from date of placement of Order. NPCIL stated that the reactor proposal came up after commissioning of the Units and it is very difficult to procure the reactor. In the planning stage itself if reactors have been recommended the process would be very simple.

(g) **TCC Recommendation**

NPCIL to expedite the action for commissioning of the reactors at KGS without further delay

SRPC noted the above.

8.4. **Re-installation of failed Shunt Reactor II (400 kV 80 MVAR) at KKNPP**

(i) The shunt reactor was commissioned on 05.10.2012. The same had failed and out of service from 14.12.2016.

(ii) In the 190th OCC Meeting (09.05.2022), KKNPP had informed that Contractor had taken the reactor to Chennai and repaired reactor is expected back at KKNPP and would be commissioned by end of **May 2022.**

(iii) **TCC Deliberation**

(a) NPCIL informed that work is in progress and commissioning of shunt reactor at KKNPP is now expected by **August, 2022.**

(b) MS, SRPC recalled that since long KKNPP was requested to commission the reactor before Monsoon which was also affirmed by KKNPP.

(c) ED, SRLDC expressed that against a capability of absorbing around 600 MVAR from both the units, only 100-125 MVAR is being realised. During monsoon, TTPS units also won't be there on bar to support MVAR absorption and the severity of the situation needed to be understood by NPCIL and action for commissioning of the reactor needed to be speeded up. He suggested that for the upcoming units study may be carried out by KKNPP and CTUIL regarding the additional MVAR requirement considering the maximum possible absorption by the units.

(d) MS, SRPC endorsing the views of SRLDC stated that as per Planning Criteria it is Generator responsibility to ensure the reactive power availability as warranted by system. If units are not capable of providing adequate MVAR, generator may need to install reactor at switchyard also as and when requirement arise.

(e) TCC Recommendation

NPCIL to expedite commissioning of the reactor at KKNPP, in view of the urgent system requirement.

SRPC noted the above.

8.5. **Restoration of 230 kV SR Pudur – KKNPP feeder at KKNPP end**

(i) In the 187th Meeting of OCC held on 09.02.2022 outage of 230 kV Kudankulam – SR Pudur feeder at Kudankulam end since 06.12.2021 due to defective Line Isolator at KKNPP end and TN SLDC concern of over loading issues at Tuticorin complex when all the Tuticorin units are on bar at full load had been deliberated. KKNPP representative had informed that the rectification of the faulty isolator and Restoration of 230 kV SR Pudur – KKNPP feeder will take another two-three months.

(ii) Subsequently, TANTRANSCO had suggested interim arrangement that 230 kV TTPS-KKNPP S/C line and 230 kV TTPS Auto-Kayathar 400 kV S/C line may be modified as 230 kV TTPS-TTPS Auto line 3 and the same was implemented on 04.04.2022 with the approval of CEA.

(iii) In the 190th Meeting of OCC (09.05.2022) KKNPP had informed that there is some issue at GIS and again it will take another month to rectify those issues (restoration by June 2022).

(iv) TCC Deliberation

(a) NPCIL informed that Order had been placed with M/s Siemens and work will commence from 20th June, 2022 and switchyard outage is planned. Works will be completed within one week once started.

(b) SRLDC suggested that during the outage period TANTRANSCO may plan for maintenance/replacement of insulators etc on TTPS-SR Pudur lines since these lines are passing through tough terrain even covering bird sanctuary.

(c) TANTRANSCO informed that action had been taken for the same. Reconductoring with HTLS conductors also have been planned.

SRPC noted the above.

8.6. **Refuelling Schedule of KKNPP Unit-2 (1000 MW)**

(i) KKNPP Unit 2 (1000 MW) has been taken out for annual maintenance cum refuelling from 25.03.2022 for 68 days (25.03.2022 to 31.05.2022). Thus the unit was not available during the High demand months of SR. The beneficiary States has suffered due to the non availability of KKNP unit-2 coupled with less generation from coal based thermal stations on account of shortage of fuel.

(ii) KKNPP has planned next outage of Unit- 2 (1000W) from 17.03.2023 to 20.05.2023 (65 days) again during the high demand season of SR. The refuelling schedule of Unit 2 needed to be reviewed by KKNPP. KKNPP to ensure availability of the unit during high demand season of SR.

(iii) In the daily review meeting of JS (OM), MoP, it was noted with concern that KKNPP unit -2 was approved for refuelling shutdown by SRPC forum during peak demand months of SR.

(iv) Rescheduling of re-fuelling activities in KKNPP to lean period: TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has furnished the following:

a) The power demand goes peak every year during the summer months of April and May in the country. This year due to post COVID-19 surge in power demand and coal shortage leading to lesser generation from thermal stations etc., all the States including Tamil Nadu faced difficulties in meeting demand and were forced to procure power from open market at high cost.

b) The Kudankulam Nuclear Power Plant Unit II schedules its refueling activities during April and May wherein Tamil Nadu has a share of 562.5 MW. M/s. NPCIL

was requested vide TANTRANSCO's letter dt: 21.03.22 to postpone the refueling activities of Unit II of Kudankulam NPP. But no favourable consideration has been given by NPCIL.

c) In this regard, shutting down of 1000 MW Unit during peak summer is highly detrimental to manage the power situation. Being a nuclear power station, NPCIL is enjoying the '*must run status'* and supplies power during RE season, when the State is in surplus scenario. NPCIL has not come out with any technical/ commercial issues for deferment of the re-fuelling activities.

d) This issue has been deliberated in the 34th SRPC meeting also. In this regard, TANTRANSCO has flagged the issue by a letter to CMD/ NPCIL dt: 04.05.2022 to consider the rescheduling of refueling activities at least from next year onwards.

e) Under such circumstances, the Forum may request NPCIL to come up with a detailed response for deliberation during the meeting.

f) TCC Deliberation:

(i) MS, SRPC recalled that in the daily JS(MoP) Meeting JS was critical of SRPC for approving KKNPP shut down during the peak months. He observed that February-April are the peak months w.r.t SR and shut down of 1000 MW unit impact the system very adversely which had been put forward by beneficiaries in various forums since long.

(ii) NPCIL informed that KKNPP Unit outage needs to be taken for refuelling whenever 300 Full power days operations get completed. Efforts to reduce the RSD outage period from 75 days to less than 70 days are being made to improve the availability of unit. Recent Refuelling SD of KKNPP-2 was completed in 66 days. Efforts will be taken to further optimize the number of refuelling outages. The refuelling cycle in respect of Unit 1 is 400 days and the present refuelling cycle of Unit 2 is 300 days. After 2 more cycle, the refuelling cycle for Unit 2 will be 450 days.

(iii) APTRANSCO/TSTRANSCO opined that reloading quantity of the fuel may be adjusted such that units may be available during peak months.

(iv) All the Utilities requested to shift the refuelling to off peak period by operating the unit at 700 MW (part load operation) for at least for two months. SRLDC observed that KKNPP units had operated at partial loading for quite longer period in the past.

(v) NPCIL added that regulation of power/deviation from the standard procedure will complicate reactor core management and have potential to affect fuel reliability and such variations needs to be contained.

(vi) KSEBL noted that w.r.t SR both the scenario, surplus as well as deficit, needed to be managed and NPCIL needed to come up at least with seasonal flexibility.

(vii) KPTCL also expressed that during RE season they are penalised for under drawl and during summer season for over drawal. NPCIL units only can help the states.

At the same time states are forced to absorb RE and Nuclear (Must Run). NOC may be given to NPCIL units to sell the power in market.

(viii) MS, SRPC noted that all these issues had been apprised to MoP and MoP had taken a Meeting wherein it was concluded that in the existing units flexibility cannot be enforced, however it was suggested that in future the design of nuclear plants should be such that there is flexibility to absorb RE power. He opined that after further deliberations in the SRPC Meeting, Chairperson SRPC may be requested to take up with MoP to ensure no planned outages of NPCIL during the months of February to April every year.

(ix) TCC Recommendation

Chairperson, SRPC may be requested to take up with MoP to ensure that no planned outages units are planned by NPCIL in SR during the months of February to April every year.

g) SRPC Deliberation

The Committee reiterated the requirement of availability of units at NPCIL stations during February, March and April and requested NPCIL to reschedule refueling/shutdowns accordingly.

9. Recovery of relinquishment charges as per the order of CERC dated 08.03.2019 in Petition No. 92/MP/2015

9.1 TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has furnished the following:

a) Hon'ble Commission vide its Order dt: 08.03.19 in Petition No: 92/MP/2015 directed to recover relinquishment charges to be paid by entities relinquishing part / full LTA quantum. As per the direction of Hon'ble CERC, the relinquishment charges have been computed by CTU and put on its website on **20.05.2019,** according to which, the total relinquishment charges payable by the generators/ LTA customers is Rs.7299.07 crore to the PoC pool.

b) The issue of recovery of relinquishment charges was taken up by TANGEDCO in the 41st, 44th , 45th and 46th meetings of Commercial Sub Committee and subsequently the same was deliberated in the 36th and 38th SRPC meetings also.

c) In the meantime, many generators have filed appeal before APTEL against the order of CERC and interim injunction was awarded by APTEL.

d) SRPC directed CTU to furnish the action taken in this regard. In response, CTU stated that since majority of the generators have filed appeal, action will be taken based on the outcome of the appeals.

e) TANGEDCO insisted to take necessary action to vacate the stay and recover the charges without waiting for disposal of the appeals. PGCIL stated that difficulties are being faced in recovery of relinquishment charges since some of the generators were under NCLT proceedings etc.

f) Under these circumstances, CTU/PGCIL may be requested to furnish the following details:

(i) Details of recovery of relinquishment charges collected as on date and remitted to pool.

(ii) Details of bank guarantee invoked in this regard and whether the same has been brought into the pool account. In this regard, in appeal no. 352 of 2019, M/s. Aryan MP Power Generation (P) Ltd have stated that BG for an amount of Rs. 56.10 Cr has been encashed by PGCIL.

(iii) List of generators gone to NCLT.

(iv) Any tangible action taken for recovery of the relinquishment charges from generators.

(v) Whether invoice has been raised on all relinquishing entities.

(vi) Action taken by CTU for vacating the stay granted by APTEL.

(vii) PGCIL may be requested to exclude the cost of such redundant assets from the pool.

9.2 TCC Deliberation

(a) TANGEDCO informed that they had taken up the issue of recovery of relinquishment charges in various meetings of the Commercial Sub Committee and TCC/SRPC Meetings. As per the CERC Order dated 08.03.2019 in Petition No. 92/MP/2015, the relinquishment charges had been computed by CTU and put on its website**.** The total relinquishment charges payable by the generators/ LTA customers is Rs.7299.07 Crore to the PoC pool. Before the CERC Order, many IPPs/generators had relinquished the LTA and the charges were being recovered from the beneficiaries. They have been asking the CTU the details of recovery made from the generators and the status of Bank Guarantees (BG) invoked from various IPPs/generators, list of generators that were gone to NCLT, tangible action taken to vacate the stay as APTEL had granted stay against the CERC Order.

TANGEDCO requested to exclude the cost of such redundant assets from the PoC pool since this is over burden on the beneficiaries. The relinquishment capacity is around 35,000 MW against the LTA granted capacity of 48,383 MW. More than 10,000 MW is the stranded capacity and the entire investment cost is being recovered from the beneficiaries. CTU to take action on the recovery of relinquishment charges payable by the generators as calculated by them i.e Rs. 7299.07 Crores.

(b) CTUIL informed that as per the CERC Order, they had computed the relinquishment charges payable by the generators/ LTA customers to the PoC pool as Rs.7299.07 Crore and published on website. However**,** more than 20 IPPs had disputed the charges computed and filed appeals in APTEL. These appeals are yet to be disposed by APTEL. In view of these disputes and GST issues concerning the raising of invoices, CTU has not raised any invoices as on date. However,

demand letters had been issued to the generators for payment of relinquishment charges.

(c) CTUIL informed regarding the details that were sought by TANGEDCO in the agenda as below:

(i) Against the demand letters, two parties had made the payment of around Rs. 3 Crores and the Bank Guarantee (BG) of 18 IPPs was encashed for around Rs. 400 Crores. The same has been kept in Bank Fixed Deposit (FD) and awaiting the disposal of APTEL appeals disputing the relinquishment charges for taking further necessary action to disburse the amount through PoC pool.

(ii) Out of 18 IPPs, 15 IPPs were undergoing NCLT proceedings. Five more new IPPs have been added under NCLT proceedings, whose CBG is not encashed, in view of court proceedings are under NCLT. There are 20 IPPs which are undergoing insolvency procedure under NCLT. CTUIL has filed claims with IRP in all NCLT-IPPs.

(iii) As on date, 2 IPPs have completed the insolvency proceedings, However, CTU being operational creditor, nothing has been recovered from these parties in NCLT process.

(iv) CTUIL has filed the reply in APTEL and hearings are to be take place in the matter. The matter is listed in Court 1 of APTEL and the bench is vacant for the past two years. CTUIL is taking the steps for transfer the case from Court 1 to Court 2.

(v) The invoice towards the payment of relinquishment charges have not been raised due to APTEL's stay and GST issues. However demand notices were issued to IPPs and claims have also have been filed before IRP.

(vi) None of the assets are redundant and the assets are being utilised as per system requirement. All the assets have been developed as per due approved process and the Tariff of which is being recovered as per CERC Order.

(d) On a query from TANGEDCO that why invoices were not raised by CTU, CTU informed that earlier, when CTU raised invoices for recovery of MTOA relinquishment charges, tax authorities had sent the show cause notices to CTU mentioning that why GST is not being paid in respect of relinquishing customer. CTU had replied to them stating that these relinquishment charges are the transmission charges which are to be put back into pool. However, Tax Commissioner did not accept the reply and issued an Order stating that GST is applicable on relinquishment charges considering this as compensation. Against this Order, CTU had filed an appeal in Appellate Tax Tribunal and the matter is being pursued.

(e) Director (T, SO, P & S), KSEBL opined that instead of CTU going into the appeals, CTU may have raised invoices to the parties along with the taxes since the defaulting entity has to bear the taxes. This action would protect the interest of

the common people instead of protecting the defaulting entity.

(f) CTU informed that the parties disputed the charges and filed appeals. Hence the payments will not be made by these parties. Once the invoice is raised, upfront tax has to be made to the Tax Authorities.

CTU, on keeping the BG amount in FDs, clarified that in the cases of refund of BG amounts to IPPs, APTEL/CERC recently in their Orders have directed to pay along with the interest to IPPs, when the order by APTEL/CERC is in their favour. In case if this BG amount is put back into the pool, the same shall be recollected from DICs along with interest to refund to IPPs.

TANGEDCO stated that there is no justification to hold the amount recovered from the IPPs/Generators. All the assets are included in the PoC pool and the complete charges are being recovered from the DICs.

(g) Director (Grid & Tr. Mngmnt.), APTRANSCO stated that AP is the most suffering state on account of these lines developed. Hence CTUIL has to take special interest in recovering the relinquishment charges from the generators who relinquished/abandoned the LTA. The transmission system was developed but the generation project did not come up. But the transmission charges are being recovered from the beneficiaries/DICs for the developed transmission system which is a burden to the states. End consumers bear the brunt of these charges.

(h) CTUIL informed that only two generation projects had been abandoned in Southern Region and it was more in other Regions. As per the CERC Regulations, the generators have the right to relinquish LTA but with relinquishment charges.

TANGEDCO stated that these schemes were evolved based on the BPTA not based on the LTA. Hence as per the agreement, generators are liable to pay the transmission charges. After implementation of the projects, Regulations had been changed and the transmission charges have been put on beneficiaries.

(i) Regarding the exclusion of the cost of redundant assets from the pool, CTUIL reiterated that no asset is redundant. As per the Operator's feedback, no transmission system or line is kept unutilized / redundant. Transmission systems/lines may be utilized less in one season and peak season, it may be utilized for more transfer of power. Much of the transmission system has been planned as per planning process and all the inter-regional links power is imported by SR. Presently, SR has 7500 MW firm LTA & MTOA which is to be transferred from NEW grid to SR Grid. Against 7500 MW, SR has imported more than 16000 MW in this peak season including through Power Exchanges, STOA etc. These transmission systems are only facilitating to meet the demand by SR beneficiaries. It may be observed that during peak season, SR is importing from NEW grid and during the off-peak season, SR is exporting to NEW grid to the extent of 5000-8000 MW.

TANGEDCO pointed out that as the CTU computations, stranded capacity is 10,000 MW. In the affidavit filed with CERC, CTU had stated that 56% of the

transmission capacity has become redundant due to the relinquishment of LTA by IPPs/generators.

CTUIL stated that there was a methodology that was prescribed for determining the stranded capacity and corresponding transmission charges. CTU had submitted affidavit in CERC saying that relinquishment charges cannot be determined through system studies. However, Commission had come up with specific Order and as per that Order relinquishment charges had been computed by CTU. CTU reiterated that no asset is redundant and the transmission systems are utilized at different point of times during the grid operation.

(j) MS, SRPC stated that the issue would be further deliberated in the SRPC meeting and the decision in respect of disbursement of Rs. 400 crores in FDs from the relinquished entities to the DICs may be taken.

9.3 SRPC Deliberation

a) Chairperson, SRPC enquired about the status of the case in APTEL.

b) COO, CTUIL informed that they were in the process of shifting from Cout-1 to Court-2 of APTEL so that hearing takes place. He also informed that in respect of GST issues, they were rigorously following up and were hopeful for positive results and after that they would raise the invoices. Around Rs 400 cores are with CTU in the form of FD and the same will be put in the pool once the Order comes. They were not putting into the pool because in case Order from APTEL is in favour of generators, the amount shall be taken back from the pool (taken back from DICs) for reimbursement to those IPPs/Generators.

c) Chairperson, SRPC suggested CTUIL to refund the Bank Guarantee (BG) encashed by CTUIL from the relinquished generators for around Rs. 400 Crores to the DICs.

d) COO, CTUIL stated that it is common money of all the five regions and cannot be given state-wise or region wise. Hence it needs to be taken up in other four RPCs and gets recorded. Subsequently, they would go ahead with the reimbursement to the DICs.

e) **SRPC recommended that CTUIL to place the agenda item in other RPCs conveying the decision of SRPC. Subsequently, the Bank Guarantee (BG) encashed by CTUIL shall be refunded to all the DICs.**

10. Enhancement of PSDF grant for 125 MVAr Bus Reactor at Dr NTTPS switchyard

(i) APGENCO vide letter dated 10.05.2022 (**Annexure-10**) has submitted the following:

- ✓ MoP vide order dated 17.12.2020 has sanctioned Rs.12.41 Crores (against estimated cost of Rs.12.95 Crores) from PSDF to APGENCO for installation of one number 125 MVAr Bus reactor at the existing 400 kV switchyard of Dr NTTPS.

- ✓ As the L1 firm during open tender process offered Rs.21.11 Crores and during negotiations the bidder has expressed that there has been steep hike in price of raw material due to COVID-19.
- ✓ Requested to arrange sanction of additional amount of Rs.7.82 Crores.

(ii) TCC Deliberation

a) APGENCO informed that the reactor was proposed during 2018 to mitigate the high voltage issues in Vijayawada zone and the estimated cost was around 12.95 Crores and PSDF was sanctioned for 12.41 Crores during December 2021. There has been steep hike in price of raw material due to Covid-19 and the offered cost is 21.11 Crores, additional 7.82 Crores compared to sanctioned fund which may be further sanctioned from PSDF.

b) NLDC informed that enhancement of PSDF fund beyond the sanctioned amount is not possible as per the PSDF Guidelines. However, APGENCO may approach Project Monitoring Group and action will be taken according to the direction from MoP.

c) CE, NPC Division, CEA stated that as per MoP Guidelines, once the project is sanctioned grant from PSDF, any additional cost (due to price variation etc,) if any shall be borne by the project entity from their own source. APGENCO may take up the issue appropriately.

d) CE, KPCL informed that they are planning to submit DPR for procurement of 125 MVAR shunt reactor at Yeramarus and requested CEA to support them in getting the fund sanctioned. CE, NPC Division, CEA suggested KPCL may approach NLDC with DPR. The proposal would be evaluated by Techno Economic Sub- Group of PSDF and accordingly PSDF sanction would be processed.

e) **TCC Recommendation**

APGENCO may approach Project Monitoring Group of PSDF/MoP for suitable direction.

SRPC noted the above.

11. Re-Construction of dilapidated Township of Vijayawada Substation under Additional Capitalization block 2019-24

11.1 PGCIL vide letter dated 12.05.2022 (**Annexure-11**) has submitted the following:

(a) The issue of re-construction of damaged residential quarters issue was raised in 39th SRPC for meeting the basic minimum requirement for continuous manning and safety of the manpower of Vijayawada station, for getting consent of constituent as per directive of CERC.

(b) During SRPC discussion POWERGRID stated that structural assessment was carried out and report was awaited. The report shall be submitted to SRPC after receiving from M/s NCCBM (National Council for Cement and Building Material) Govt of India,

Hyderabad. Report of NCCBM is received in February 2022, with following the recommendation:

"Taking into consideration of zonal requirement of earthquake resistance and as per poor quality concrete found in Residential quarters B & C (Load bearing structures), it might not be having capacity to carry the upcoming load due to insufficient comprehensive strength of collected concrete and brick sample, it would appropriate to dismantle these structures."

(c) Keeping in view of above recommendation of M/s NCCBM, POWERGRID is now **requesting constituent for their consent for re-construction of quarters at Township of Vijayawada SS, under the provisions of Additional Capitalization for the tariff period 2019-24 (under Regulation 25.2.(a) of CERC Terms and conditions of Tariff Regulations, 2019) at an estimated cost of RS. 4.50 Crores** (09 Nos. Quarters including dismantling of old quarters), for meeting the basic minimum requirement of these stations.

11.2 TCC Deliberation

(a) MS, SRPC informed PGCIL has requested for the consent of constituents for re-construction of quarters at Township of Vijayawada SS, under the provisions of Additional Capitalization for the tariff period 2019-24 as per CERC (Terms and Conditions of Tariff) Regulations 2019.

(b) PGCIL informed that a Report from M/s NCCBM (National Council for Cement and Building Material) Govt of India, Hyderabad has been received in February 2022 and the report had suggested dismantling the structures. Since the man power requirement has significantly reduced, it was proposed to create minimal infrastructure at an estimated cost of RS. 4.50 Crores (09 Nos. Quarters including dismantling of old quarters). Presently there are 67 nos of quarters at Vijayawada Township. Operating manpower has been reduced; however, Substation maintenance (including transmission line maintenance) manpower is required to be kept at SS.

(c) APTRANSCO, KPTCL & KSEBL agreed to give consent for re-construction of 9 nos. of quarters at Township of Vijayawada SS, under the provisions of Additional Capitalization for the tariff period 2019-24.

(d) TSTRANSCO stated that the issue was deliberated in the 39th Meeting of SRPC held on 06.12.2021 wherein no consensus was arrived. PGCIL had informed that they would submit a Report from M/s NCCBM.

(e) TANGEDCO informed out that as per the Tariff Regulations 2019, the Regulation 25 envisages the *Additional Capitalisation within the original scope & after the cut-off date* and the Regulation 26 envisages the *Additional Capitalisation beyond the original scope* and the Regulation 27 specifies *Additional Capitalisation on account of Renovation and Modernisation.* PGCIL to clarify that under which Regulation, the Additional Capitalization is proposed to be claimed.

(f) PGCIL clarified that they would claim under Regulation 25 of CERC (Terms and Conditions of Tariff) Regulations 2019.

(g) MS, SRPC pointed out that in the CERC Order dated 06.05.2021 in Petition No. 155/TT/2020, it is mentioned that CERC are not inclined to allow ACE claimed by the Petitioner towards "building & civil works" under Regulation 25(2)(a) of the 2019 Tariff Regulations. As per the Regulation 27 (Additional Capitalisation on account of Renovation and Modernisation) only, the consent of the beneficiaries is required. He enquired that whether PGCIL has filed a petition specifically including reconstruction of quarters at Vijayawada SS and any CERC Order/RoP in respect of Vijayawada SS for additional capital expenditure.

(h) PGCIL informed that CERC in similar cases earlier had directed to take the consent from beneficiaries' viz. in the Order in Petition No 155/TT/2020.

(i) TCC suggested that in view of the lack of complete details, the agenda may be first deliberated in the Commercial Sub Committee Meeting with detailed information.

11.3 SRPC Deliberation

(a) PGCIL informed that they have filed a petition with CERC covering the reconstruction of quarters at Vijayawada SS under provision 25.2.c of CERC Tariff Regulations 2019. CERC has issued Record of Proceedings (RoP) for the date of hearing on 08.06.2021 under this Petition no. 154/TT/2020 in the matter of revision of transmission tariff for 2001-04, 2004-09 and 2009-14 tariff periods, truing up of transmission tariff of 2014-19 tariff period and determination of transmission tariff for 2019-24 tariff period for Transmission System associated with 400kV Central Transmission Project-I in the Southern Region wherein CERC has directed PGCIL to seek the consent of the RPC forum. However, final Order is yet to come.

PGCIL added that the township at Vijayawada was constructed 31 years back and is deteriorated/not in good condition. They were seeking consent to construct only 9 nos. of quarters because man power requirement was considerably reduced due to automation. There is only maintenance set up of substation and transmission lines. Building code and building standard construction practices had been revised subsequent to 2001 earth quake of Bhuj and these buildings at Vijayawada constructed in 1980s are not complying with the seismic requirement which has now been mandated by the National Disaster Management Authority also. There are three townships much older than this Vijayawada township in SR-I jurisdiction, but the condition of the quarters at Vijayawada township has gone very bad. Hence PGCIL is recommending the reconstruction at Vijayawada township and the approximate cost is Rs. 4.5 Crores. PGCIL requested SRPC to approve the same.

(b) Chairperson, SRPC enquired the life time of the existing buildings at Vijayawada SS. PGCIL replied that it is 30 years and completed the life period.

(c) SRPC approved for the dismantling of old quarters and for reconstruction of the 9 nos. of quarters at PGCIL Vijayawada township and for the estimated cost of Rs 4.50 Cr.

PGCIL would furnish the details in respect of Vijayawada Township quarters like Petition, RoP, Order, Report of NCCBM to Commercial Sub Committee of SRPC.

12. Commissioning of the Transmission project under "Additional Inter-Regional AC link for import into Southern Region" executed by M/s WKTL

12.1 The status is as follows (as per CEA report for April 2022):

	Transmission Elements	Line Length (ckm)/ MVA Capacity	Implementing Agency	Sch COD	Anticipated COD	Constraints/ Remarks
a	Establishment of 765/400 kV substations at Warangal (New)	**2x1500 MVA +2x240 MVAR**	Warora Kurnool Transmission Limited (**WKTL**), which was SPV of Essel Infraprojects Ltd has been acquired by **Adani Transmission limited**.	**Nov 19**	**Jan 23**	
b	Warora Pool -Warangal (New) 765 kV D/C line with 240 MVAR switchable line reactor at both ends.	**664**		**Nov 19**	**Jan 23**	65.6 ckm stringing complete. 808 / 844 tower foundation completed, 588 towers erected.
c	Warangal (New) –Hyderabad 765 kV D/C line with 240 MVAR switchable line reactor at Warangal end.	**268**		**Nov 19**	**Jan 23**	85.074 ckm stringing complete. 329 / 344 tower foundation completed, 315 towers erected.
d	Warangal (New) – Warangal (existing) 400 kV (quad) D/C line.	**96**		**Nov 19**	**Jan 23**	70 / 126 tower foundation completed, 38 towers erected
e	Hyderabad– Kurnool 765 kV D/C line with 240 MVAR switchable line reactor at Kurnool end.	**337**		**Nov 19**	**Oct 22**	143.83 ckm stringing complete 422 / 430 tower foundation

						completed, 408 towers erected. Line reactors 2x240MVAR at Kurnool commissioned and being used as bus reactors for voltage control.
f	Warangal (New) – Chilkaluripeta 765 kV D/C line with 240 MVAR switchable line reactor at both ends.	**390**		**Nov 19**	**Oct 22**	469 / 510 tower foundation completed, 350 towers erected

12.2 TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has furnished the following

a) The transmission project under "*Additional Inter- Regional AC link for import into Southern Region"* executed by M/s WKTL is delayed inordinately since the SCOD i.e.5.11.2019.

b) There was a Right of Way issue in only one element i.e. Warora- Warangal 765 kV D/C line. However, the entire project was stalled by WKTL.

c) Subsequently, due to poor financial conditions of M/s Essel Infra, the parent company of WKTL, the lenders Yes Bank and IDBI Trustee Limited filed a petition No.71/MP/20219 before CERC for transfer of 100% sharing holding of Essel infra to M/s Adani Transmission Limited. The Central Commission vide its order dated 27.01.2021 approved the proposal of the lenders for share transfer. But, even after that, the project has not been commissioned.

d) The issue had been deliberated in various forums including MoP. MoP vide letter dated 16.04.2020 addressed to CEA has directed as below:

"WKTL, as implementing agency for the above TBCB project, are solely responsible for execution of the project within the scheduled time frame*. Ministry of Power only facilitates implementation of the project in a time bound manner. ln case of any constraint in completion of the project, as per established procedure in this regard, WKTL should have approached CERC for redressal of the issue. lnstead, WKTL approached CEA and MoP for redressal of the issue. MoP, In an attempt to facilitate resolution of the issues, constituted a committee, which studied the details of the case and carried out joint inspection of the site.* ***During this process, WKTL, at its own level, stopped the work in other sections of the Transmission system which is in total violation of the extant provisions of TSA****. It is further clarified that the time taken by Ministry of Power in examination of the issue and conveying its views does not, in any way, entitle WKTL to relief in the*

time lines for project extension, which is governed solely by its contractual obligation. *Hence, during the intervening period, i.e. the period since approaching CEA and Ministry of Power, WKTL, would not make them entitled for any relief under Force Majeure or any other clause of Transmission Service Agreement.*

CEA is advised to ascertain the progress of all the elements of the transmission system awarded to WKTL including the present Warora-Warangal 765 kV D/c line within the framework of contractual obligations and to ***issue all necessary advisories to the Lead Long Term Transmission Customer including invoking of provisions as may be necessitated*** *for ensuring that there is no further delay in completion of the project."*

e) CEA vide letter dated 18.04.2020 has communicated the copy of the MoP's letter and advised as below:

"MoP, GoI has decided that M/s WKTL, the developer of Warora-Warangal 765 kV D/C Transmission Line is required to complete the balance works in above line as per the original approved route in the coal bearing area of WCL involving 16 towers without any further delay and also to ***comply all other decisions of MoP conveyed as per above letter dated 16.04.2020****. Further, WKTL is required to complete all the elements in the above Scheme within the framework of the contractual obligations. It is also requested that the latest status and implementation schedule of all the elements of above line may be conveyed to CEA at the earliest.*

Lead Long Term Transmission Customer (LTTC), i.e., ***TANGENDCO Ltd, is requested to take necessary action as per TSA to ensure that there is no further delay in completion of the above project.***

f) In this context, TANGEDCO being the Lead LTTC, had issued notice dated 21.03.2020 requesting to make payment of LD for the delay since SCOD. Subsequently, another notice dated 18.12.2021 was issued to make payment of LD for the delay of 180 days (restrictions in TSA) as per the provisions of TSA under Article 6.4.1 even though the delay was more than 774 days.

g) However, in the order dated 07.02.2021 in petition No.334/MP/2020 granted interim protection against encashment of BG against LD.

h) Now, M/s WKTL has issued notice dated 29.04.2022 regarding intimation of readiness for charging /commissioning of the element 5 of the project i.e. Hyderabad –Kurnool 765 kV D/C line 240 MVAR switchable reactor at Kurnool end. In this context, it is to be stated that since this element is proposed to be commissioned independent of other elements, the issue of applicability of LD may be deliberated in the meeting. Further, the forum may request CEA and CTU to deliberate the further course of action due to the abnormal delay.

12.3 TCC Deliberation:

(a) MS, SRPC briefed that Warora- Warangal 765 kV D/C line was held up due to RoW issues. MoP had clearly stated that M/s WKTL as implementing agency for this TBCB project, are solely responsible for execution of the project within the scheduled time

frame and the consultation process by M/s WKTL during the intervening period i.e. the period since approaching CEA and Ministry of Power, WKTL would not make them entitled for any relief under Force Majeure or any other clause of Transmission Service Agreement. CEA had also given directions that Lead Long Term Transmission Customer (LTTC) to take necessary action as per TSA to ensure that there is no further delay in completion of the above project. TANGEDCO being a Lead LTTC has been diligently following it up with Transmission Service Provider (TSP) and the same needs to be placed on the record. Now, M/s WKTL had issued a notice for commissioning of the 765 kV Hyderabad –Kurnool D/C line along with the 240 MVAR switchable reactor at Kurnool end. Studies need to be carried out whether this element is useful for the grid requirement and subsequently the decision to allow the commissioning of the element or not may be taken by SRPC.

(b) TANGEDCO informed that they have been following it up with TSP from the beginning and the proactive actions have been taken by them. They have participated in many meetings including the meeting conducted by Ministry of Power. MoP had clearly stated that M/s WKTL should not delay the progress of the other elements due to the delay in Warora- Warangal 765 kV D/C line on account of RoW issues. WKTL was acquired by M/s Adani Transmission limited and even after this there is huge delay and no significant progress is being noted (the scheduled COD is 05.11.2019). There is no appreciable progress in the project even after lapse of more than 2 years. This project is going to be vital for all the RE projects in Southern Region. The studies are being carried out for planning of other systems taking into consideration all the elements of this project. Earlier, CTU/PGCIL had taken up the issue of delay in execution of the Talcher II transmission system with CERC and filed a petition for cancellation of the license. TANGEDCO requested CTUIL/CEA to come out with proactive measures to impress upon the TSP to complete the project in time. And for Liquidated Damages (LD) for the delay in completion of the Project, they have issued notices to TSP for LD. TSP has already filed a petition and got Orders from CERC that no coercive action should be taken against TSP including encashment of Bank Guarantee towards LD. Under these circumstances, TSP has come out with a notice that commissioning of one element of the project. As per the TSA, once the element is commissioned, TSP is liable to pay the LD for the particular element within 10 days from the date of CoD. The action to be taken by Lead LTTC in the circumstances of stay issued by the Commission needs to be deliberated.

(c) CTUIL informed that as per RFP, there is no prerequisite that other elements also to be commissioned along with the 765 kV Hyderabad –Kurnool D/C line COD. If TSP wants to commission the line, it can be done within the terms & conditions of the TSA. LD is governed by TSA and the same shall be taken up by lead LTTC.

(d) MS, SRPC stated that the provisions of CERC Sharing Regulations 2020, stipulate that "*Where only some of the transmission elements of the Associated Transmission System have achieved COD before the COD of the Associated Transmission System and if* ***such transmission elements are certified by the respective Regional Power Committee(s) as required for improving the performance, safety and security of the***

***grid**, the Yearly Transmission Charges for such transmission elements of the Associated Transmission System shall be included for determination of transmission charges of DICs in accordance with Regulations 5 to 8 of these regulations"*

Hence the requirement of commissioning of the element 765 kV Hyderabad –Kurnool D/C line along with the 240 MVAR switchable reactor at Kurnool end may be decided based on the studies.

(e) CTUIL stated that if the forum recommends for the joint study in order to know the utilization part/ loading pattern of the line, CTU will be part of the study. This line was integration of two high capacity corridors between NEW grid & SR grid. One corridor is from Wardha – Nizamabad – Maheshwaram - Kurnool and other parallel corridor is Warora – Warrangal - C'Peta. In case of outage of one corridor, 765 kV Hyderabad – Kurnool D/C line will help other corridor.

(f) TANGEDCO stated that this corridor was evolved for import of power to SR due to deficit conditions that time for facilitating import of power from WR to SR. Along with this, other corridors were also evolved like Raigarh-Pugalur HVDC. Now the scenario has changed. Hence there is a need for assessing the utilization of this corridor in the current changed scenario.

(g) Director (Tr), TSTRANSCO stated that delay in completion of this corridor has created lot of problems operationally/financially to TSTRANSCO. This corridor is passing around 350 kM in Telangana State.

(h) TSTRANSCO stated that when source point Warora-Warangal is not available, this element may not be of much help to the grid. Number of lines in parallel is in place and commissioning of only this line may not be required at present. However, studies are required to be carried out.

(i) CTUIL pointed out that as per TSA individual lines can be commissioned. In earlier standard bidding document, wherein the different elements were clubbed by NCT to make a project viable so that TSP will participate in bidding. As part of the RfP documents/Planning document, CTUIL will submit what are all the elements which should come together and which are all the elements can come independently before TBCB bids take place. If the forum desires study on utilisation of the line, CTUIL will join/facilitate the study (physical-at SRPC/SRLDC).

(j) On a query about future course of action as lead LTTC, TANGEDCO informed that as of now they didn't file any appeal in this regard. They can invoke provisions of TSA. Only for 180 days LD can be levied. Beyond that only provision available before LTTC is terminating the TSA as per article 13 of TSA. But there is a stay by the CERC that no coercive action should be taken against TSP including encashment of BG towards LD.

(k) TCC recommendations

- Commissioning of single element may not be useful, however CTUIL to carry out Joint Study to assess the requirement of the commissioning of Hyderabad –Kurnool 765 kV D/C line 240 MVAR switchable reactor at Kurnool end.

- TANGEDCO being a Lead LTCC was suggested to have a meeting with other LTCCs in respect of LD issues and decide upon future course of action.
- Chairperson, SRPC may be requested to take up with MoP regarding early completion of all the elements.

12.4 SRPC Deliberation

(a) SRPC noted the above.

(b) Chairperson, SRPC agreed to take up with MoP regarding early completion of all the elements.

13. Settlement of Wheeling Charges paid mutually with effect from July 2011 to March 2018

13.1 CERC Orders (in KPTCL- Petition No.225/TT/2013, KSEB- Petition No. 232/TT/2013 and TNEB- Petition No.212/TT/2013), mention that the YTC for the interstate lines *have* been taken in line with Sharing of Inter-State Transmission Charges and Losses Regulations, 2010 and the charges reimbursable had been calculated from 1.7.2011. The Wheeling charges indicated at 3(b) of the REA issued from the month of July 2011 were provisional and issued as inputs from NLDC were pending. As these lines are to be covered under PoC Mechanism from 1.7.2011, the Wheeling charges indicated at 3(b) of the REA issued from the month of July 2011 ceased to have any commercial implications. SRPC vide letter dated 17.3.2017 had requested the Constituents to mutually settle Wheeling Charge payment effected from July, 2011. SRPC vide letter No: SRPC/SE-I/2018/7126-36 dated 06.11.2018 had also circulated the final statements.

13.2 The issue was under deliberation in various Commercial Sub-Committee meetings of SRPC. The status of payments to be made as noted in the Commercial Sub-Committee meetings is as below:

Payable by	Payable to	Amount	Remarks
APPCC/ APTRANSCO / TSTRANSCO/ TSPCC	TANGEDCO	Rs. 25 lakhs	**51st CCM(22.04.2022):** **APPCC:** Made the payment of ₹ 15,97,883 to Tamil Nadu on 31.01.2022. **TANGEDCO:** Raised the bill for the ₹ 8,65,684 for enabling the payment. **TSPCC:** Payment would be settled.
KPTCL/PCKL	TANGEDCO	Rs.7.69 Crores	**51st CCM(22.04.2022):** • High level meeting between KPTCL/PCKL and KSEBL was held on 08.12.2021. • **KPTCL:** The bills for payments to TANGEDCO/TSTRANSCO/Goa had been sent to their Finance Wing for the settlement purpose, but the bills had been returned seeking few clarifications. They
	KSEBL	Rs.12.76 Crores (July 2011 to August 2016)	

	TSTRANSCO	Rs. 9.33 Crores (July 2011 to October 2016)	sought the approval from PCKL in this regard. Further, PCKL vide letter dated 08.04.2022 has stated that KPTCL may consider for deduction of ₹1,11,50,724/- from the wheeling charges payment of Goa towards reactive energy charges receivable by PCKL for the period 2003-04 to 2010-11. Besides, PCKL was not having any issue in respect of payment to Tamil Nadu and Telangana. The bills will be processed accordingly.
	Goa	Rs. 16.74 Crores	

13.3 KSEBL vide letter dated 16.05.2022 (**Annexure-13**) had stated that the Chairman and Managing Director of KSEBL had communicated vide letter dated 31-08-2021 to the Managing Director of KPTCL that KSEBL's claim on reimbursement of Transmission and Wheeling Charges amounting to Rs.12.76 Cr for the period from July 2011 to May 2016, arrived at by adjusting the amount receivable by KSEBL towards Frequency Linked Penalty Scheme during the period 04/1994 to 05/1997 of Rs.11.58 Cr is genuine and based on facts and intimated our willingness for higher level bilateral meeting for settling the dispute as directed by SRPC. Accordingly, higher level meeting was held on 8th December 2021. Even though CMD KPTCL, had stated to look into the issue of Frequency Linked Penalty Scheme implemented as per Section 55(7) of the Electricity Supply Act I948 on mutually agreed basis by all the constituents of SREB including KEB at 111th Meeting of the SREB at Pondicherry on 06.08.1994. But no reply or no refund is received from KPTCL yet. The reminder letter has been sent to the CMD KPTCL vide letter No. Fin /POP/PCKL/KPTCL/2022-23 dtd 29-04-2022 by Director (Finance), KSEBL.

This reveals that the intention of KPTCL/PCKL is not the settlement of the Transmission and Wheeling Charges from 07/2011 refundable to KSEBL as per SRPC letter dtd 17-03-2017 but to delay the settlement by denying the already settled matter of Compensation for Frequency Linked Penalty Scheme which had been implemented by SREB as per Section 55(7) of the Electricity Supply Act 1948 on mutually agreed basis. Hence, the matter needs to be raised again in SRPC meeting.

13.4 TCC Deliberation

(a) MS, SRPC stated that there are no disputes in settlement of Wheeling Charges paid mutually except between KPTCL/PCKL & KSEBL. In the Commercial Sub-Committee meetings, KPTCL had agreed to clear the payments to TANGEDCO, TSTRANSCO & Goa.

(b) Chief Engineer (E), SLDC, KPTCL informed that Payments to TANGEDCO, TSTRANSCO and Goa were under process. KPTCL was considering the deduction of the reactive energy charges receivable by PCKL for the period 2003-04 to 2010-11, from the wheeling charges payment of Goa.

(c) TSTRANSCO informed that they have cleared the payments to TANGEDCO. TSTRANSCO expressed concern on non-receipt of the payment from KPTCL despite agreed to pay long back.

(d) Addl. Director (Proj.), PCKL informed that a meeting between KPTCL/PCKL and KSEBL was held on 08.12.2021 and another Meeting at higher management level is proposed to be held shortly. KSEBL had adjusted the wheeling charges payable to KPTCL with amount receivable by KSEBL towards Frequency Linked Penalty Scheme during the period from 1994 to 1997. The wheeling charges had actually not paid to KPTCL by KSEBL hence there is no question of reimbursement. Frequency Linked penalty scheme was discussed in the 109th to 113th SREB forums and the procedure for incentivising and disincentivising for the over-drawal/under-drawal of the power during low frequency/high frequency was agreed only on provisional basis.

(e) Director (T, SO, P & S), KSEBL informed that a meeting was held in the month of December 2021 wherein it was requested to convene a final meeting. KSEBL vide letter dated 29.04.2022 had also requested to convene a meeting. However, no response was received so far from Karnataka. The applicability of the Procedure regarding the Frequency linked Penalty Scheme is well within the provisions of Section 55(7) of the Electricity Supply Act 1948 that was prevailing at that time. It cannot be said that it is not a legal procedure. The procedure was agreed in SREB forums and one payment was also made by AP at that time. Audit team had also pointed out in this regard and it cannot be left like that.

(f) MS, SRPC stated that since the wheeling charges had not been actually paid by KSEBL, the refund may not arise. This agenda pertains to the reimbursement of the Wheeling Charges paid mutually with effect from July 2011 to March 2018 as per the REA and there is no link with any other pending payment. Hence other payment issues including frequency linked penalty may be settled bilaterally by KSEBL and KPTCL. He added that in 140th SREB meeting it was agreed, the payments pertaining to frequency linked penalty scheme shall not be opened in SRPC forum.

MS, SRPC requested KPTCL to expedite the payments to TSTRANSCO, TANGEDCO & Goa.

13.5 SRPC Deliberation:

(a) SRPC noted the above.

(b) Director (Transmission), KPTCL informed that they were processing and reconciling the bills to TANGEDCO, TSTRANSCO & Goa. The same would be settled soon.

(c) KSEBL informed that they will have a bilateral meeting with PCKL/KPTCL and settle the payment issues between them. MS, SRPC requested KSEBL & PCKL/KPTCL to delink the frequency linked penalty scheme from the wheeling charges payments.

14. Islanding Schemes of Southern Region (ISSR)

14.1 Implementation Status various Islanding Schemes

a) As a result of the comprehensive exercise of review of operational Islanding Schemes and finalization of new Islanding Schemes undertaken during February – August, 2021, all Islanding Schemes (operational as well as new) of SR are under various stages of implementation and the Status was reviewed in PCSC-101 meeting held on 13.04.2022.

b) TANTRANSCO, TSGENCO, TSTRANSCO and KPCL to confirm completion of works at their end for respective Islanding Schemes.

c) **TCC Deliberations**

- In the meeting, latest implementation status of the Islanding Schemes of Southern Region was presented.
- When enquired about the pending works w.r.t. Bengaluru IS, KPCL confirmed completion of the same from their side. Accordingly, the Bengaluru IS was reckoned to be in full operation w.e.f. 31.05.2022.
- W.r.t. Vijayawada IS, APTRANSCO requested that as suggested by SRPC, TSTRANSCO & TSGENCO should provide Under Frequency Relays on the Island forming feeders at 132 kV level at their ends. In this regard, it was noted that TSTRANSCO had already taken up the issue with the concerned field staff for providing the same. TSTRANSCO assured that they would be provided soon.
- The status of implementation of ISSR as on 31.05.2022 is given below:

SN	Name of the Islanding Scheme (IS)	Operational IS/ New IS	Status of Implementation	Implementing Utilities	Utilities from whom Implementation PENDING
1	Hyderabad (Ramagundam) IS (Telangana)	Operational IS	**Review:** Completed on 05.03.2021 Reviewed scheme put into service w.e.f. 31.07.2021	TSTRANSCO, TSGENCO, PGCIL (SR-I), NTPC-Ramagundam	---
2	Chennai IS (Tamil Nadu)	Operational IS	**Review:** Completed on 18.05.2021 Reviewed Scheme put into service w.e.f. 20.05.2022	TANTRANSCO, PGCIL (SR-II)	---
3	Neyveli IS (Tamil Nadu, Kerala)	Operational IS	**Review:** Completed on 04.06.2021 Reviewed scheme put into service w.e.f. 01.11.2021	TANTRANSCO, PGCIL (SR-II), NLCIL, NNPTPS, KSEBL	**TANTRANSCO:** Completed for all elements except one feeder; however, stated that Islanding would be achieved due to implementation of the tripping at the other end of the said feeder. Supply of UFR relays awaited. Assured that the pending works would be completed by June, 2022.

4	Kudankulam IS (Tamil Nadu, Kerala)	Operational IS	**Review:** Completed on 18.08.2021 Reviewed scheme put into service w.e.f. 31.12.2021	TANTRANSCO, PGCIL (SR-II), KSEBL	**TANTRANSCO:** Completed for all elements except one feeder; however, stated that Islanding would be achieved due to implementation of the tripping at the other end of the said feeder. Supply of UFR relays awaited. Assured that the pending works would be completed by June, 2022.
5	Visakhapatnam IS (Andhra Pradesh)	New IS	**Design:** Completed on 27.04.2021 The finalized scheme was put into service w.e.f. 31.07.2021	APTRANSCO, APGENCO, PGCIL (SR-I), NTPC-Simhadri,	---
6	Vijayawada IS (Andhra Pradesh)	New IS	**Design:** Completed on 16.07.2021 The finalized Scheme put into service w.e.f. 30.11.2021	APTRANSCO, APGENCO, PGCIL (SR-I), TSGENCO, TSTRANSCO	Confirmation regarding implementation of IS pending from **TSGENCO & TSTRANSCO.** It was noted that TSTRANSCO had taken up the issue with their concerned field staff, and assured that they would be provided soon.
7	Bengaluru IS (Karnataka)	New IS	**Design:** Completed on 15.07.2021 The finalized Scheme put into service w.e.f. 31.05.2022	KPCL, NTPC-Kudgi, NTPC-Talcher (Stage-II), UPCL, KPTCL, PGCIL (SR-I) & PGCIL (SR-II)	All stake-holding utilities including KPCL confirmed completion of the pending works from their sides.

14.2 Creation of SCADA Display to Monitor Vital Parameters of the Island

a) As mandated by Ministry of Power, Government of India, in order to monitor vital parameters of an island in real-time basis in the Control/ Despatch Centre of the area implementing utilities are required to create a dedicated page specific to the Islanding Scheme in the SCADA display.

b) The status of creation of SCADA display was discussed in PCSC-101 meeting held on 13.04.2022.

c) KA-SLDC to update the action taken w.r.t. completion of above remarks

d) All SLDC's are requested to focus on the accuracy of the Data being displayed on their respective IS-SCADA Display.

e) **TCC deliberations**

- It was noted that SCADA Displays for all the Islanding Schemes including Bengaluru IS had been created by the respective Implementing Utilities in their control rooms.
- SLDC-KPTCL was requested to furnish snapshots of all pages (main-page and all sub-pages) of the SCADA Display created for Bengaluru IS for record.
- The status of SCADA Display creation for ISSR as on 31.05.2022 is given below:

Name of the Islanding Scheme (IS)	**Timeline for making available sought SCADA Display**	**Implementing Utility**	**Implementation Status as on 31.05.2022**
Hyderabad IS	**Original:** November, 2021	TS-SLDC	Completed on 30.11.2021
Chennai IS	**Original:** December, 2021	TN-SLDC (Chennai LDC)	Completed on 28.02.2022
Neyveli IS	**Original:** December, 2021	TN-SLDC (Erode LDC)	Completed on 28.02.2022
Kudankulam IS	**Original:** December, 2021	SRLDC in coordination with TN-SLDC (Madurai LDC) & Kerala-SLDC	Completed on 31.03.2022
Visakhapatnam IS	**Original:** November, 2021	AP-SLDC	Completed on 30.11.2021
Vijayawada IS	**Original:** November, 2021	AP-SLDC	Completed on 30.11.2021
Bengaluru IS	**Original:** December, 2021	KA-SLDC	Completed on 31.05.2022

In this regard, all SLDC's were requested to focus on improving the accuracy of the Data being displayed on their respective IS-SCADA Display.

14.3 Revision of U/f & O/f Settings of Participating Generators of various Islanding Schemes of Southern Region

a) W.r.t. the requirement of all Participating Generators to support Island stabilization, all Participating Generators are required to revise the Under-frequency and Over-frequency

settings appropriately to ensure that **no tripping** of participating generator units takes place **in the frequency range 47.5 – 52 Hz**.

b) In this connection, all participating generators were requested to revise their Unit-wise Under frequency (U/f) and Over frequency (O/f) settings appropriately (by suitably employing frequency-grading as well as time-grading in line with SRPC guidelines), and furnish the same to SRPC Secretariat for concurrence. Based on the details furnished, consolidated list of Participating Generators (Islanding Scheme wise) and their communicated U/f & O/f Settings, along with SRPC Remarks indicating their orderliness, had been furnished to concerned Utilities vide SRPC mails dated 24.11.2021, 21.01.2022 an 23.03.2022 for necessary action.

c) Under frequency/ Over frequency settings of the following generators which were not furnished/ not found to be in line with the general guidelines issued by SRPC were discussed in PCSC-101 meeting held on 13.04.2022. **All Utilities as mentioned in MoM are requested to take steps urgently to revise the U/F & O/F settings appropriately in line with SRPC guidelines, and furnish the same for concurrence to SRPC Secretariat. STUs/ TRANSCOs of all states are also requested to coordinate with the IPPs in the state and furnish the above mentioned settings.**

d) **TCC deliberations**

- The status of pending revision of U/f & O/f Settings of the Participating Generators of various Islanding Schemes of Southern Region was presented.
- It was noted with concern that the revision is mainly pending from the Central Generating Stations (CGS), who are also the major players in stabilizing respective Islands in which they are located. These CGS, viz., NPCIL-MAPS (for Chennai IS), NLC-TS2 Expansion (for Neyveli IS), NTPC-Simhadri (for Visakhapatnam IS), NPCIL-KGS (for Bengaulru IS) were urged to revise the U/f & O/f settings appropriately in line with SRPC guidelines/ suggestions, and ensure they indeed provide support to statbilising the Island in which they are located.
- The status of the same as on 31.05.2022 was noted as follows:

Islanding Scheme (IS)	**Utilities responsible for revising UF & OF Settings**	**Utilities who are yet to confirm appropriate revision of UF & OF Settings (in respect of the entities mentioned alongside)**
Chennai IS	TANGEDCO, TANTRANSCO, NTECL-Vallur, NPCIL-MAPS	**NPCIL-MAPS** TANTRANSCO – [Kaveri]
Neyveli IS	TANGEDCO, NLCIL, NNTPS, TANTRANSCO	TANTRANSCO – [ILFS 400]
Kudankulam IS	TANGEDCO, TANTRANSCO, KSEBL, NPCIL-KNPP, NTPL	TANTRANSCO – [COASTAL ENERGY, PIONEER, SAHELI]

Visakhapatnam IS	APGENCO, APTRANSCO, NTPC-Simhadri	**NTPC-Simhadri TPS** APTRANSCO – [Vijeswaram-1 ,Vijeswaram-2 , Godavari Gas Jegurupadu ,Girija Co-gen , Machkund, RCL]
Vijayawada IS	APGENCO, APTRANSCO, TSGENCO, TSTRTANSCO	**APGENCO- [Dr. NTTPS, VTPS 400KV]** APTRANSCO - [LANCO 220KV, LANCO 400KV Stage-2]
Bengaluru IS	KPCL, KPTCL, NTPC-Talcher-II, NPCIL-Kaiga, UPCL	**NPCIL- Kaiga GS**

All Utilities as mentioned above were requested to take steps urgently to revise the U/F & O/F settings appropriately in line with SRPC guidelines, and furnish the same for concurrence to SRPC Secretariat. STUs/ TRANSCOs of all states were also requested to coordinate with the IPPs in the state and furnish the above mentioned settings.

SRPC noted the above in respect of Islanding Schemes.

15. Status of New Thermal projects of Central /State Sector

Sl No	Name of project	Located in	Capacity in MW	Commissioning Schedule /Remarks (Update in the Previous Meetings)
1	**Telangana STPP (NTPC)**	Telangana	2x800	MoP vide letter dated 25.02.2019 has allocated 85% to Telangana and balance 15% is earmarked as "unallocated power" and is placed at the disposal of Central Government for meeting urgent/continent requirement of States/UTs from time to time. In the absence of allocation of unallocated power (15%) provision in the CERC (Terms & Condition of Tariff) Regulations would be implemented and accordingly scheduling coordination would be carried out. **40th TCC/42nd SRPC:** **U1 : COD by September 2022** **U2: COD by March 2023**

TCC Deliberation:

a) On a query about postponed new dates of commissioning, NTPC informed that Covid-19 Pandemic restrictions delayed the commissioning activities.

b) TSTRANSCO informed that if NTPC expedite the action for commissioning the units by July/August 2022 it would help Telangana in meeting the Kharif field crop season. Second unit if possible to bring by January 2023, it will help SR and Telangana in peak months.

c) NTPC agreed to consider the request favorably. On query from SRLDC on the unallocated power allocation, NTPC informed that Generator doesn't have any say on this and MoP would decide on the allocation of 15 % of unallocated quota. Already TSTRANSCO had requested for full allocation to Telangana.

d) MS, SRPC suggested NTPC to give advance intimation regarding the COD dates so that MoP may decide on the allocation of unallocated power. Metering scheme already have been approved by Commercial Sub-Committee in case scheduling and accounting is carried out at regional level by SRLDC (ie in case of 85 % to TS and 15 % to beneficiaries). In case scheduling is carried out by SLDC (ie 100 % allocation to TS) evacuation will be through TS system only.

e) CTUIL expressed that if 15 % is allocated to other beneficiaries, evacuation will be through ISTS network, and NTPC has not applied for any connectivity/LTA. W.r.t Telangana STPS, power evacuation is through STU and then to ISTS network since there is no direct connectivity to ISTS network. If 15 % power is allocated to beneficiary outside SR, since there is no ATC margin available for exporting power from SR, the beneficiary may need to wait till commissioning of Narendra-Pune line (June 2023) to avail the allocated power.

f) NTPC intimated that until unless MoP allocates the power, it is not known that who is the beneficiary of 15 % unallocated power, and it is not clear who has to apply for LTA.

g) TSTRANSCO informed that they will also follow up with MoP for allocating full power to Telangana.

h) SRLDC further expressed concern regarding the terms and conditions of injection of infirm power also.

i) TCC Recommendation

i. NTPC to intimate MoP on the expected COD of the Units at the earliest and request for allocation from unallocated quota.

ii. TSTRANSCO informed that they would again approach MoP for 100 % allocation to Telangana.

SRPC Deliberation

a) MS,SRPC cited the request of Telangana regarding the commissioning of the second unit of TSTPP by January 2023, so that Telangana can

	meet the peak demand of February to March. b) Chairperson, SRPC mentioned that the commissioning of TSTPP was behind schedule for more than two years and requested NTPC to advance the above mentioned commissioning schedule of first unit of Telangana STPP and bring the second unit also as early as possible. c) Regional ED, NTPC stated that the project was being monitored at the highest level of NTPC, BHEL, CEA, Ministry of Heavy Industries and MoP. The initial hiccups at the design stage were overcome. The best effort schedule of commissioning of second unit would be March, 2023. However, in view of the concern expressed by the forum the matter would be discussed with TSTPP and the top management of NTPC and assured that all out efforts would be made to advance the commissioning of second unit from March to January 2023. d) Regarding the unallocated share of 15%, Chairperson, SRPC and CMD, TSTRANSCO requested NTPC to take up with MoP to get the same allocated to Telangana as mentioned in the Andhra Pradesh Reorganization Act. It was noted that there would not be any issue with regard to LTA if the total energy from the project is allocated to Telangana, else the LTA issue (on account of allocation of unallocated power to others) needed to be addressed.			
2	**KKNPP Unit 3 & 4 (NPCIL)**	TN	2x1000	CMD, TANGEDCO vide letter dated 30.04.2022 (refer Annexure-8a) had taken up the issue CMD NPCIL for probable date of commissioning to have realistic Load Generation forecast. **40th TCC/42nd SRPC** **U3: May 2025** **U4 : Dec 2025**
3	**Dr. NTTPS, Stage-V Vijayawada (APGENCO)**	AP	1 x 800	First time synchronization of unit with oil firing done at 00:11 hrs on 07.12.2021.Further activities for COD are under progress. 190 OCC update (09.05.2022): COD expected by Aug 2022 **40th TCC/42nd SRPC:**

				By December 2022
4	**SDSTPS Stage II Krishnapatnam (APPDPCL)**	AP	1 x 800	First synchronization was done on 10.11.2021 with coal firing. The restarting operation of Unit was done from 25.03.2022 to 28.03.2022 for partial load stabilization up to 268 MW with Mills-A,B&C. It is expected that the turbine side works will be completed 3rd week of May 2022. Unit restart operation is likely in the last of week of May 2022 for checking of TG vibrations followed with full load stabilization of 800 MW. 190 OCC update (09.05.2022) COD is expected by July 2022 **40th TCC/42nd SRPC:** **By September 2025.** (TG vibration issues are to be rectified)
5	**Yelahanka Combined Cycle Plant (KPCL)**	KAR	1x160+ 1x210= 370	**40th TCC/42nd SRPC:** Negotiation with GAIL regarding Gas Supply is under process. **COD expected by December 2022**
	TCC Deliberations ➢ MS, SRPC observed that this unit may help in Voltage control. Operating in Synchronous condenser mode also may be explored. ➢ SRLDC also observed that the only generator available in and around Bengaluru and may help in forming Islanding/BSRP.			
6	North Chennai Stage III	TN	1 x 800	**40th TCC/42nd SRPC:** **December 2022**
7	Ennore SEZ STPP (North Chennai Stage IV)	TN	2 x 660	**40th TCC/42nd SRPC:** **2022-23**
8	Ennore TPS Exp	TN	1 x 660	**40th TCC/42nd SRPC:** **2023-24**
9	Udangudi Stage I	TN	2 x 660	**40th TCC/42nd SRPC:** **2022-23**

19	Uppur TPP (TBCB)	TN	2 x 800	**40th TCC/42nd SRPC: 2023-24**
11	Damaracherla (Yadadri)	TS	5x800	**190 OCC update (09.05.2022)** U1:COD by Feb 2023 U2 to 5: COD by June 2023 **40th TCC/42nd SRPC:** **Unit 1 & 2- March 2023** **Balance units: 2023-24** TSGENCO informed that this project was delayed due to COVID-19 Pandemic. Delay from BHEL also factored.

16. BHAVINI related issues

16.1 Commissioning of 500 MW PFBR:

a) Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI), a Government Company under the administrative control of the Department of Atomic Energy (DAE) is currently constructing a 500MWe Prototype Fast Breeder Reactor (PFBR) at Kalpakkam. MoP vide letter dated 12th May 2014 (**Annexure-16**) had conveyed the allocation of power from PFBR as follows:

State/UT	Total Share (MW)
Andhra Pradesh *	**146.9**
Karnataka	**84.4**
Kerala	**35.7**
Tamil Nadu	**151.8**
Puducherry	**6.2**
Unallocated	75.0
Total	500

* Combined Andhra Pradesh

b) The status noted in the SRPC meetings, as per BHAVINI letter dated 30.01.2019 is COD by end of 2020. There was no further updates from BHAVINI. MS, SRPC vide letter dated 9th February 2021 had requested BHAVINI to furnish the expected commissioning date and the progress (on quarterly basis) to SRPC Secretariat. There was no response from BHAVINI.

c) CMD TANGEDCO vide letter dated 30.04.2022 (refer Annexure-8a) addressed to CMD, NPCIL (with a copy to MS, SRPC) had taken on present status of commissioning of the project.

d) **TCC deliberations**

- MS, SRPC informed that there was no update from BHAVINI. With the permission of Chairperson, Director (Technical), BHAVINI has been requested to depute a senior Officer to attend 42nd SRPC Meeting as a Special invitee enabling the forum to benefit from his/her presence during discussions on BHAVINI related issues.

e) **SRPC deliberations**

- MS, SRPC mentioned that no update was coming from BHAVINI and that no representation in the meeting of SRPC in spite of invitation.
- **Chairperson, SRPC, suggested MS, SRPC to take up with BHAVINI once again and to share the status with the beneficiaries of BHAVINI so it can be factored in the LGB.**

16.2 Recovery of Transmission Charges from BHAVINI

a) The issue was deliberated in 51st Commercial Sub Committee held on 22.04.2022 wherein CTUIL had informed that after rigorous follow up with BHAVINI officials and DAE, CTUIL has received the payments fully from BHAVINI and around Rs. 58.89 Crores to be refunded to the pool. CTUIL will refund the amount to DICs whatever was billed in the pool account through the second bill which will be raised within 10-15 days.

b) TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has stated that it is learnt that M/s. BHAVINI has remitted the outstanding Transmission charges and hence PGCIL may immediately refund the same to the beneficiaries along with **applicable interest** from 2011 onwards.

c) TCC Deliberation

(i) CTUIL informed that the transmission charges (Principal amount) for 220 kV Kalpakkam - Sirucheri and 220 kV Kalpakkam- Arni lines have been released by BHAVINI in March 2022. The principal amount of Rs 59.89 Crores has been adjusted with the states in the Bill 2 raised in the month of April 2022. However, the interest amount is yet to be paid by BHAVINI. Interest payment would be transferred to PoC pool on release of the same by BHAVINI.

(ii) CTUIL added that BHAVINI approached Niti Ayog, GoI for relief of against payment of surcharge. Niti Ayog had called a meeting with PGCIL & BAHVINI wherein a relief has been given to BHAVINI to the extent of deferring the payment of surcharge/interest till Dec 2023 and the same is payable in 30 instalments commencing from January 2024.

(iii) TANGEDCO requested CTUIL to share the details of DISCOM wise interest portion liable to pay by BHAVINI.

(iv) CTUIL informed that they had computed the interest part tentatively and has come around Rs. 50 Crores. However, it was not worked out DIC wise. Whenever the interest

amount would be received from BHAVINI, they would compute DIC wise and would be refunded.

(v) TSTRANSCO enquired that whether CTUIL has refunded/adjusted to Telangana since the amount prior to bifurcation of AP needs to be settled among AP and Telangana based on the approved allocation ratio i.e 53.89% for TS and 46.11% for AP.

(vi) MS, SRPC stated that in the 51st Meeting of Commercial Sub-Committee held on 22.04.2022, CTUIL representative had noted the allocation ratio between AP & TS and agreed to take care while disbursing the refunds.

(vii) CTUIL confirmed that they have taken care the approved allocation ratio between AP & TS while disbursement.

(viii) CTUIL informed that for 3rd line 230 kV BHAVINI-Kanchipuram line, they had raised bill against BHAVINI & TANTRANSCO as per the CERC Orders. BHAVINI has already made the payments and TANTRANSCO was yet to make the payments. CTUIL requested TANTRANSCO to make the payments around Rs. 37 Crores at the earliest.

SRPC noted the above.

17. Notification of guidelines for encouraging competition in development of transmission projects

17.1 The agenda of TANGEDCO on this issue was deliberated in 51st Meeting of Commercial Sub- Committee of SRPC held on 22.04.2022 wherein the following was noted:

i) *SRLDC/PGCIL/CTUIL/SRPC secretariat stated that the guidelines notified by Ministry of Power may not be proper for deliberation in the meeting since the same is not in the purview of the Committee. It was suggested that the states may take up the matter individually/collectively with MoP at higher level.*

ii) *MS, SRPC informed that since the TANGEDCO letter dated 06.09.2021 had also been marked to Secretary(Power), MoP & Secretary, CERC by TANGEDCO, the matter has not been taken up further by SRPC secretariat.*

iii) *TANGEDCO stated that the matter will be taken up appropriately and the consolidated views of the states may be forwarded to MoP/CERC after deliberations.*

17.2 TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has furnished the following:

a) Ministry of Power vide resolution dated 10th August, 2021 notified the revised guidelines for encouraging competition in development of Transmission Projects. The new guidelines repealed the existing guidelines for development of transmission projects through Tariff Based Competitive Bidding.

b) The legitimate rights / powers of the beneficiaries / LTTCs have been completely removed through the revised guidelines. The LTTCs will not have any role in respect of the projects under TBCB except the liability to pay the transmission charges billed by the TSP. The revised guidelines notified by MoP was brought for information in the 49th CSC meeting held on 03.09.21.

c) Considering the irreversible financial damages to Discoms, TANGEDCO vide letter dated 06.9.2021 addressed to Member Secretary/SRPC, detailed the implications of the

revised guidelines on the finances of Discoms and requested SRPC to take up the matter with Ministry of Power and Hon'ble CERC for withdrawing the revised guidelines.

d) Since the issue was not escalated by SRPC, TANGEDCO once again raised the issue during the 51st CSC meeting of SRPC held on 22.04.22. During the meeting, it was stated that individual States may take up the matter directly with MoP. However, TANGEDCO insisted that SRPC can take up the consolidated views of the Discoms to MoP. All other Discoms supported the views of TANGEDCO.

e) In this context, it is pertinent to mention that most of the projects executed through TBCB route are not completed as per scheduled COD. The TSPs habitually approach CERC and request for tariff revision. Since there is a contractual agreement (TSA) between the TSP and beneficiaries as per the repealed procedure, Discoms had the right to litigate the illegitimate claims made by the TSPs. For example, CERC has rejected the claims made by PSITSL and TTCL for declaration of Force Majeure and escalation of levelised tariff.

f) Since the new procedure removes such provisions which are very vital in protecting the paymasters, viz., Discoms, it is inevitable to deliberate this issue among the stakeholders and escalate the matter to MoP for revision of the Notified procedure.

g) Hence it is requested that SRPC may deliberate the issue and take up the matter from Chairperson /SRPC to MoP for withdrawing the revised guidelines.

17.3 TCC Deliberation

(a) MS, SRPC informed that the issue was deliberated in the 51st Meeting of the Commercial Sub-Committee held on 22.04.2022, wherein APPCC/PCKL/TSPCC had endorsed the views of TANGEDCO and opined that the matter may be taken up with MoP for withdrawing the modified guidelines. However, SRLDC/PGCIL/CTUIL/SRPC secretariat had stated that the guidelines was notified by Ministry of Power and it may not be proper for deliberation in the meeting since the same is not in the purview of the Committee. It was suggested that the states may take up the matter individually/collectively with MoP at higher level.

(b) Director (Tr), TSTRANSCO & Chairperson, TCC stated that the policies by the Central Government in respect of the planning & implementation of the transmission network shall be made with the consent/consultation with the states since the transmission charges for the network developed shall be borne by the states. Different states have got different policies. Ultimately, network planning has to be carried out collectively and the consent of the states has to be taken care while framing the policies in this regard.

(c) Director (Grid & Tr. Mngmt.), APTRANSCO opined that the matter has to be taken up with Ministry of Power collectively by all the SR states.

(d) TANGEDCO stated that, this issue was brought to forum for the benefit of all the states/LTTCs/stakeholders because the MoP revised guidelines for the TBCB transmission projects has totally removed the basic fundamental rights of the states/LTTCs. As per the previous guidelines, LTTCs were empowered to enter into an agreement with TSP where the rights of the states/LTTCs have been protected and the same is not in the new guidelines. As per the new guidelines, TSP and the nodal agency

will enter into the agreement/TSA and states are not part of the TSA but the tariff burden is alone put on the beneficiaries.

TANGEDCO added that in one verdict of the Hon'ble Commission in the recent Orders in Petition No. 13/MP/2021 & 40/MP/2019 where the TSP claimed the huge tariff addition under Force Majeure conditions in addition to the bid tariff. However, Commission had strongly rejected the claims made by TSP. In these petitions, Beneficiaries/LTTCs/Lead LTTC have jointly fought against the claims and succeeded. Now as per the new guidelines, LTTCs have no right to fight. TSP has filed a petition in CERC without impleading the LTTCs in the petition and they have got the Tariff adoption Order & Transmission license. In that Order it was mentioned that none of the LTTCs have filed their comments/replies. There is no option to file the reply as LTTCs are not part of the petition.

TANGEDCO further added that there are two parts as per the new guidelines one is related ISTS part and other is related to intra-state part. In respect of ISTS part, states should be allowed to be a part of TSA, then only states can represent any legal forum to safe guard the interests of the end consumers. TANGEDCO requested the forum to deliberate on the new guidelines and SRPC may be requested to convey the consolidated views of the states to Ministry of Power because these guidelines are arbitrary.

(e) CTUIL opined that the consolidated views on behalf of the states may be communicated to MoP but not as the views/recommendation of the Committee. As per the new policy guidelines, CTU has been made as a Nodal Agency and is required to sign the TSA. The same is being followed by CTUIL.

(f) POSOCO & PGCIL also opined that they are bound to follow the MoP Guidelines/Policies, hence the views of the states may be communicated to MoP but not as the views of the Committee.

(g) After deliberations, State Utilities recommended that Chairperson, SRPC may be requested to communicate the views/concerns of SR State utilities to MoP on the revised guidelines for development of transmission projects through TBCB.

17.4 SRPC Deliberation

(a) SRPC noted the above.

(b) Chairperson, SRPC agreed to communicate the views/concerns of SR State utilities to MoP on the revised guidelines for development of transmission projects through TBCB.

18. SRLDC agenda items

SRLDC vide email dated 18.05.2022 (**Annexure-18**) has proposed the following agenda items:

a) <u>Critical Situation in Grid Operation due to Frequent Tripping of Transmission Elements in SR</u>

The tripping of large number of transmission lines are taking place in the recent past dueto equipment failure, thunderstorms, tower failure and line faults. Reliable operation of

transmission system is very important to carry out secured grid operation. In this regard, it may be noted that there were **207** no. of 400 kV line tripping and **53** no. of ICT tripping in SR during Feb 2022 to May 2022(as on 13-05-2022). Moreover, requests for emergency shutdown of many elements in real time are placing additional stress on the system. Also, with critical coal stock condition, outage of generating units due to tripping of evacuating lines on fault is putting the grid in grave danger.

State-Wise Details

Sl. No.	State	No. of GD/GI
1	Karnataka	53
2	Andhra Pradesh	29
3	TamilNadu	9
4	Telangana	8
5	Kerala	6
6	Pondicherry	1
7	Puducherry	1

In order to avoid frequent tripping of transmission lines, the following actions shall be taken regularly and at the earliest:

- Frequent vigilant/ intensified patrolling and proper maintenance of ROW shall be carried out by attending all tree clearance issues.
- Enabling of A/R in 220 kV and above transmission lines.
- Ensure healthiness of all protection system.
- Healthiness of mechanical protections of ICTs shall be ensured by providing necessary sealing arrangement to avoid moisture ingress during rain.
- Follow utmost precautions during maintenance/testing activities to avoid tripping of healthy equipment.
- Ensure that unwanted default settings in relays are disabled.
- Ensure that reach settings for Zone 2 and above are properly set to avoid unwanted tripping.
- Cleaning/coating of insulators in coastal areas.

A. TCC Deliberation

(i) ED, SRLDC observed that during this peak period SR Grid had met all time maximum demand of 60,870 MW on 1st April 2022 and these peak loads were met without any N-1 constraints in transmission lines for which the system operator (SRLDC) is thankful to all the constituents, especially transmission utilities/CTUIL for providing the adequate network. He expressed concern on the constraints in 220 kV & 400 kV ICTs and sub transmission system in many states. There were **207** no. of 400 kV line trippings and **53** no. of ICT trippings in SR during the period February 2022 to May 2022. There were 104 GDs/GIs during this period in which major events were in KPTCL system (53 Nos)

and APTRANSCO system (29 Nos) and around 5 incidents were near miss events. He mentioned that even one transmission line/ICT outage may lead to cascade tripping leading to load loss and generation loss. The issues had been taken up at higher level with each state and separate meetings were already held with Karnataka and Tamil Nadu to discuss on the transmission constraints.

He appraised on the recent grid disturbance which involved entire Kappakka /Simhadri /HNPCL systems and import from Gazuwaka and there was a generation loss of 2645 MW and load loss of around 809 MW and he expressed concern that there was 5-6 such disturbances noted recent past and stated that this issue needed to be addressed urgently. He informed that this issue had been taken up with APTRANSCO (at Management level) and suggested that lot of insulators replacement/up gradation/Silicon coating and hardware replacement needed to be carried out on urgent basis. Healthiness of protection and substation equipment needed to be ensured, mechanical protections of ICTs with necessary sealing to be carried out and also to ensure that unwanted default settings in relays are disabled. A Team of engineers (SRLDC, SRPC, and APTRANSCO & PGCIL) had visited the site and assessed the incident and brought out a report. The recommendations of the Team needed to be complied by APTRANSCO on urgent basis.

(ii) Director (Grid & Tr. Mgmt), APTRANSCO informed that a committee was constituted to look into the incidents at Kalpakka and issues lead to such disturbance. An assessment had been made on the requirement at the S/S to avoid such incidences in future which had been sent to Management for approval. As and when approval is received the process of replacement of the equipment etc would be started. He requested SRPC/SRLDC to facilitate the outages to carry out the replacements etc as and when materials are received at site without routing through OCC forum. The replacement work of equipments may start within one month.

(iii) MS, SRPC assured that such outages would be facilitated but as per standard procedure needed to be uploaded at the portal under emergency category and requested to follow D-3 since some outages may affect ATC/TTC also. ED, SRLDC endorsed the same.

(iv) **TCC Recommendation**

(a) SRLDC/SRPC to facilitate outages as and when requested (under emergency category, D-3) by APTRANSCO to replace the equipment/preventive maintenance etc at Kalpakka SS and adjoining area.

(b) All the entities to take necessary preventive measure to avoid frequent tripping of transmission elements.

SRPC noted the above.

b) <u>Frequent Grid Disturbances in Karnataka System</u>

During Feb 2022 to May 2022(as on 13-05-2022), there were 21 Grid Disturbances and 5 Grid Incidents in Karnataka. It is pertinent to note that these events are occurring repeatedly and major reasons attributing towards these events are single bus operation, non-ensuring N-1 conditions during antecedent, radial operation, outage of 220 kV lines during antecedent

(lack of outage planning), and inadvertent operator's errors during relay testing/other testing activities. Such repeated grid incidents/disturbances cause severe impact on grid security in Karnataka system and may lead to catastrophic impact on the SR grid.

In order to avoid frequent GDs/GIs, necessary preventive steps may be undertaken in future by proper planning of 220 kV lines outages, strengthening of 220 kV transmission network, avoiding single bus/radial operation of 220 kV SS and deploying trained/experienced manpower for relay testing activities and strict adherence to operating procedure during maintenance and renovation activities.

A. TCC Deliberation

(i) ED, SRLDC informed that there were 22 no of Grid disturbances occurred during this peak demand season in KPTCL control area. There were 24 GDs during 2020-21 and 51 GDs during 2021-22. A Special meeting was convened with KPTCL & KPCL to discuss on transmission constraints in KPTCL system. Almost all the parts of the State are affected with severe over loading irrespective of the season. Even though the issues had been taken up at higher level, there was no concrete action plan furnished by KPTCL for resolving the issues on long term/short term basis. He desired to know from KPTCL regarding the plan for evacuating the RE power during coming RE season noting that there is no strong 400 kV network specifically for RE evacuation. It is the usual pattern that during peak season southern part of Karnataka would be under constraint and during wind season Northern part. The case study data furnished by KPTCL had been analysed and sent back to KPTCL with comments of SRLDC. KPTCL needed to revert back.

(ii) KPTCL informed that they have noted the observations furnished by SRLDC on KPTCL case study and are working on the same to update/study as suggested by SRLDC. Long term plan is under implementation by KPTCL. Regarding the constraint in Northern part of Karnataka, DPR is ready for 400 kV Yelvar S/S (near Bijaipur) which was requested to consider under GEC project but not considered. Once gain the request had been put up by Chief Minister of Karnataka to MNRE and reply is awaited. Another RE potential area is Kushtagi, DPR is ready for establishment of Kushtagi S/S for which also MNRE had been approached to approve under GEC. DPR is ready for reconductoring works at Nagjheri, Kadra and Kodasalli. Retendering would be done after 15th June 2022. DPR is ready for 400 kV Kadakola S/S and tendering would be after 15th June 2022. Member (Power System), CEA had called a meeting on 09.06.2022 on these issues and KPTCL would be presenting on the short term and long term measures/plan to relieve the transmission constraints/ Grid Disturbances.

(iii) ED**,** SRLDC further expressed concern that all the evacuation lines from Mysore/Hassan are severely over loaded beyond their Thermal Limits and the situation would become more aggressive in coming two years. Against drawal of 7000 MW, TTC of KPTCL is only 1000 MW which gives a clear picture of the vulnerable system of KPTCL.

(iv) KPTCL informed that within two months the connectivity between Kothipura-Bidadi would be established. Subsequently, Tubinkare, Ramnagara and Bidadi loads would be on Bidadi S/S which will relieve Mysore ICT loading.

(v) MS, SRPC endorsing the views of ED SRLDC expressed that a single element tripping may lead to Generation or load loss or both. Appropriate action needed to taken by KPTCL on war footing to address the transmission constraint in KPTCL system. He appreciated Karnataka for the portfolio adopted in the generation front and requested KPTCL to come up with the same spirit in developing transmission/sub transmission.

(vi) KPTCL expressed that severe ROW issues were the hurdles in implementing the planned transmission systems as per the schedule. However, all possible efforts would be put to resolve the issues.

(vii)**TCC Recommendation**

(a) KPTCL to take necessary actions to avoid frequent Grid disturbances/ incidents

(b) KPTCL to present the short term and long term action plan in the meeting convened by Member (PS), CEA on 09.06.2022.

SRPC noted the above.

c) Tripping of Major Transmission Lines due to Tower Collapse

Tripping of transmission lines are being reported recently due to tower collapse. Ideally, construction, operation, and maintenance of high capacity lines shall take care of thunderstorms or local effects of weather. It is important that the critical aspect of availability of the transmission lines in operation during thunderstorms shall be looked into by all the transmission utilities and all technological, operational measures may be identified and implemented at the earliest, in order to enhance the reliability and resiliencyof the grid. List of tower collapse during 2021 and 2022 due to heavy rain, wind & localized whirl wind is given below:

Sl. No.	Voltage Level (Utility)	Transmission Elements	Outage Time/ Date	Tower Collapse Location	Remarks
1	220 kV (APTRANSCO)	Chinakampalli - Rajampet	19-11-2021	Near Chinakampalli	Information not available to RLDC, this line was not available during the RYTPP Generation loss
2	400 kV (KPTCL)	Pavagada Tumkur Line-1&2	16:30 08-05-2022	T N Kote to Parashurampura road, Doddabeeranahalli, Chitradurga	Tower Collapse in the Karnataka Portion

3	400kV (PGCIL)	Gooty-Somanahalli	18:51 08-05-2022	LOC no 763 near to Somanahalli	Restored through ERSon 14th May 2022
4	220kV (KPTCL)	Alipur Regulpadu & BTPS Lingapur	17:38 16-05-2022	Near Alipur	

A. TCC Deliberation

(i) ED, SRLDC informed that there were four Tower Collapses in recent past due to heavy rain, wind & localized whirl wind and these incidences were not reported to SRLDC in time. Restoration of towers needed to be carried out deploying ERS at the earliest. He appreciated that PGCIL had brought back 400 kV Gooty-Somanahalli line on ERS within 6 days whereas states are delaying the restoration. When trunk lines tripped i.e.on 16.05.2022 (Alipur - Regulpadu & BTPS - Lingapur lines tripped on Tower Collapse), evacuation issues also were faced at BTPS /YTPS /JSWEL.

(ii) **TCC Recommendations**

Transmission Utilities to report the tower collapse immediately to CEA/ SRLDC/ SRPC and to deploy ERS for restoration and restore the tower expeditiously.

SRPC noted the above.

d) Transmission Constraints

- **ATC/TTC Declaration :-**

At present in Southern Region, the TTC/ATC of Inter-Regional (NEW-SR) and Intra-Regional Flow gates S1-(S2&S3) & Import of S3 are being declared every month.

As per the "Detailed Procedure for Relieving Congestion in Real Time Operation, 2013", approved by CERC, *every*

"State Load Despatch Centre (SLDC) has to assess/declare the TTC/TRM/ATC on its inter-State transmission corridor considering the meshed intra State corridors for exchange (import/ export) of power with inter-State Transmission System (ISTS)".

Further the decision of the **4th National Power Committee Meeting** held on 10th October 2015 is as below

"Monthly TTC/ATC will be uploaded by the SLDCs at their respective website and also communicated to concerned RLDC & NLDC subsequently".

SRLDC had taken up the agenda of declaration of the state TTC/ATC in the 174th SRPC OCCM held on 19th January 2021, it was concluded that the states to initiate

action to compute ATC/TTC w.r.t their control area and also to upload on the state website. Southern Region States TTC details are given below:

State	TTC/ ATC Calculated	TTC/ ATC Declared	TTC (MW)	Remarks
Andhra Pradesh	Yes	Yes	5800	Limiting Element :- N-1 of Vemagiri ICTs
Telangana	Yes	No	8200	Limiting Element:- N-1 of 400/220 kV Dichipally ICTs, N-1 of Ramagundam ICTs
Karnataka	No	No	1110	Assessed by SRLDC based on Karnataka Peak Demand Scenario, Limiting Element :- N-1 of ICTs at Mysore and Nelamangala
Tamil Nadu	Yes	No	12000	Limiting Element :- N-1 of 400/220kV Allundur ICT

Telangana, Karnataka & Tamil Nadu are requested to declare their TTC/ATC at the earliest.

Transmission constraints and elements required to relieve these constraints ICT Over-Loading are also given in the mail.

A. TCC Deliberation

(i) ED. SRLDC stated that Transmission constraints in Tamil Nadu was taken up with higher management and also in the Special Meeting held on 16.05.2022 with all the concerned wings of Tamil Nadu System. In the meeting, it was agreed that TANTRANSCO will furnish two sets of data etc for PSSE studies which is awaited. He expressed concern regarding the vulnerable situation existing at Neyveli Complex. Villainur lines are being kept opened putting Puducherry in alert condition, and during one occasion Puducherry lost supply. Any tripping of lines in Neyveli Complex may lead to tripping of NLCIL units connected at 230 kV level. The constraints at Alundur, Thiruvalam and downstream networks had already been discussed in the Special Meeting. He requested TANTRANSCO to expedite the commissioning of planned substations along with ICTs at 400/230 kV Cuddalore.

(ii) TANTRANSCO informed that works will be taken up shortly. For Alundur & Thiruvalam ICTs, PO is under approval. Once it is approved works will be taken up immediately. ED SRLDC reiterated that this works may be taken up on accelerated mode (TN schedule-2 and a half year).

(iii) CTUIL informed that TTC of Tamil Nadu had been declared as 12,000 MW and CTUIL had already allocated 11,300 MW to TN. Considering the TRM, at present Tamil Nadu don't have any import capability for ISTS. With the existing network, any further LTOA/MTOA may not be granted to TN system.

(iv) MS SRPC opined that these issues had been furnished by POSOCO in their Operational Feedback and ATC/TTC calculations are based on guidelines/ certain assumptions/existing network configuration and requested CTUIL to take common approach on a Pan India Basis.

(v) CTUIL mentioned that Tamil Nadu had earlier not concurred the augmentation proposed by CTUIL and mostly at present the issues are experienced in such places like at Arasur, Hosur and Udumalpet etc. If TANTRANSCO is agreeing for these augmentation, CTUIL will come up with a compressed schedule for implementation, get approval in next meeting, so that before next peak period issues would be mitigated.

(vi) ED, SRLDC observed that the ATC/TTC declaration for TN was without considering the constraints at Neyveli and if it is considered ATC will be of the order of 7000 MW. States are not putting their ATC TTC declaration on their website even after continuous request to upload the same.

(vii) It was noted that CTUIL had pointed out that ATC/TTC may be restricted to the quantum declared by States' and further LTA/MTOA may not be granted beyond that until unless intra-state transmission networks are not developed. Inter regional and interstate ATC/TTC computation is also based on the intra state network and states have to take lead to ensure that adequate network is available for required import ATC/TTC.

(viii) TANTRANSCO reiterated the request for shifting of evacuation of one Unit at NLCIL TS II stage I (connected at 230 kV Level) to 400 kV side. It was observed that this proposal was not acceptable by NLCIL.

(ix) ED, SRLDC stated that there are alarming transmission constraints in Andhra Pradesh system especially at Rangunacherry, KV Kota, Talappally, Vemagiri etc. Issues w.r.t AP system will be communicated to AP higher management and will request SRPC to convene a Special Meeting to deliberate on the issues.

(x) **TCC advised that all the SLDCs to ensure TTC/ATC to be computed and also made available on their website.**

B. SRPC Deliberation:

(a) It was noted that a special meeting on the transmission constraints/grid related issues convened by SRPC with KPTCL/KPCL and with TANTRANSCO/ TANGEDCO. Meeting with Andhra Pradesh would also be planned shortly.

(b) Chairperson, SRPC & CMD TSTRANSCO stated that Telangana did comprehensive strengthening of intrastate network, thereby enabling 24X7 reliable power supply to all, including agriculturalist and requested all state utilities to strengthen the downstream network to ensure reliable power supply.

e) Measures to control over-drawl

(i) Automatic Demand Disconnection Schemes (ADMS) for SR:

- The existing ADMS schemes have hardly been effective in reducing the Over-Drawal.
- Revised ADMS scheme is yet to be implemented by the states.

(ii) Physical Regulatory Measures in SR:

- The physical regulatory measures act more as a warning without much load interruption, having very little impact in terms of reducing over-drawl.
- Proposal of reviewing the elements for physical regulation was put up in 190th OCCM (09/05/2022) to include stations with higher load. The same is yet to be confirmed by states.

(iii) 3 stage Emergency Control measures

- POWERGRID expressed operational/practical difficulties in implementing the SPS scheme state-wise as the current DTPC is not equipped for direct trip facility from the equipment. POWERGRID to explore with OEM of DTPC for providing direct switch facility for extendingtrip signal. POWERGRID is yet to respond on the same.

TCC Deliberation

ED, SRLDC mentioned that the review of the Automatic Demand Management System, Physical regulatory measures for Over drawl and three stage emergency load disconnection plans was done to effectively deal with the low frequency and high over drawl scenario and approved in 189th SR OCC held on 08.04.2022. He requested all the states to implement the schemes before September (short peak period). The following were noted:

(A) Automatic Demand Disconnection Schemes (ADMS) for SR:

- At frequency < 49.85 Hz and OD > 250MW for more than 15 min, each state each state to identify 3 different group of load feeders (100 MW for Kerala & 200 MW each for all other states) to trip as part of Stage-1, Stage-2 and Stage-3 of ADMS in intervals on 10 mins.

(i) MS, SRPC stated that the review was warranted due to the heavy OD by states making the system vulnerable which puts the grid into risk. The scheme needed to be implemented and automated also.

(ii) APTRANSCO informed that they are in receipt of 33 kV feeders list identified for ADMS and will be implemented within a month.

(iii) KSEBL informed that they have implemented the scheme.

(iv) KPTCL informed that DISCOMs are requested to furnish the feeders list. Control is at 11 kV side and around 2800 number of feeders are involved. Addition of around 230 S/S also going on. The revised ADMS scheme will be implemented within a month.

(v) TANTRANSCO informed that the new scheme is implemented in TN system. TN SLDC was requested to furnish the details.

All the states to implement the scheme at the earliest and details/confirmation on the implementation to be furnished to SRLDC/SRPC.

(B) Physical Regulatory Measures in SR

TCC Deliberation

(i) SRLDC stated that these measures are intended when all actions as per IEGC and Regulations have been exhausted but violation is sustained and there is an impending danger to Grid Security. The Physical regulatory measures were devised as a 3 stage action with increasing impact. The physical regulatory measures act more as a warning without much load interruption, having very little impact in terms of reducing over-drawl. Proposal of reviewing the elements for physical regulation was put up in 190th OCC meeting w.r.t. AP and TN (to include stations with higher load). The same is yet to be confirmed by them.

(ii) SRLDC/SRPC requested APSLDC/TNSLDC to revert back quickly, if not agreeable to this proposal, they can come up with more suitable /effective suggestion. If they are not coming up the alternate proposal of SRLDC may be implemented.

(C) SPS scheme to mitigate sustained over drawal by States

TCC Deliberation

(i) PGCIL expressed operational/practical difficulties in implementing the SPS scheme state-wise as the current DTPC is not equipped for direct trip facility from the equipment. PGCIL is discussing the matter with OEM.

(ii) ED, SRLDC observed that this scheme needed to be in place in future and PGCIL should look into it seriously. PGCIL expressed that detailed discussion is needed in this regard.

(iii) MS, SRPC requested PGCIL to identify the technical requirements to implement the scheme along with the tentative cost estimate. And subsequently may be discussed in the sub-committee meetings.

SRPC noted the above.

f) <u>Primary Response Testing of State Generating Units:</u>

The Hon"ble Central Electricity Regulatory Commission (CERC), vide notification dated 12th April 2017, had notified Indian Electricity Grid Code (Fifth Amendment) Regulations, 2017. As per this notification, following proviso has been added at the end of Regulation 5.2(g) of Part 5 of the Principal Indian Electricity Grid Code (IEGC) Regulations

"***Provide that periodic checkups by third part should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be. The cost of such tests shall we recovered by the RLDCs or SLDCs from***

***the Generators. If deemed necessary by RLDCs/SLDCs, the test may be conducted more than once in two years.*"**

TCC Deliberation

(i) SRLDC informed that in compliance to IEGC 5th Amendment, POSOCO has formulated a procedure, modus-operandi and also identified the Testing Agency for conducting the PFR testing of Southern Region CGS Stations. 24 out of the 33 units had completed the testing. Left out generators which were already scheduled may plan accordingly. State utilities are requested to take up Primary Response testing of all the Intra-State Generating units in their respective control area. In the 190th OCC Meeting it was noted that M/s Solvina had agreed for knowledge sharing workshop to State Generators. Schedule of Workshop/Awareness program State wise is planned. All the generators of one state may be called for the workshop at a particular station. SRLDC/Solvina/any other agency may make presentations.

(ii) MS, SRPC suggested that SRLDC may take up with states in this regard. ED, SRLDC informed that schedule had been finalized in consultation with states and thermal stations will be covered first and in Kerala at Idukki it is planned. MVAR testing also had been planned in some of the stations.

SRPC Deliberation:

It was noted that with the guidance of SRLDC the testing was conducted in most of the ISGS. Similar test need to be conducted, as per Grid Code, at state sector generators also. In this respect capacity building workshops would be conducted by SRLDC for all SR states. SLDCs and respective state control area generators can participate in the workshop. SRLDC was also planning MVAR testing in some of the stations.

g) Renewable Integration

A. Availability of Power Plant Control (PPC) during contingencies

TCC Deliberation

(i)SRLDC stated that as per the Central Electricity Authority (Technical Standards for Connectivity to the Grid) (Amendment) Regulations, 2019 "***The generating stations of aggregate capacity of 500 MW and above shall have the provision to receive the signal from the State Load Dispatch Centre or Regional Load Dispatch Centre, as the case may be, for varying active and reactive power output***.", however many generating stations mentioned above do not have this capability.

At present in Southern Region, almost 47 GW of Renewable Energy (RE) is commissioned, further RE is getting installed in huge parks without N-1 security criteria, like at Pavagada Solar Park – 2050 MW, NP Kunta Solar Park – 1400 MW & Tuticorin Pooling Station – 919 MW(future – 2000 MW). At State sector RE parks are being developed, in Andhra Pradesh: Uravakonda, Ghani & Jammalamadugu, In Karnataka: Gadag, Koppal & Hiriyur and in Tamil Nadu: Tirunelvelli, Kayathar & Kamuthi.

RE Plants does not have N-1 security criteria, thus during peak generation tripping of any element on fault or any permanent unforeseen outage, the power evacuation would be impacted, hence the availability of Power Plant Controller (PPC) is required . It is observed that w.r.t ISTS connected RE of around 5000 MW, PPC is available for around 3500 MW, 500 MW plants have SCADA which have similar functions of PPC and for 1000 MW there is no PPC/SCADA facility. RE generating stations may be covered under AGC implementation and PPC will be an essential requirement to providing frequency response and dynamic reactive power response.

(ii) ED, SRLDC recalled that during last year there was a generation of around 2000 MW at Pavagada Solar Park and one transformer was to be taken out. Around 250 MW generation was to be reduced. To coordinate this action it took 45 minutes (on telephone). In such cases PPC is essential to ease the constraint. MS SRPC also endorsed the observations on PPC requirement of SRLDC for greater than 500 MW and it is a regulatory requirement also.

(iii)TSTRANSCO informed that TS system has 3700 MW RE capacity commissioned before 2019 and it is difficult to implement PPC in these generators. High voltage issues are being faced and studies are being carried out testing on one or two RE generators (reactive power management) and some improvement had been showed by these generators. The issue of active power consumption for reactive support was highlighted by them. Also CEA may be approached to clarify whether old generators also needed to comply the Regulations. Without proper Regulatory support/advise from Higher Forum, RE generators cannot be approached for implementation.

TCC recommendation

- **SLDCs to take up with RE generating stations for providing PPC complying to CEA Connectivity Regulations.**
- **Active power compensation (night hour drawal - MVAR absorption) by RE needed to be taken up with individual State Electricity Regulatory Commission (SERC). This can be taken up in OCC again.**

B. Compliance of CEA connectivity regulation for Renewable Energy Generators in State Sector

At present, POSOCO is checking the compliance of the Central Electricity Authority (Technical Standards for Connectivity to the Grid) renewable Energy generators in line with the "***Consolidated procedure for First Time Charging/Energisation (FTC) and Integration of New or Modified Power System Element***" dated 3rd June 2020. Further, considering the high renewable energy penetration in Southern, it is important that existing Renewable Energy Generator's which are displacing the conventional synchronous machines also to support and provide the various Grid Support services. SLDCs to appraise the status of compliance of CEA Regulations of Existing plants and also for the upcoming generating stations.

TCC Recommendation

- **All the State utilities requested to ensure compliance with CEA Connectivity regulations for Renewable Energy Generators in State Sector.**

- **FTC (First Time Charging) Procedure can be developed by State utilities and FTC of SRLDC can be referred by State utilities.**

SRPC noted the above.

h) <u>Mandatory inspections of all the elements under CEA (Measure relating to Safety and Electric Supply)</u>

TCC deliberations

(i) SRLDC pointed out regarding the compliance of Regulation 29(1), 43(2), 43(4) & 77 of CEA (Measures relating to safety and Electric Supply) Regulation, 2010. The utilities are requested to comply with the regulations. The CEA letter mandating electrical inspectorate clearance for any modification in sub-station and CEA letter dated 18th Jan 2019 advising mandatory PTCC Clearance is attached in mail.

(ii) KPTCL stated that whenever Code for charging the lines are requested after replacing the collapsed tower with new tower, Electrical Inspectorate clearance is being insisted by SRLDC. KPTCL opined that when new lines are commissioned the procedure holds good but for charging already existing lines (healthy) tripped on tower collapse this lengthy procedure may be relaxed to facilitate early restoration of the system.

(iii) Director (Transmission), TSTRANSCO informed that in Telangana State, Regulatory Commission had disallowed 10 % of Capital Investment for not having Electrical Inspectorate Clearance Certificate. Recently Government of Telangana was apprised by TSTRANSCO and they have released an Order in which it is stated that Transmission Utility(STU)/Transmission licensee can also inspect their own lines/transmission assets and give clearance for charging. He felt that at present new technologies/HV transmission system etc are well conversant to STUs.

(iv) PGCIL endorsing the concern of KPTCL opined that provisional clearance may be given to charge the element since as the owner of the element also inspect the same, and subsequently Electrical Inspector may certify the healthiness.

(v) TNSLDC expressed the issues faced by them in receiving CEA Regulation clearance, and recalled that recently while they approached Trichy local inspectorate for clearance for charging Karaikudi- Pugalur line which was kept idle for one week for replacement of LA, they refused to come citing that they will not take up 220 kV and 400 kV level elements clearance, Chennai Inspectorate officials also didn't consider the request. Self certification by respective STU needed to be considered for charging.

(vi) SRLDC opined that since the progress of works and anticipated possible date of commissioning is known to the entity, it is advisable to keep ready all the formalities well in advance and this procedure will not be tedious. Last moment information regarding the charging cannot be entertained.

(vii) MS, SRPC clarified that CEA Safety and Supply Regulations need to complied by all concerned power utilities irrespective of State/Central or IPP. In this case State

Inspectorate certification is mandatory. Self certification by respective utilities are provisioned in Amendment Regulations 2015 but is applicable only upto 11 kV level for Central Government Entities (MoP letter date 16.05.2016). At central level applications are made online and on special requirement within 2/3 days clearances are given and states needs to develop the capability/infrastructure for the same.

(viii) ED, SRLDC informed that recently when KGS approached for charging of one phase of ICT, SRLDC insisted for CEA clearance and they could arrange the same within two-three days. He stated that there are three issues to be looked into in this regard:

- Deviations in the approved system by Standing Committee and system developed.
- Power and Telecommunication Co-ordination Committee (PTCC) clearance
- Electrical Inspectorate clearance.

He recalled the discussions held in the Meeting chaired by CEI, CEA on 10.05.2022 to deliberate on submission of statutory clearances for charging for modified/replaced transmission elements. All the elements, CT, PT, Isolator, CB, LA, Bushings wave trap, are covered. He highlighted the following:

- Apply online for clearance on CEA web portal which is readily and universally accessible and details of nodal officers are also available therein
- Upload the latest and relevant Test Reports of equipment or any test report asked by the Electrical Inspector
- Submit the planned maintenance schedule beforehand
- If the documents are found in order, Consent for Charging would be granted.
- Physical inspection would be done during the next Periodical Inspection.
- For any assistance, the nodal officers of the respective jurisdiction may be contacted for better coordination.

Also the following were noted w.r.t the procedure to be followed for restoration of line through Emergency Restoration system towers:

- ERS plan, schedule to be shared to the concerned RIO over email and telephonic intimation to be conveyed beforehand.
- All Electrical Safety measures at the ERS site must be followed strictly,
- Time span for the ERS work should be reasonable & limited and have approval from the concerned RIO.
- Subsequent to completion of Diversion /restoration works, Electrical inspection would have to be done under regulation 43 for charging the line.

(ix) MS, SRPC requested all the utilities to go through the draft Safety Regulations which is available in public domain for comments and give suggestions to address such issues for ease of doing business.. He requested all the entities to furnish their comments/difficulties to SRPC which will be consolidated and submitted to CEA accordingly.

(x) **TCC Recommendations**

(a) CEA Safety and Supply Regulations needed to be complied/adhered by all the concerned entities.

(b) Special provisions can be enabled through state government as stated by CEA in respect of central entity inspections.

(c) Capacity and infrastructure development to be taken up in State Inspectorate to take up the Electrical Inspections above 220 kV.

(d) All the utilities to go through the draft Safety Regulations which is available in public domain for comments and give suggestions to address such issues.

SRPC noted the above.

i) Prolonged Transmission Element Outages

TCC Deliberation

(i) SRLDC projected the elements under prolonged outages. It was observed that many reactors are under prolonged outage especially in Telangana system (5 newly commissioned reactors) where HV issues are prevailing (above 420 kV). SRLDC requested TSTRANSCO to expedite the revival of the reactors before September 2022.

(ii) SRLDC requested KPCL to expedite the revival of Raichur ICT II before peak RE season. Other ICTs are loaded beyond their capacity. SRLDC highlighted that outage of 400 KV-Nelamangala-Talguppa-1, which creates constraints in Sharavathi HES evacuation. There were there such incidences in the recent past.

(iii) KPTCL informed that the failure of the line was due to insulator issues, works are being taken to replace the insulator which will take another 3-4 months to restore the line.

(iv) TCC advised all the transmission utilities for appropriate action to revive the elements at the earliest and avoid such prolonged outages of elements.

SRPC noted the above.

j) Status of outstanding charges to the DSM pool account

TCC / SRPC noted the outstand charges to the DSM pool and advised the entities to clear the outstanding payment at the earliest.

SRPC Deliberation (Concluding Remarks on SRLDC agenda)

(i) ED, SRLDC mentioned that at 400 kV level network there was no issue of N-1. However, he expressed concern on the network below 400 kV, including ICTs, which were being stressed highly. Large/multiple disturbances were experienced on this level, involving many generators, like recently happened disturbance at Kalpaka, Rayalaseema area, multiple trippings in Karnataka etc., which points to

the large requirement of system strengthening at this level. He requested state utilities to urgently take up the system strengthening. Regarding TTC declaration by states, he observed that the drawal of most of the states are much higher than the TTC computed. Also that Over Voltages at various areas were also a matter of concern. Many reactors were planned, commissioning of which need to be expedited.

(ii) Chairperson, SRPC requested all concerned to respond positively to the suggestion put forth by the ED, SRLDC.

(iii) COO, CTUIL offered their help in the planning of intra state network strengthening, if required.

19. Assessment of online Dynamic Line Rating

19.1. In the 3rd meeting of Southern Regional Power Committee (Transmission Planning) [SRPC (TP)] held on 24.08.2021 SRPC (TP) has agreed to consider the following lines for assessment of Dynamic Line Loadings as a pilot project and SRPC was requested to take further action on the issue:

i. Tuticorin PS- Madurai 400 kV D/C (quad) line (line length 95 km)
ii. Kalpakka – Simhadri 400 kV D/C line (line length 4 km)

19.2. In the 39th TCC/SRPC meeting it was noted that PGCIL would be the Nodal agency for implementation of pilot scheme on 400 kV Tuticorin PS- Madurai D/C line. PGCIL shall have discussion with experts and finalise the scheme/estimated cost etc. and put up for discussion in SRPC Sub-Committees. Funding etc. would be decided subsequently.

19.3. In the 189thMeeting of OCC (09.04.2022) PGCIL SR-II had informed that they had one more round of discussion with M/s Ampacimon. Meanwhile they have received report from M/s Sterlite Technologies and they have assured that they will furnish the details of agency who had supplied the sensors. IISC Bangalore also had been approached. It was requested that PGCIL SR- II may(need to- **this requirement had been emerged as a Standing Committee Approved Proposal**.) come up with a firm proposal for implementation of Dynamic Line Rating on Tuticorin PS- Madurai 400 kV D/C (quad) line (line length 95 km).

19.4. TCC Deliberation

i) PGCIL, SR-II informed that they are in discussion with M/s Ampacimon as well as with M/s Sterlite OTLM. Recently M/s Lindsay had also been approached and the details sought by them had been shared to them, they will come up with a Report. M/s Ampacimon will be saving all the information in their Belgium Cloud which is not appreciable on the cyber security aspect. However after receiving the offers from M/s Sterlite OTLM and M/s Lindsay the three will be compared and by July end firm proposal will be put up. PGCIL Technology Development wings are also in touch with these agencies. Funding terms and conditions needed deliberations.

ii) MS, SRPC requested PGCIL to come up with the proposal and funding pattern in

OCC/CC and subsequently may taken to TCC/SRPC forum for approval.

iii) PGCIL observed that the proposed line, Tuticorin-Madurai line, is under loaded and suggested that any line among the three heavily loaded lines (Pugalur HVDC-Karoor (old Pugalur) - 49 kM line), Kudgi- Kolhapur lines (189 kM) or Thirunelveli-Kanarpatty line (15 kM) may be considered for pilot study. ED (AM), SR II added that since sensors etc are needed to be installed along the line, it will be beneficial if we go with short line for Pilot.

iv) MS, SRPC observed that the proposal has come through Standing Committee and survey etc had been carried out and complete topography had been taken care. At present as a Pilot Project Tuticorin PS- Madurai 400 kV D/C (quad) line (line length 95 km) may only be considered. SRLDC had intimated that they can modulate the line flow and one line may be tripped to generate overloading of the pilot line and SRLDC had got the clearance of the same from NLDC. Additional/new lines may be considered subsequently. He opined that the learning/experience from this pilot implementation will be helpful to all the states.

v) Chairperson TCC & Director (Tr), TSTRANSCO recalled that during the year 2019, the load at Hyderabad was around 2900 MW. Heavy over loading were observed in three 220 kV D/C lines connecting to Hyderabad, Mamidipally - Shivrampalli, Shankarapally - Gachibowli and Malkaram - Sharpur Nagar. All these lines are interconnected through various S/Ss. If any line trips the other lines will be over loaded and cascade trippings were initiated. To avoid this only way left out was to have parallel lines which may cost around Rs. 1200 Crores. Over head transmission lines cannot be laid since Hyderabad city is densely populated and cables was the other solution. Estimate was prepared and submitted to NLDC for PSDF funding, for upgrading ACSR Zebra conductor to HTLS ACCC drake conductors in Hyderabad area along with the switchyard strengthening. Each lines capacity was increased from 200 MW to 450-490 MW. This was possible with an investment of 100 Crores (about 59 Crores from PSDF) else would have cost Rs 1200 Crores worth new cables. This was done with one line in live while works were carried out on other line. Each line was loaded above 500 MW. These lines are in healthy condition since 2019. Many 132 kV lines also had been converted to HTLS conductors. 10-12 lines were converted to HTLS conductors for providing 9 hours Agricultural supply within a span of 11 months. Additional load of 5000 MW was to be supplied.

vi) KPTCL desired to know the cost implication in converting ACSR Zebra conductor to HTLS ACCC drake conductors. Director (Tr), TSTRANSCO informed that converting the conductor is equivalent to laying a new OH line, but conversion can be done easily whereas new line laying will take time due to ROW issues etc. He informed that in their system two 220 kV lines of length 136 kM, conductor replacement was carried out in three months one by one as all the lines cannot be done at a time. HTLS conversion is recommended for increasing the capacity of line where parallel OH line cannot be laid and to avoid very high cost of new line.

vii) CE, NPC, CEA informed that funds from PSDF is available for reconductoring with

HTLS conductor. Many states like Telangana & Punjab had already availed this and is very cost effective solution. She requested all the states that if any requirements are there, the same may be put up at the earliest.

viii) TSTRANSCO informed that PSDF fund is only sanctioned for 220 kV lines, 132 kV lines are not covered.

ix) CE NPC, CEA clarified that there is not such demarcation and if STU recommendation is there, as per procedure approval will be given within a short period.

x) **TCC Recommendation**

- **PGCIL SR II to move ahead with Tuticorin-Madurai lines as the Pilot Project**.
- **PGCIL SR II to come up with firm proposal including funding aspects. This would be put up to OCC/CC and subsequently will be put up to TCC/ SRPC forum for approval.**

SRPC noted the above.

20. Expeditious commissioning of new transmission elements in Karnataka state network to mitigate constraints in meeting the peak demand

20.1 MoP has addressed a letter dated 28th January 2022 to Additional Chief Secretary (Energy), Government of Karnataka furnishing the transmission constraints that have been observed in the Karnataka State network and planned transmission augmentation and had requested that the concerned agencies in Karnataka shall expedite the commissioning of new transmission elements and a regular monitoring at State Government level to ensure timely commissioning of the transmission schemes to enable Karnataka in meeting its demand in upcoming months. The Ministry of Power, Government of India shall also be kept informed about the progress in this regard.

i. A Special Meeting with KPTCL, KPCL, PCKL, and SRLDC & SRPC held on 11.04.2022 to discuss the transmission constraints in Karnataka highlighted by SRLDC. Subsequently, KPTCL had furnished the status/time line for commissioning of **Transmission strengthening projects planned to overcome the loading constraints** as given below**:**

Sl. No.	Project	Status	Expected Timeline for commissioning
1	Establishing 2 x 500 MVA, 400/220 kV SS at C.N Halli, Tumkur District	Land acquisition under final stage	Dec-25
2	Establishing 2 x 500 MVA, 400/220 kV SS at Gulbarga, Kalaburagi Taluk & District	Work under progress	Dec-22
3	Establishing 2 x 500 MVA, 400/220 kV GIS SS at Dommasandra, Bengaluru	NIT to be issued	Dec-24

4	Establishing 2 x 500 MVA, 400/220 kV (400 kV GIS & 220 kV AIS) SS at Peenya in existing 220/66 kV SRS Peenya SS premises, Bengaluru North Taluk, Bengaluru Urban District	Work under progress	Dec-23
5	Providing additional 3rd 500 MVA, 400/220 kV power transformer at proposed 400/220 kV Devanahalli Hardware Park SS, Bengaluru District along with associated 220kV lines.	Work under progress	Dec-23
6	Establishing 2 x 500 MVA, 400/220 kV SS at Kadandale in Moodabidri Taluk, Dakshina Kannada District	Land identified, Survey works under progress	Dec-24
7	Establishing 2 x5 00 MVA, 400/220 kV SS at Hampapura in Mandya District	SRPC (TP) clearance awaited	-
8	Establishing 2 x 500 MVA, 400/220 kV SS at Kadakola in Mysuru District	To be tendered.	Dec-24
9	Proposal for replacement of age old Drake conductor/ porcelain insulators with hardware by High performance conductor (HPC)/polymer insulators of outgoing 220 kV lines from Kali generating complex in Uttara Kannada District.	DPR approved	Dec-24
10	Strengthening of existing 220 kV Mysore -Hootagalli D/C line by replacing existing Drake by Drake equivalent HTLS conductor.	DPR under preparation	Dec-24
11	Conversion of existing 220 kV Hootagally - Vajamangala S/C line to D/C line with Drake ACSR conductor	DPR under preparation	Dec-24
12	Conversion of existing 220 kV Vajamangala -T.K Halli SC line to D/C line with Drake ACSR conductor	DPR under preparation	Dec-24
Strengthening of Bangalore 220kV network			
13	Establishing 2 x 150 MVA, 220/66 kV GIS near 66/11 kV Mathikere SS in Mathikere, Bengaluru.	Work under progress.	Dec-23
14	Establishing 2 x 150 MVA, 220/66 kV GIS in the premises of existing 66/11 kV Keonics City SS in Bengaluru South	LOI to be issued	Jun-24
15	Establishing 2 x 150 MVA, 220/66 kV sub-station at Sahakarinagar, Bengaluru.	Commissioned	

16	Establishing 2 x 150 MVA, 220/66 kV Sobha Dreams GIS SS, Bengaluru East Taluk, Bengaluru Urban district.	Work under progress.	Aug-22
17	Establishing 2 x 100 MVA, 220/66 kV sub-station in Nelamangala	Retendered	Dec-24
18	Modernisation of existing 220/66 kV V.Valley SS on 220kV side with 220 kV GIS double bus bar arrangement with required GIS line bays, GIS transformer bays and allied equipment along with strengthening of 220 kV Somanahalli-Tataguni-V.Valley S/C overhead line	Tender to be invited	Dec-24
19	Construction of 220 kV unmanned GIS switching station with (remote operation from Khoday's Glass Factory s/s) double bus bar arrangement in the existing BBMP park right below 220 kV Peenya-Singarpet S/C line near Khoday's Glass Factory sub-station along with re-arrangement of 220 kV lines	Tender invited	Dec-24
19	Strengthening of 220kV Nelamangala-Antharasanahalli S/C line by replacing existing Drake by high performance conductor	Work Awarded	Jun-24
20	Running 220 kV 1200 sqmm UG Cable from 400 kV Hoody to EDC SS	Estimate under preparation	Dec-24
21	Strengthening of existing 220kV Nelmangala - Dobbaspet D/C line by replacing Drake to Drake equivalent High Performance Conductor	DPR under preparation	Dec-24
22	Running 220 kV 1200 sqmm UG Cable from 220 kV Koramangala to EDC SS	Estimate under preparation	Dec-24
23	Strengthening of existing 220 kV Kolar HVDC-Kolar D/C line by replacing Drake to Drake equivalent High Performance Conductor.	Estimate for Terminal bay at PGCIL station to be received	Dec-24

ii. **3rd ICT 500MVA at 400/220 kV Kolar S/S implemented by PGCIL**: In the Special Meeting, PGCIL had informed that work would be awarded by end of April2022**.**

iii. **TCC Deliberation**

a) MS, SRPC informed that Member (Power System), CEA is taking a Meeting to discuss Intra-State/Inter-State Transmission Expansion Plan for the State of Karnataka on 09.06.2022 through VC.

b) PGCIL informed that **Work has been awarded with 12 months time schedule for commissioning** of 3rd ICT 500MVA at 400/220 kV Kolar S/S**.**

SRPC noted the above.

21. Status of important Associated Transmission Evacuation Systems

A — **Transmission evacuation system for HNPCL (1,040 MW) Power Plant**

APTRANSCO : 400 kV TM D/C Kamavarapukota – Vemagiri; 186.8 ckm

OCC Updates:

Description	Total	Completed so far	Balance
Foundation	268	254	14
Stringing	268	220	48
Erection	188.6	127.4	59.2

The expected date of commissioning is **December 2023**

B — **KPTCL Transmission system for evacuation of power from Yermarus TPS (2 x 800 MW)**

1) **Gulbarga 400/220 kV substation- 2 x 500 MVA**

   Original Schedule: December 2021, Revised Target: **October 2022**

2) **Yeramarus TPS - Gulbarga 400 kV D/C line (QM):**

   Original Schedule: December 2021, Revised Target: **October 2022**

3) **400 kV SS at Chikkanayakanahalli – 2 x 500 MVA (39th SC)**

   Gazette notification issued on 17.09.2020, **Land acquisition under progress**

4) **LILO of Nelamangala – Talaguppa 400 kV D/C at CN Halli**

   Land acquisition under progress

5) **Termination** of 400 kV D/C of Hassan from Nelamangala – Talaguppa at CN Halli 400 kV, Bellary PS -C.N.Hally 400 kV D/C line QM : **Land acquisition under progress**

C — **400 kV Mangalore (UPCL) – Kasargode-Kozhikode**

NCT in its 1st meeting had approved the scheme through TBCB.

Hon'ble CERC had issued Order dated 27.12.2019 on Petition No 335/TL/2019 on '*Grant of transmission license to Udupi Kasargode Transmission Limited (UKTL)'.*

OCC update:

KSEBL informed that there is a case in High Court of Karnataka given by some occupants in Mangalore area. Hearing is listed during middle of February 2022. The works are on stay at present. The petition was shared to KSEBL also. Sterlite is responding to the Petition. Tower erection and some stringing had been completed in Kerala portion. KPTCL portion tower erection is now put on hold.

KSEBL vide letter dated 16.05.2022 (refer Annexure-13) had informed

The Hon'ble High Court of Karnataka has granted interim direction not to take any

	steps to lay the 400kV transmission line from Udupi to Kasaragode till the next date of hearing and issue notice to the respondents accordingly. The portion of line in Kerala and 400 kV Substation at Kasaragode is nearing completion. The original target of completion of the line was November 2022.The line and substation at Kasaragode has become essential to meet the demand in North Kerala and Mangalore area in Karnataka. The construction of 400kV line from Kasaragode to Wayanad is already awarded and the work can be commences soon. The matter needs to be deliberated and **KPTCL to intervene to sort out the court case.** **TCC Deliberation** ❖ KSEBL informed that Kerala portion is almost over and KPTCL portion ROW issues yet to be resolved. ❖ Chairperson, SRPC may be requested to take up with MoP for settling of ROW issues, and to expedite the commissioning. Karnataka Government may extend all support to resolve the ROW issues **SRPC Deliberation** ❖ 400 kV Mangalore (UPCL) – Kasargode-Kozhikode, being a critical line connecting south Karnataka and north Kerala on the western side of Western Ghats, KSEBL requested Chairperson, SRPC to take up with MoP to resolve the RoW issues. ❖ SRPC suggested that the Government of Kerala to take up with the Government of Karnataka/MoP. Government of Karnataka may please extend all support to resolve the RoW issues. ❖ Chairperson, SRPC agreed to take up with MoP for resolving ROW issues and to expedite the commissioning.
E	**400 kV Madakkathara (Trichur)-Areekode (Kozhikode) -Kasaragode**
	KSEBL had informed that line consist two stretches, 400 kV Madakkathara – Malaparamba and Malaparamba – Areekode. The works are to be carried out in the existing 220 kV circuits. 400 kV Madakkathara - Areekode line commissioned on 18.01.2021. OCC Update: Kozhikode –Kasaragode line: Revision in original plan. The line is joining Wyanad(switching Station). The approval is received from Transmission Standing Committee. Works are tendered and will be started shortly. Kasargode S/S needs to come up. **TCC Deliberation** **Areakode (Kozhikode) –Wayanad-Kasaragode is awarded – Time schedule is 2 years. Line would be on commissioned by 2024.**
F	**400/200 kV Arasapadavu S/s (KPTCL)**

	Previous Meetings: Land acquisition under progress. Estimate to be prepared.

22. Status of the Systems Planned to relieve Constraints

Utilty	System	Remarks
TANTRANSCO	**1. Substations along with ICTs at 400/230 kV Cuddalore, Manalmedu and Ariyalur** Constraints: 400/230 kV 2 x 250 MVA ICTs at Neyveli II TPS and 400/230 kV 2 x 500 MVA ICTs at NNTPS (Approved in 1st SRSCT)	**Cuddalore, Manalmedu Land** acquisition under progress
	2. 1 x 500 MVA, 400/230 kV, 3rd ICT at Thiruvalam *Constraints: 400/230 kV 2 x 315 MVA ICTs at Thiruvalam* (Approved in 42nd SCPSPSR)	**Tendering under progress**
	3. 2 x 315 MVA, 2x100 MVA 400/230/110 kV Vellaviduthi (Pudukottai) S/s *Constraints 400/230 kV 2 x 315 + 1 x 500 MVA ICTs at Allundur S/s and 230 kV Trichy (PG) - Allundur(TN) D/C* (Approved in 37th SCPSPSR)	**Expected by September 2022.**
PGCIL	**1. 1 x 5 00 MVA, 400/220 kV ICT (3rd) at Hiriyur** *Constraints: 400/220 kV 2 x 315 MVA ICTs at Hiriyur S/S* *(*Approved in 2nd SRPC TP)	Work is under progress, commissioning by August 2022
	2. 1 x 500 MVA, 400/220 kV ICT (3rd) at Kochi *Constraints: 400/220 kV 2 x 315MVA ICTs at Kochi* (Approved in 2nd SRPC TP)	***Works warded. By December 2022***
	KSEBL to take care of constraints at Madakkathara after commissioning of Kochi ICT	
	3. 1 x 500 MVA, 400/220 kV ICT (3rd) at Palakkad *400/220 kV 2x315 MVA ICTs at Palakkad*	Work awarded (12 months)

	(Approved in 3rd SRPC TP)	
	4. 1 x 1500 MVA,765/400 kV ICT (3rd) at Nizamabad *Constraint: 765/400 kV (2 x 1500 MVA) Nizamabad ICTs* *(*Approved in 3rd SRPC TP)	**By May 2023**

SRPC Deliberation

(a) TANTRANSCO was requested to expedite the commissioning of ICTs at 400/230kV Cuddalore, in view of critical loading at Neyveli complex.

(b) KSEBL was also requested to plan for additional ICTs at 400 kV Madakkathara SS and HVDC SS Thissur, since these nodes would face constraints. KSEBL stated that studies would be conducted in this regard, keeping in view the connectivity from the upcoming 400 kV Kasargode SS.

(c) **Entities to take action to relieve the congestion.**

23. Status of upcoming Pump Storage Plants in SR

State	Status of PSP Scheme
Andhra Pradesh	**Upper Sileru (9 x 150 MW):** Environmental clearance expected by May 2022.
Karnataka	**Sharavathy (2000 MW):** **40th TCC/42nd SRPC:** **Board approval within a month and CEA approval within six months.**
Kerala	38th SRPC: PSP schemes proposed for stations Sholayar-I (810 MW), Sholayar-II (390 MW) and Poringalkuthu (80 MW) had been dropped and alternative locations were being explored. **OCC update:** Battery storage scheme is under examination. Final decision needed to be taken. **40th TCC/42nd SRPC:** ➢ **KSEBL highlighted some issues in regard to pumping back to reservoir. KSEBL suggested that the dropped proposals may be dropped from agenda also.** ➢ **MS, SRPC informed that even Captive pump schemes propsals are coming up. MoP/CEA are looking up for Pump Storage Schemes** **KSEBL to take up with CEA Hydro on technical feasibility (Head**

	related issues).
Tamil Nadu	**Kundah(4x125 =500MW):** 39thSRPC(06.12.2021): **Expected in 2023-24** **40th TCC/42nd SRPC:** **First Units Expected in 2023-24. And other unit in subsequent years**
	Sillahala Stage I & II 2000 MW: 39th SRPC(06.12.2021):**Expected by 2028-29** **40th TCC/42nd SRPC:** **Stage I : Received clearance. Expected by 2028-29** **Stage II: Clearance yet to be received**

24. Emergency Restoration System (ERS)

24.1 Requirement of ERS had been outlined in MoP letter dated 05.12.2014. The status is given below:

Transmission Utility	Requirement as per MoP	Existing	Status/Remarks
APTRANSCO	**3**	**2**	**APTRANSCO informed ***
* against the suggested quantity of 3 sets of ERS in the state by MoP, 2 sets of ERS infra structure consisting of 20 Nos towers were procured by AP and placed at three different locations, 3 nos in Srikakulam, 7 nos in Visakhapatanam and 10 Nos in Nellore coastal districts to meet the exigencies in case of natural calamities for restoration in the existing transmission network. **No other ERS System is under procurement**. **40th TCC/42nd SRPC:** APTRANSCO informed that they would come up if PSDF fund is sanctioned for procuring ERS			
KPTCL	**2**	**2**	
PED	Nil	Nil	
PGCIL	**4**	**4**	SR-I &II two Nos. each in place
KSEBL	**1**	**0**	**40th TCC/42nd SRPC:** *
* **One supplier had come up. Further updates in next SRPC Meeting.**			
TANTRANSCO	**2**	**0**	**40th TCC/42nd SRPC: by June 2022**
TSTRANSCO	**1**	**0**	**40th TCC/42nd SRPC: by June 2022 ***
* LOA is issued for 79 Crores			

24.2 CSIR - Structural Engineering Research Centre, Chennai, India's premier National Laboratory under the Council of Scientific & Industrial Research (CSIR), Ministry of Science and Technology, has developed an indigenous and cost effective technology, "Emergency Retrieval System (ERS) for power lines". The communication received from CEA related to this had already circulated to all. On 15.03.2021,CSIR-SERC officials gave a presentation on the same to SR stakeholders..

25. Notification of Flexibility in generation scheme by MoP

25.1 TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) has stated as follows:

a) MoP vide notification **dated 12.04.22** has **repealed the earlier notification dated 15.11.21 issued for the** Scheme of Flexibility in Generation and Scheduling of Thermal/ Hydro Power Stations through bundling with Renewable Energy and Storage Power and substituted with fresh scheme. Notable revisions in the fresh scheme are as below:

- Instead of Thermal/ hydro generators swapping RE power, this notification allows RE plants established anywhere in India to bundle their power with thermal / hydro power.
- Allows the sharing of gains between the generator and beneficiary in the ratio of 50:50 **without subjecting to a cap of 7 paise/ kwhr** .

b) The major issues and concerns in the scheme are summarized below:

- No consultation with stakeholders before issue of notification.
- The sanctity of the PPAs signed by beneficiaries is violated.
- The variable charges for the thermal stations will be billed for the coal that has not been utilized at all, which is illegal.
- The beneficiaries will be forced to buy RE power at the high cost of Thermal power and also pay the capacity charges for the thermal generator.
- If there is any gain after adjusting all overheads of the RE generators, only 50% of the gain will be passed on to Discoms.
- The thermal/hydro and RE generators will be benefitted, as the Beneficiaries will be billed at thermal cost for RE power.
- In future, large scale RE power is on the anvil. Hence swapping of 100% thermal power with 100% RE power may become a reality. The cost of coal and oil is always on the increase and hence thermal cost will be increasing. Whereas, RE cost is coming down with advancement in technology. Hence Discoms will be forced to pay for thermal power, though the dispatch will only be from RE generator. In the long run, this will make the Discoms incur huge financial repercussion.

c) The issues were raised by TANGEDCO in the Commercial Sub Committee meeting of SRPC held on 28.01.2022 where NTPC requested approval for the flexible generation scheme for the Solar PV projects installed at Ramagundam and Simhadri.

d) The issue is being taken up with MoP by TANGEDCO. However, this may be deliberated during the 40th TCC and 42nd SRPC meeting considering the long term adverse impact on Discoms.

25.2 TCC Deliberation

(a) TANGEDCO informed that there were three Notifications of MoP regarding the Scheme of Flexibility in Generation and Scheduling of Thermal/ Hydro Power Stations through bundling with Renewable Energy and Storage Power. In the Notification dated 05.04.2018, it was intended to have flexible solar schemes in smaller scale. Based on that notification, NTPC had developed two Floating Solar Plants (FSP) at Ramagundam STPS and Simhadri STPS and NTPC had filed the Petitions for fixation of Tariff with CERC. TANGEDCO had raised strong objections in CERC since the PPA for procurement of thermal power is sacrosanct and any alteration in the provisions of the contract is arbitrary which is not permissible. The logic behind the fixation of tariff of the entire capacity of despatch in any ratio between thermal & RE at the rate of thermal power is nothing but profiteering the thermal generators at the cost of DISCOMs & the end consumer.

TANGEDCO added that as per the first notification, the scheme was optional for the thermal generator whereas in the subsequent notification dated 15.11.2021, the same was removed. Capping of 7 paise/kWh to thermal generators in sharing the gains between generator & DISCOMS was introduced in the second notification. They had raised objections/concerns on the revised scheme in the 50th Meeting of the Commercial Sub-Committee. Subsequently there was another notification dated 12.4.2022 repealing the earlier notification dated 15.11.2021, which allows RE plants established anywhere in India to bundle their power with thermal/hydro power and allows the sharing of gains between the generator and beneficiaries in the ratio of 50:50 without subjecting to cap of 7 paise/kWh to thermal generators.

TANGEDCO summarized the major issues and concerns in the scheme are as below:

i. The notifications were arbitrary and the stakeholders/beneficiaries were not consulted before issue of notification.

ii. It was stated to be reducing the emissions as well as enabling the DISCOMs to meet their RPO obligations without any additional financial burden. In reality thermal power has to be back down to the extent of injection of RE power resulting in part load operation of the thermal station which ultimately increases the net coal consumption which would increase emissions.

iii. The fixation of tariff of the entire capacity of despatch in any ratio between thermal & RE at the rate of thermal power is illogical.

iv. The terms of the PPA are sacrosanct and any alteration of the provisions of the contract arbitrarily is illegal. The PPA has been signed for the procurement of power

from thermal station only and clearly says that the energy charges are to be calculated as per the CERC Regulations from time to time which is only based on fuel cost, ie., cost of coal/oil. There is no provision in PPA for supply of power from RE source. The scheme intends to levy the beneficiaries the energy charges at the rate of thermal power, which includes the cost of coal and oil including transportation and other levies for the total scheduled quantum. However, the cost actually to be incurred by the generator for the power to be replaced by RE power is only the cost incurred for the generation of RE Power, which is approved by Hon'ble CERC, which comprises all expenses incurred by RE generator including the profit margin. So it is illogical in billing the DISCOMs/beneficiaries for RE power at the rate of thermal power. It is also illogical to compute and sharing the gains as difference between thermal power and RE power.

v. The generator will continue to enjoy the cost of thermal power which comprises of many components for arriving ECR even for the RE power which is replacing the thermal power like Run of Mine (ROM) cost, additional charges including crushing charges, transportation charge, handling charges at mine end, washing charges, Transportation charges beyond the washery end or coal handling plant, as the case may be, and up to the loading point and the Statutory Charges, as applicable.

vi. The proposal of recovering the thermal charges based on the coal cost replaced by RE power without actually incurring the expenses is illegitimate and unethical billing of end consumers. Neither the Electricity Act nor any of the Regulations of Hon'ble Commission permits the Petitioner to bill the RE power at the rate of thermal cost. This is apart from the recovery of applicable fixed charges in full for the thermal power.

vii. Further, the beneficiaries will be deprived of the legitimate waiver of transmission charges had they procured power directly from the ISTS connected RE generators. The RE power procured under this scheme is only for replacement of Thermal power for which LTA has already been signed by the beneficiaries and transmission charges have to be paid irrespective of quantum of RE power procured through this scheme. There is abundant RE Power available in the market through SECI/MNRE at cheaper rate as low as Rs. 2.45 /kWh. This Thermal/RE flexibility scheme is not conceived under TBCB route, beneficiaries will be deprived off buying the cheaper power available in the market and forced to buy costly RE power without any such provision in the PPA.

viii. Further, there will be huge implications on despatching the utilities in merit order. When the thermal generators are not despatched, it is impossible to arrive at realistic Merit Order despatch fleet by DISCOMs.

ix. The variable charges for the thermal stations will be billed for the coal that has not been utilized at all, which is illegal.

x. The beneficiaries will be forced to buy RE power at the high cost of thermal power and also pay the capacity charges for the thermal generator.

xi. If there is any gain after adjusting all overheads of the RE generators, only 50% of the gain will be passed on to DISCOMs.

xii. The thermal/hydro and RE generators will be benefitted, as the Beneficiaries will be billed at thermal cost for RE power.

xiii. In future, large scale RE power is on the anvil. Hence swapping of 100% thermal power with 100% RE power may become a reality. The cost of coal and oil is always on the increase and hence thermal cost will be increasing. Whereas, RE cost is coming down with advancement in technology. Hence DISCOMs will be forced to pay for thermal power, though the dispatch will only be from RE generator. In the long run, this will make the DISCOMs incur huge financial repercussion.

TANGEDCO requested that the forum to take up the matter with MoP to revisit the scheme and to have consultation with all the stake holders. Also a detailed pilot study to be conducted before arriving any conclusion.

TANGEDCO further informed that there is another notification from MoP regarding the trajectory of replacement of thermal power with RE power by 2025-26. It was projected to replace 30,000 MW of thermal capacity with the RE power. Any of the high cost thermal generators found RE power, under this scheme, beneficiaries would be forced to buy this high cost power after the blending of coal etc.

(b) TSGENCO stated that on one side it is proposed to have a super critical generator which has 42% efficiency to reduce the environmental pollution. Under this scheme, super critical boiler will operate in sub-critical since efficiency of the boiler will come down. Also when the unit operates under reduced load, auxiliary power consumption would be enhanced and the heat rate will go up. With that, the unit cost will be increased ultimately. TSGENCO pointed out that if this scheme is made as compulsion, the economical operation of the generating units as per the Merit Order will get distorted. Also upon implementation of FGD, the cost of the unit will go up but the generator will come down in Merit Order Despatch (MoD). To encourage the FGD implemented generator, it should be kept high in MoD. Similarly, the priority should be given in MoD to the generators implementing this flexibility scheme.

(c) VP and Head of Plant, JSWEL stated that this scheme is viable when the cost of RE power is less than the Variable Cost (VC) of the thermal generator. However when the cost of RE Power is more than the VC of thermal generator, there would not be any benefit to end consumer. In that aspect, the scheme may be relooked into.

(d) TSTRANSCO informed that presently 45% of the flexibility in the on-bar thermal generators is available for handling the variations in the RE and load etc. To despatch RE power in place of thermal power, the flexibility of the grid operation may come down. This aspect needs to be studied.

(e) Director (T, SO, P & S), KSEBL stated that with the plain reading the MoP trajectory of replacement of thermal power with renewable power, the target of 45% energy by 2025-26 is achievable, since solar generation is available for around 45% of the time in a day and the huge solar capacity being added to the grid. However, there are some practical

issues for implementation like increase in cost of energy etc. Those issues may be taken up with the MoP by the Committee.

(f) Director (Tran), KPTCL stated that in view of the various issues in the scheme of Flexibility in Generation and Scheduling of Thermal/ Hydro Power Stations through bundling with Renewable Energy and Storage Power, it is required to carry out detailed study.

(g) NTPC (SRHQ) stated that the scheme has undergone revisions two times based upon the inputs and representations of the stake holders. TANGEDCO had raised certain issues in the Commercial Sub-Committee Meeting and those might have been taken up with Ministry of Power by TANGEDCO. Considering the various inputs, MoP has again revised the scheme in the month of April 2022 wherein the issues in respect of locational constraints, ECR had been taken care. Objective of the Scheme is to benefit the stakeholders by way of reduction of overall power procurement cost, fulfilment of RPO obligations etc. NTPC is exploring all the possibilities and evaluating thermal capacity which are economically viable and can be used so as to meet the objective of the Scheme. As the trajectory given by MoP recently, whereby progressively thermal capacity have to be substituted by RE power by 2025.

(h) TANGEDCO informed that during the hearings of the Commission in the Tariff Petitions filed by NTPC for FSPs at Ramagundam STPS & Simhadri STPS, CERC had sought the clarification that why the thermal power cannot be billed at the rate of thermal power and the RE power cannot be billed at the rate of RE power instead of billing at the rate of thermal power even for the thermal capacity replaced with the RE power.

TANGEDCO added that there is no dispute in bundling the thermal power with RE power, but issue arises when bundling of the cost of Thermal & RE power. Thermal power and RE power can be directly billed to the extent they were generated / supplied.

(i) TSGENCO informed that three years back, CMD, NTPC had proposed this sort of bundling in the meeting taken by Joint Secretary, MoP. It was learnt that recently CEA & NTPC had tested a simulation regarding flexibilization in NPTI, Faridabad but it was not giving any positive result. Boiler is designed for 100% TMCR at constant output and with this flexibilization boiler is intended to operate at different ratings from 45% to 100% to vary the generation. With these frequent changes in boiler operation, boiler may face fatigue and boiler tube failures may also occur. For this purpose, boiler design needs to be changed and OEMs to be contacted.

(j) MS, SRPC apprised the forum that MoP vide letter dated 26.05.2022 has given the trajectory for replacement of thermal energy with renewable energy by 2025-26 and the targets have been fixed for all Central Generating Stations and for the state generators in SR like Kakatiya TPS, Kothagudem TPS, Mettur TPS, North Chennai TPS, Singareni TPP, Tuticorin TPS, Yeramarus TPP. MoP has also identified some IPPs and targets have been set.

(k) Director (Grid & Tr. Mngmt.), APTRANSCO opined that the issues for implementation the MoP scheme shall be taken up with MoP jointly through SRPC. He requested NTPC to clarify whether they were planning to reduce the emissions from the generators and to share the benefits of the gains to the states while implementing the flexibility scheme.

(l) NTPC (CC) stated that the scheme is for the interest of beneficiaries and will benefit the states by reducing the cost of power. He pointed out that TANGEDCO has raised that why the billing for thermal power and RE power cannot be separate. In that case there has to be a separate agreement for RE power purchase which will only add to the cost and financial liability to the beneficiaries. As per the scheme, there is no additional financial liability on the beneficiaries and the cost of power only would come down. In fact the risk is being taken by the generator because it is a kind of merchant capacity that the liability would be taken by generator and there is no corresponding back to back liability for beneficiaries for purchase of power. In the scenarios of RSD/Technical Minimum operation of the generator, the source RE power cannot be used for the flexibility and the same to be transacted in STOA/Power Exchanges at lower cost. The scheme would be viable to implement where thermal station's ECR is higher than the cost of RE power. The replacement by RE power will be done only when the schedule for thermal station is received from the beneficiaries to generate power from that station. For example if the station ECR is Rs. 4 /kWh and beneficiaries schedule that power, then only thermal power is replaced with cheaper RE power i.e Rs.2.5/kWh. The difference in ECR and RE power i.e Rs. 1.5 kWh would be the gain and Rs.0.75/kWh would be shared to beneficiaries.

(m) TANGEDCO pointed out that when the cheaper power is available in the market around Rs. 2.5/kWh, beneficiaries will not go for scheduling the high ECR station.

(n) Director (Grid & Tr. Mngmt.), APTRANSCO enquired about the gains passed to the beneficiaries in respect of Simhadri FSP which was operated under MoP flexible scheme quite some time.

(o) NTPC (CC) informed that in case of Simhadri, it is a Floating Solar Plant and generally per unit cost of the FSP is higher than land solar plant.ECR of Simhadri STPS is in the range of Rs. 2.80 -2.90/kWh whereas the cost of FSP power is higher than that. Hence there was no saving. The FSP was implemented assuming that ECR of Simhadri STPS may increase over a period of time due to increase in coal cost.

(p) After deliberations, State Utilities recommended that Chairperson, SRPC may be requested to take up with MoP on behalf of State utilities.

25.2 **SRPC Deliberation:**

(a) SRPC noted the above.

(b) Chairperson, SRPC stated that this scheme is not only burden to States/DISCOMs but also for the state Gencos. He agreed to take up with Secretary, Ministry of Power on behalf of State utilities for modifications in the scheme. He requested all the states to take up with Ministry of Power from their respective Government in this regard.

26. Exemption of deemed LTA for the cases of MAPS and NLC TPS II-Stage-I - Revision of RTA, RTDA and Loss allocation

26.1 The issues were discussed in 51st Commercial Sub Committee meeting held on 22.04.2022 wherein the following had been noted:

(i) <u>Exemption of LTA Quantum in the share of Tamil Nadu from NLC TS-II Stage-I and MAPS for the billing period from November 2020 to November 2021</u>

- NLDC is in the process of the revision based on the CTU intimation to exempt these LTAs from the computation of transmission charges w.e.f implementation of Sharing Regulations 2020. CTUIL also confirmed the same.
- SRPC secretariat had stated that as and when the notifications of transmission charges payable by DICs for earlier billing months are revised by Implementing Agency, RTA and RTDA statements would be revised by SRPC secretariat.

(ii) <u>Scheduling Loss through STU lines to be made zero – For LTA quantum exempted stations to be revised from 2.11.2020 to 20.02.2022</u>

- SRLDC stated that NLDC has informed that the revision of loss statements cannot be carried out as the Regulatory provisions do not permit to revise it.
- SRLDC highlighted that Tamil Nadu has filed a petition before Hon'ble CERC for revision of calculation of transmission loss corresponding to the excluded capacity drawn using TANTRANSCO network and to refund the transmission losses corresponding to the excluded capacity at applicable rate for generating stations for the corresponding period. Since the issue is sub judice, CERC directions may be awaited.

26.2 TANGEDCO vide letter dated 16.05.2022 (refer Annexure-7) had stated the following:

a) Based the consistent efforts of TANGEDCO and deliberations held during the 39th meeting of SRPC and recommendations of SRPC, NLDC excluded the deemed LTA quantum considered in respect of MAPS and NLC TPS II- Stage -I from the total LTA of TANGEDCO vide notification dated 31.01.2022. The transmission charge for the billing month of January, 2022 has been calculated based on the revised LTA.

b) In this connection, SRPC, NLDC and PGCIL were requested vide letter dated 12.02.2022 to revise the ISTS transmission charges and losses as well as RTDA by excluding the deemed LTA quantum in respect of the MAPS and NLC TPSII- Stage -I with effect from billing month of January, 2021 to December,2021.

c) Based on the above letter, SRPC forwarded the request of TANGEDCO to NLDC vide letter dated 16.02.2022 for their consideration.

d) As of now, there is no response from NLDC regarding revision of the transmission charges bills and from SRPC with regard to revision of transmission charges, losses as well as RTDA for reconciliation and refund of excess amount billed for the period from January 2021 to December 2021.

e) The loss allocation on account of the deemed LTA has been imposed on TANGEDCO resulting in huge financial loss to a tune of Rs.20.88 crore (approx) due to the reduction in scheduled energy.

f) Apart from the above, the transmission deviation charges have been calculated based on the deemed LTA that needs to be revised. Further, consequent to reduction in scheduled energy from these low cost generators, TANGEDCO has been forced to procure power from the other sources at higher rate to make up the shortfall equivalent to the quantum lost. These issues have been raised in the petition filed before CERC seeking exclusion of deemed LTA and revision of bills in respect of all the ISGS having connectivity with ISTS and Intra State network.

g) It is requested that the Committee may take up the matter with NLDC for early notification of revised computations and refund of the excess recovery in respect of the above Stations.

26.3 TCC Deliberation

(a) NLDC informed that the revised inputs have been received from CTUIL on 24.05.2022. NLDC is in the process of carrying out the revision of the transmission charges from November 2020 to November 2021 (Billing period) and the revised notifications for transmission charges would be notified by June 2022.

(b) MS, SRPC stated that based on the revised notifications by NLDC, SRPC secretariat would revise RTA and RTDA for the respective months.

(c) NLDC informed that transmission losses are not going to be revised retrospectively and the charges only would be revised. As soon as the communication received/clarity obtained from the CTUIL, they started implementing those directions for transmission losses and charges i.e from billing period of December 2021. Prior to that when there was no clear communication, it was not possible to go beyond the Regulations.

(d) TANGEDCO pointed out that from the date of implementation of CERC Sharing Regulations 2020, NLDC is supposed to carry out the revisions for transmission losses as well as transmission charges.

(e) It was noted that the power had been scheduled all over India and despatched. It was noted that TANGEDCO had filed a petition with CERC in this matter. Hence it is prudent to wait for CERC Orders.

26.4 SRPC Deliberation

(a) SRPC noted the above.

(b) NLDC informed that by the end of June 2022, they would complete the revision process in respect of Transmission Charges. Regarding the transmission loss part, it cannot be revised since the power had already been scheduled and utilised. Also the matter is sub-judice with CERC and it is prudent to wait for the CERC directions.

27. Compliance Status of Old Protection Audit Recommendations (PAR-Old)

Applicable Regulation/ Rules/ Order: CERC Order dated 15.12.2016 in Petitions filed by KSEBL (88/MP/2016) and KPTCL (135/MP/2016)

27.1 CERC, vide order dated 15.12.2016 in Petitions filed by KSEBL (88/MP/2016) and KPTCL (135/MP/2016) while granting last-chance time extensions to the SR Constituents for completing their respective Protection Audit Recommendations (PAR), had directed SRPC to monitor the status of completion of PAR regularly in PCSC meetings and submit_bi-monthly report to the Commission confirming the completion of Phase-I and Phase II of PAR by the Constituents of Southern Region. In this regard, the report for the period 07.09.2021 to 15.03.2022 was communicated to CERC vide SRPC letter dated 15.03.2022. The compliance status of various SR-Constituents (having pending recommendations) was reviewed in PCSC-101 meeting held on 13.04.2022.

27.2 **TANTRANSCO was requested to approach CERC for requisite time extension for compliance of their audit recommendations.**

27.3 **TSGENCO (Hydel), KPTCL and TANTRANSCO** are requested to complete the pending PAR at the earliest. The IPPs for whom there are pending PAR [viz., Spectrum PGL, Konaseema GPL, APGPCL Vijjeswaram (Stage-I & Stage-II) & LANCO-Kondapalli PL] are also requested to complete them at the earliest.

27.4 **TCC Deliberations**

- The status of compliance of PAR-Old Remarks was presented in the meeting. The status of the same as on 31.05.2022 is as follows:

SN	Constituent	PAR (Phase-I) Activities	PAR (Phase-II) Activities	PAR (Ph-I & Ph-II) Compliance (%)	Remarks
		Stipulated Completion Date	Stipulated Completion Date		
1	TSGENCO (Hydel)	**31.03.2017**	**31.03.2017**	**96.88**	TSGENCO informed work was under progress and implementation of A/R pending in 2 relays. Pending recommendation (one) would be complied by June 2022.
2	KPTCL	**31.05.2017**	**31.05.2017**	**98.55**	KPTCL informed that pending recommendation (one no.) would be complied by June 2022.
3	TANTRANSCO	**31.12.2017**	**31.12.2017**	**88.33**	TANTRANSCO informed that 14 recommendations were pending to be implemented and requested time extension till 31.12.2022.

- When enquired about the pending works from TANTRANSCO, they relied that 50% of the pending works were completed by 31.05.2022; and they were targeting to complete the balance works also by August, 2022. To this it was clarified that in case TANTRANSCO anticipates more time in complying with the pending remarks, they should approach Hon'ble CERC for requisite time extension for compliance of their audit recommendations. TANTRANSCO was also requested to furnish the latest status of compliance to SRPC Secretariat for necessary updations.
- **TSGENCO (Hydel), KPTCL and TANTRANSCO were requested to complete the pending PAR at the earliest. The IPPs for whom there are pending PAR [viz., Spectrum PGL, Konaseema GPL, APGPCL Vijjeswaram (Stage-I & Stage-II) & LANCO-Kondapalli PL] were also requested to complete them at the earliest.**

SRPC noted the above.

28. Compliance Status of New Protection Audit Recommendations (PAR-New)

28.1 As part of GSC (Task-II) under Package-A, protection audit of **15** stations was carried out by M/s Tractebel Engineering (TE) in the southern region during the period, December, 2015–July, 2016.

28.2 Subsequently, protection audit of various stations in SR was also being regularly conducted by SRPC teams, albeit at a small scale, in line with CERC Order, dated 27.04.2015, in APTRANSCO's Petition No.95/MP/2015 and CERC Order dated 14.05.2015 in TSTRANSCO's Petition No.83/MP/2015 and Protection Audit of 19 stations have been carried out during the period December, 2016–July, 2019.

28.3 However, in view of the need to cover large no. of 220 kV & above Stations (Substations as well as Generation Switchyards), the modus operandi of conducting protection audit of all remaining stations in SR was discussed in detail by the Protection Coordination Sub-Committee (PCSC) of SRPC in the 80th meeting held on 20.12.2018, wherein it was decided to carry out the same by forming regional groups, each consisting of members from various SR utilities. This was also got approved in 35th SRPC meeting held on 02.02.2019.

28.4 Accordingly, conduction of comprehensive protection audit of SR-Stations by regional level groups comprising members from various utilities had been taken up from October, 2019. Under this, so far protection audit of **81** stations was conducted during the period October – November, 2019.

28.5 The compliance of pending protection audit recommendations of above **114** stations is being monitored periodically by SRPC by circulating the consolidated status of the same to various SR-Constituents for compliance.

28.6 **The entities are requested to comply with the pending remarks and update the status.**

28.7 **TCC deliberations**

- The status of compliance of PAR-New Remarks was presented in the meeting. The status of the same as on 31.05.2022 is as follows:

SN	SR-Constituent	Compliance %	SN	SR-Constituent	Compliance %
1	APTRANSCO	71.34	9	PGCIL (SR-I)	81.48*
2	TSGENCO	79.17	10	PGCIL (SR-2)	81.91**
3	TSTRANSCO	60.42	11	PED	66.67
4	KPCL	60.14	12	NTPC	82.22
5	KPTCL	64.73	13	NLCIL	52.17
6	TANGEDCO	46.15	14	NPCIL	74.19
7	TANTRANSCO	25.73	15	Others	30.43
8	KSEBL	59.04			

Note:

* → Out of the 15 No. of Pending Recommendations, 12 Recommendations pertain to other Utilities (KPTCL & TSTRANSCO). Thus, 80% of the pending Recommendations pertain to the other Utilities.

** → Out of the 17 No. of Pending Recommendations, 5 recommendations pertain to Other Utilities (KPTCL & KSEBL). Thus, 29.4% of the pending Recommendations pertain to the other utilities

- To above, NTPC informed that their compliance percentage should be much higher as they have already taken steps to comply with the pending remarks. In this regard, NTPC was requested to furnish the latest status of compliance to SRPC Secretariat for necessary updations.
- **All concerned SR-Utilities were requested to take steps to comply with the pending remarks and furnish the updated status to SRPC Secretariat.**

SRPC noted the above.

29. Supply interruption to Manjeswaram Substation (110 kV Konaje-Manjeshwaram ISTS line)

29.1 KSEBL vide letter dated 16.05.2022 (refer Annexure-13) has informed that in the 190th Meeting of OCC (09.05.2022) the failure of KTPCL Kavoor 100 MVA transformer and supply interruption to Manjeswaram substation and railway traction load had been discussed. KTPCL confirmed 15 MW load to meet the traction load to Kerala side. Unfortunately the power could not be availed at Manjeswaram Substation due to the apprehension at substation level.

29.2 **TCC deliberation**

i) KSEBL informed that from Mylatti S/S Kerala have only single circuit feeding the load of Vidyanagar, Kubbanur, Mulleria and Manjeswaram area. Line is over loaded at Mylatti

end. One traction S/s is there at Uppala which is fed from Kubbanoor. Solar generation is coming to Kubbanoor and whenever solar is not there KSEBL is not able to meet the load and forced to do load shedding even at night off peak hours. KSEBL requested KPTCL to update on the status of Kavoor transformer.

ii) KPTCL informed that Kavoor 100 MVA transformer (new) would be charged within 15 days.

iii) With respect to the strengthening of this line it was noted that KSEBL portion is completed.

iv) KSEBL observed that a letter was addressed to KPTCL from KSEBL with a query regarding the expenditure of construction of KPTCL portion of the line. Normally for inter state line; the portion under geographical area of the state expenditure would be borne by the respective state which was adopted in case of Kaniyampeta - Kadakola line also.

v) MS, SRPC recalled that in the Special Meeting held on 13.07.2022, KSEBL had agreed in principle to bear entire cost of putting up new D/C line. This was agreed since there was a predominant flow of power from Karnataka to Kerala through this line. Also physical works would be carried out by KPTCL in KPTCL portion and would be reimbursed by KSEBL. He requested KPTCL to see this issue in a holistic way and take up the works in their portion as there may be power flow requirement from KSEBL to KPTCL in future.

vi) KSEBL informed that after commissioning of 400 kV S/S at Kozhikode, KSEBL was able to support Karnataka by reverse power flow on Kaniyampeta to Kadakola line. In a similar line after commissioning of 400 kV Kasargod SS, the line may be used for exporting power to Karnataka from Kerala system.

vii) KPTCL informed that KSEBL may make formal request (letter) to KPTCL to carry out the works at Karnataka portion. Based on this letter action would be considered. KSEBL agreed to send a request letter for upgradation in their control area by KPTCL.

viii) **TCC Recommendation**

- KSEBL & KPTCL may resolve the issue mutually.

SRPC noted the above.

30. Implementation of SAMAST by State Utilities

The following had been noted in the meetings of OCC:

a) APTRANSCO: Bid opening date postponed on request of bidders to 18.02.2022.

b) KPTCL: Work Award was issued during August 2021and the works under progress. One year from DoA is the target date of completion.

c) KSEBL: Tender for meters floated and tender for AMR and software part would be finalized shortly. *Grant of Rs.15.80crores has been sanctioned from PSDF*. Due to COVID-19 pandemic related issues progress was not as per planned.

d) TANTRANSCO: Trial run in progress.

e) TSTRANSCO: The revised DPR (27.45 Crores) for SAMAST had been resubmitted to

NLDC on 27.11.2021. TSTRANSCO had received communication from NLDC on 06.01.2022 conveying that the scheme is approved for an amount of 13.87 Crores (TEC approval). Out of this 90 % grant (12.8) will be disbursed. Monitoring Committee approval is awaited shortly.

TCC Updates

(i) **APTRANSCO:** Two bids have been received. Technical analysis is being taken up. Price bid to be opened within 10 days.

(ii) **KPTCL**: Work under progress. Will go live in other three to four months.

(iii) **KSEBL**: Energy meters have been ordered. DLMS test is awaited from CPRI. Tender floated for software part and would be opened by 15.06.2022.

(iv) **TANTRANSCO**: Trial run is in progress.

(v) **TSTRANSCO**: Project was recently approved by Monitoring Committee of PSDF. TPA is under progress. By end of June 2022 agreement would be signed.

SRPC noted the above.

31. Status of Implementation Automatic Generation Control (AGC)

Status update is as below:

a) Central Sector

Entity	Generator	Status
NTPC	Simhadri STPS Stage-II (2 x 500 MW)	Implemented on18.11.2018. AGC is disabled in Unit IV due to high vibration issues.
	Ramagundam STPS Stage-II(4 x 500 MW)	Commissioned on 31.03.2021. Put under AGC.
	Simhadri STPS Stage- I (2 x5 00 MW)	Commissioned, put under AGC.
	Ramagundam STPS Stage-I (3 x 200 MW)	AGC implementation works would be taken after the maintenance/renovation works.
	Talcher STPS(4 x 500 MW)	**40th TCC/42nd SRPC: All the works completed. However, clearance from NLDC is awaited**
NTECL	Vallur TPS (3 x 500 MW)	AGC is in place from14.06.2021.
NTPL	NTPL (2 x 500 MW)	In operation from 14.06.2021.
NLCIL	TPS II (7 x 210 MW)	**40th TCC/42nd SRPC: Test completed and SOP planned for the station. Would get in touch with NLDC for the implementation.**
	TPSI Expn (2 x 210 MW)	
	TPSII Expn (2 x 250 MW)	
	NNTPS (2 x 500 MW)	

NP-Kunta	Solar in AP AGC:5 blocks of 50 MW i.e. 5 x 50 =250 MW	Works stopped due to Some contractual issues which would be sorted out and expected commissioning by March 2022 end.

b) AGC at state Level-Pilot Project identification &Implementation:

State	Generator	Status
Andhra Pradesh	Krishnapatnam (2 x 800 MW)	After finalization at Management level in coordination with generator M/s APPDCL and AP Discoms, the proposal will be submitted to the Hon'ble APERC.
	In addition to Krishnapatnam planning AGC at VTPS, Ry TPP, Upper Sileru & Lower Sileru **40th TCC/42nd SRPC:** **APTRANSCO have given three options to APGENCO and response from them is awaited.**	
Karnataka	Sharavathy Generating Station(1035 MW) (Available MW for AGC is 10 % of live load up to maximum of 100 MW (10% of 1035 MW)	Implementation of AGC Pilot under USAID GTG Scheme completed. KPTCL & KPCL in coordination would put the units under AGC operation. Commercial implications are being examined. In coordination would put the units under AGC operation
	Varahi Under Ground Power House (4 x 115 MW) (Available MW for AGC is 20% of live load up to maximum of 80 MW as per the programme planned)	Go-live pilot completed (January 2021) KPTCL & KPCL in coordination would put the units under AGC operation. Commercial implications are being examined.
	40th TCC/42nd SRPC: **KPTCL observed that there is no SOP or any directive regarding incentive etc for putting units under AGC.** **MS, SRPC opined that KPTCL/KPCL need to approach SERC with proposal for implementation/incentives**.	
Kerala	Kuttiady Unit No. 5 (50 MW)	**40th TCC/42nd SRPC:** State Regulator has been approached for putting AGC on regular basis. Permission is still awaited.
	Commission has been approached only for permission to put the units under AGC. Incentive part is not included.	

	Idukki Unit No.1 (130 MW)	**40th TCC/42nd SRPC:** AGC would be implemented once the Optical Fiber link from SLDC to Idukki PH is established. Expected the works completion by two month.
Tamil Nadu	North Chennai TPS Stage-II(two units i.e. 2 x 600 MW)	**40th TCC/42nd SRPC:** Tenders will be floated again since only one party appeared.
	MTPS – II (1 x 600 MW)	**40th TCC/42nd SRPC:** Technical bid opened and after clearing the clarification price bid would be opened and works would be awarded shortly.
Telangana	KTPS-VI (500 MW) (132 MW downward)	**40th TCC/42nd SRPC:** Put in to regular operation with existing SCADA. Performance is being observed. Further course of action will be taken accordingly.

TCC Deliberation

(i) NLDC informed that +/- 5 % response limit have been set for AGC for all the NTPC stations under ambit of AGC which will translates into around +/- 800 MW responding in the system whereas the requirement is around 1500 to 2000 MW. Requested NTPC to allow NLDC to relax the limit so that adequate response may be achieved. NLDC/NTPC has acquired sufficient experience in this regard and NTPC may come forward to offer more response.

(ii) TSGENCO stated that if Super Critical Generating units are out under AGC, the unit will go from dry mode to wet mode, ie super critical mode to sub critical mode and the operator may face many issues to control the generation during ramping up and down and may lead to tripping of the unit.

(iii) SRLDC clarified that for conventional plants, generator will be given a bandwidth –Pmax and P min and the control will be within this bandwidth.

SRPC noted the above.

32. Establishment of Unified Network Management System (UNMS) for ISTS communication in SR

32.1 The Unified Network Management System (UNMS) was discussed in the various Meetings of OCC, Special Meetings (07.11.2019& 07.12.2020), TCC meetings (36th, 37th, 38th & 39th) and in SRPC meetings (37th, 38th, 39th & 40th). The following had been noted in those meetings:

a) Following functions (Service Assurance, Service Fulfilment, Web Consoles and Ticketing etc.) are considered in the proposed U-NMS (Applications / Functions may

vary at NLDC/RLDCs/SLDCs – depending upon the Operational / Administrative Requirements):

i) Control Centre in NLDC
ii) Control Centre in RLDCs
iii) Workstation based Control Centre in SLDCs

a) CERC Communication Regulations requires all users of CTU, NLDC, RLDCs, SLDCs, STUs shall maintain the communication channel availability at 99.9% annually, provided that with back up communication system, the availability of communication system should be 100%.

b) Central Electricity Authority (Technical Standards for Communication System in Power System Operations) Regulations stipulates that user shall keep evidence of compliance on availability for the previous two calendar years plus the current year for all the interfaces which are in operation.

c) CEA, Communications Regulation specifies network management system shall have features to store necessary information and facility to generate report on communication system availability of major equipment as well as the data channels on daily or weekly or monthly or annually basis. It also envisages centralised monitoring shall be in main and back-up control centre architecture with centralised database and twenty-four hours maintenance on all days.

d) It was informed that there is no provision in the existing communication infrastructure for (i) data retention for a period 3 years (including current year), (ii) automatic report generation which is required for certification & monitoring and (iii) centralised supervision.

e) PGCIL had informed that the cost for implementation is Rs. 109 Crores in SR and Rs. 5 Crores for AMC/year. The useful life would be seven years as in the case of EMS SCADA packages of SLDCs and POSOCO. Also, the cost of National Level UNMS (Rs.109 Crores) needed to be shared by all the regional constituents. NR and NER had adopted for Tariff based funding.

f) In the 39th Meeting, SRPC in principle agreed implementation of UNMS on technical/ regulatory requirements; however the funding aspects need to be finalized through SRPC forum. PGCIL/CTUIL was advised to circulate a write-up to the state utilities covering all the details/ logics of UNMS (integration of NMS, responsibility of sates/PGCIL, facilities to SLDCs, right of access, sharing of the charges of State portion/ISTS/National etc.).

g) In the 40th Meeting of SRPC (31.01.2022), the write-up etc. furnished by PGCIL/CTUIL had been discussed and agreed the following:

(i) CTUIL/PGCIL may go ahead with DPR preparation of the UNMS with **75:25 (PSDF: Equity)** and approach NLDC for PSDF funding. However**,** the forum suggested that PGCIL may seek for maximum possible funding from PSDF.

(ii) PGCIL shall consult the constituent States during finalisation of the specification/DPR/ architecture/design documents etc. for Southern Region UNMS at various stages.

32.2 In the Special Meeting held on 22.03.2022 the following had been noted:

a) PGCIL had furnished expected cost as per latest tenders : Rs. 90 Crs (approx.) including the AMC charges for 7 years for ISTS Network Plus Rs. 216 Crs (approx.) for additional Control Centre infrastructure at State location (36 Crs per State) [Total 306 crs]. PGCIL had opined that providing additional UNMS control centre at SLDC will provide no added operational advantage. One of the important disadvantages highlighted was that there will be no back-up UNMS CC at State level and in case of any failure in main, all data of State will be lost. It was concluded by PGCIL that the huge additional cost involved is not offering any added benefit.

b) PGCIL had expressed concern regarding the delay in implementing the scheme in SR and informed that the UNMS scheme has already been approved in all other regions. Scheme of NR and NER are already awarded, bids of ER package are opened and are presently under evaluation & DPR for WR scheme is under preparation. Further, PGCIL expressed that the UNMS scheme of SR is required to be implemented within this tariff block year of 2024 and any further delay in implementation may jeopardize. Hence, decision for clearance of modalities for SR UNMS scheme has to be taken on urgent basis

c) Conclusion:

(i) CTUIL/PGCIL may go ahead with DPR preparation of the UNMS with 75:25 (PSDF: Equity) and approach NLDC for PSDF funding in line with SRPC decision.

(ii) PGCIL to share the TS w.r.t SR along with BoQ to states within 15 days.

(iii) States to revert back on the setting up of UNMS at state level and the time frame needed to be taken care off.

(iv) As agreed earlier PGCIL shall consult the constituent States during finalization of the specification/DPR/ architecture/design documents etc. for Southern Region UNMS at various stages.

(v) The revised architecture scheme including additional UNMS Control Centre (CC) at State locations is not beneficial from cost and reliability point of view.

(vi) Looking into the more features and regulatory mandates it may be concluded that the project may be taken up with original configuration. However, if state is having its own UNMS (with Main & Back Up) the UNMS at Regional Level will be integrated to State UNMS. Technical /implementation aspects if any may be deliberated further

32.3 Subsequently, KSEBL vide letter dated 16.04.2022 (**Annexure-32a**) has stated that as already informed, KSEBL has concurred the implementation of UNMS in principle only, but technical/commercial aspects need further deliberations.

32.4 PGCIL vide letter dated 12.05.2022 (refer Annexure-11) has submitted the status of package as follows:

(a) The UNMS scheme for SR has been approved in 40th SRPC meeting held on 31st January, 2022. In the said meeting, it was agreed that POWERGRID may go ahead with DPR preparation of the UNMS with 75:25 (PSDF: Equity) and approach NLDC for PSDF funding. It was mentioned that Detailed Project Report (DPR) for the UNMS scheme of SR has been finalised and is under advanced stage of approval. After approval, POWERGRID will approach PSDF for funding on 75:25 basis (75 % PSDF and 25 % Equity).

(b) Further, draft Technical Specifications including BoQ has also been shared with constituents, CTUIL & SRPC vide mail dated 20th April 2022 for their valuable inputs/comments. The inputs/comments are yet awaited.

32.5 TCC deliberation

i) ED (AM), PGCIL informed that DPR have been approved already. PSDF funding will be sought shortly for which Management Approval is awaited. He hoped that within one or two weeks DPR would be submitted to NLDC for funding from PSDF.

ii) On a query from MS, SRPC, PGCIL informed that formal approval will be sought from NCT also.

iii) KSEBL informed that the reply to their queries have been received on 02.06.2022 only and yet to go through the same.

iv) MS, SRPC suggested that PGCIL may arrange consultative meeting frequently in which apprehensions of states may be looked into/clarified. Also requested PGCIL to intimate the forum, if any change in PSDF funding pattern during scrutiny of the proposal by TESG of PSDF.

v) **TCC Recommendation**

a) PGCIL to approach NLDC for PSDF funding after approval from PGCIL higher Management.

b) PGCIL to coordinate with the states on the various activities.

c) PGCIL to arrange for consultative meeting frequently in which apprehensions of states may be clarified.

d) PGCIL to intimate any change in PSDF funding pattern during the process of approval of the scheme by PSDF committees.

32.6 SRPC deliberation

- **SRPC noted the above.**
- APTRANSCO opined that the life cycle of the system could be considered as 10 years, instead of the prevailing practice of 7 years life cycle.

33. Progress of Bus/ Line Reactors to be commissioned in SR

Status of implementation of Bus / Line Reactors approved in the Standing Committee / SRPC pending for commissioning by the SR constituents is at **Annexure-33.**

TCC advised the concerned utilities to expedite implementation of Bus / Line Reactors approved in the Standing Committee / SRPC pending for commissioning by the SR constituents to overcome the voltage issues.

SRPC noted the above.

34. Items for necessary action

SRPC/TCC members are requested to ensure compliance of the following:

I. Operation Monitoring Division of CEA is entrusted with the responsibility to collect, compile and record the data concerning the generation of power and publish various reports (daily/monthly/yearly basis) as per the relevant provisions of Electricity Act 2003. CEA vide letter dated 20.04.2022 has informed that the some generators are not updating the Daily/Monthly Generation and outages Data online at National Power Portal (NPP).

II. In respect of CEA's Resource Adequacy Plan and Load Generation Balance Report 2022-23, CEA had pointed out that the power supply position is expected to remain critical in the next few months. The situation is becoming volatile with the limited power availability in Power Exchange for short term purchases by the DISCOMs. Under the given circumstances, Member (GO&D), CEA, has advised that all RPCs are required to monitor the power supply position on a regular basis and the concerned utilities of States/UTs are to be asked to furnish reasons for the deviation from the availability figures furnished by them for LGBR 2022-23. The reliability of the figures being furnished by States/UTs to RPCs/GM Division, has to be emphasized upon. The Planned maintenance of the generating units for the month may be reviewed in advance and staggered so as to ensure the availability of maximum generation capacity for meeting the anticipated power requirement.

III. CEA is monitoring the compliance of Environment Emission norms. In this regard, it is requested that the requisite information in format may kindly be furnished by all the TPPs on monthly basis to CE (TPR&M), CEA (cetprm-cea@gov.in) with a copy to SRPC.

IV. **Reactive Energy Charges payable by PCKL to KSEBL:** KSEBL vide letter dated 16.05.2022 (refer Annexure-13) had informed PCKL has not released Reactive Energy Charges payable to KSEBL from 12/2018 onwards amounting to Rs 7.77 lakhs and has raised dispute on similar lines that Tamil Nādu has disputed the Reactive Energy Charges payable to Karnataka in respect of the 220 kV S/c line from Yeradanahalli - Hosur on radial mode. The matter is to be discussed and settled.

V. **Pending receivable from APSEB :** KSEBL vide letter dated 16.05.2022 (refer Annexure-13) had informed the amount of revised REA - October 1992 dtd 06/10/1993 towards bilateral power purchase of Rs.1,46,69,501/-is still outstanding as receivable from APSEB in the books of KSEBL. As requested by APPCC, KSEBL had forwarded the latest Statement of Account and available old ledger copies showing the receivables towards this item against Andhra SEB in the books of KSEBL and had also undertaken to indemnify the

APPCC, against the excess payment, if any identified later, that would occur on releasing this long pending amount of Rs.1,46,69,501/-.

The amount of Rs.14.50 Crores is also receivable from APSEB towards Frequency Linked Penalty Scheme during the period 04/1994 to 05/1997

- **50th CCM (28.01.2022) update**: KSEBL and APPCC were requested to have a bilateral meeting to settle the dues in respect of frequency linked compensation. KSEBL would call a meeting on the dates convenient to both parties. KSEBL and APPCC agreed for the same.

VI. SPS signal relief was not upto desired levels in the past few months. States/UT to take necessary action for improving the relief. W.r.t procurement of DTPCs for SPS signals, it was concluded in the OCCM that States may go for procurement themselves.

VII. KSEBL to initiate synchronous condenser mode operation for units on rotation (1 hr each). KPCL to explore the possibility of operating one or two units on synchronous condenser mode on Pilot Project basis.

TCC/SRPC noted the above items I to VII.

35. Items for Information

I. URTDSM (PMU) Project in Southern Region

The following had been noted in the earlier meetings:

a) All the states had furnished the requirement for Phase II. SRLDC had stated that once the OF availability is received from PGCIL, they would discuss with SR-I & SR-II (if required with states also) and finalize the PMU requirements for Phase-II for SR. RE pooling stations, LI SS, STATCOM locations, Phase Shifting Transformers etc would be considered while finalizing the PMU requirement. Communication availability would also to be looked into.

b) SRLDC had furnished the list of new Analytics which could be covered in Phase II scope.

1. Real Time Automated Event Analysis Tool
2. Oscillation Source Location
3. Real time Inertia Estimation Tool
4. Big data analytics tool / engine

c) CTU/PGCIL had informed that requirements have been received from all the states for Phase II. Additional location for installation for PMUs furnished by SRLDC is not in line with already approved criteria for PMU implementation.

d) On the requirement of PMUs for Phase II, CTU/PGCIL had informed that PMU requirement was worked out for Phase-I based on the philosophy as approved in the Joint Study Committee Meeting taken by CEA in March 2012. Based on the same philosophy CTU had assessed PMU requirement of Phase-II also. Subsequently POSOCO came up with a modified philosophy in which more PMUs were suggested to

cover each generating station, FACT devices, STATCOM, Converter Transformers, SVCs, FST, Lift Irrigation schemes, Renewable Pooling Stations and also some more analytic applications. This change in philosophy was deliberated in a meeting taken by Chairperson, CEA wherein Chairperson, CEA had advised that the change in philosophy brought out by POSOCO may be discussed in next NPC Meeting and CTU had agreed to put up this issue as an agenda item for next NPC Meeting.

e) After finalization of the philosophy on Pan India basis, CTU would work out the requirement in consultation with the POSOCO/states. The finalised requirement of PMUs would be put up to SRPC for approval.

f) In the 10th meeting of National Power Committee (NPC) held on 09th April 2021 deliberations, NPC decided that a Sub-Committee would be formed under the Chairmanship of Member Secretary, WRPC with representatives from POSOCO, CTU, POWERGRID, all RPCs/NPC. The Sub-Committee shall discuss on the uniform philosophy of PMU locations, new analytics and requirement of up gradation of Control Centre under URTDSM project and submit its recommendations to the NPC.

Subsequently, CEA, NPC Division had constituted Sub-Committee on the uniform philosophy of PMU locations, new analytics and requirement of up gradation of Control Centre under URTDSM project.

g) In the 39th meeting of SRPC, it was noted that the requirement for URTDSM Phase-II project would be finalised based on the recommendation of Sub-Committee constituted by NPC on the uniform philosophy of PMU locations, new analytics and requirement of up gradation of Control Centre under URTDSM project.

h) In the 11th meeting of NPC (28.02.2022), It was informed by Chairman of Sub-Committee (MS, WRPC) that the inputs submitted by POSOCO and POWERGRID/CTU are under examination and sub-committee may require some more data from POWERGRID/CTU to compare the actual implementation done under Phase-I and the requirement envisaged in the DPR. It was also suggested that sub-committee may visit the NLDC to understand the utility of the Phase-I project and the requirements of Phase-II project. He requested that three months' time may be required to finalize the report and the same was agreed by NPC.

II. Outstanding dues between Southern & Western Regional Constituents

a) Outstanding dues between Southern & Western Regional Constituents were under deliberation in various sub-committee meetings of SRPC and meetings with WR constituents.

b) The status is as follows:

SR Constituents	**WR Constituents**		
	Receivable from		Payable to
	MPPMCL* (Rs.)	**CSPDCL # (Rs.)**	**CSPDCL # (Rs.)**
APTRANSCO /	**1,21,76,270**		

TSTRANSCO			
KPTCL/PCKL	**13,27,208**		
KSEBL	**1,21,47,260**	**7,05,279**	
TANTRANSCO	**1,17,17,268**		**92,77,878**

* Madhya Pradesh Power Management Company Limited (MPPMCL)

Chhattisgarh State Power Generation Company Limited (CSPDCL)

c) In the 37th meeting of TCC held on 28.08.2020, MS, SRPC had informed that as per the Minutes of 83rd CCM of WRPC (11.09.2020), WRPC had requested that the old issues should be consolidated and finalized among all the WR beneficiaries first and a meeting can be arranged with OPTCL & ERPC. He further informed that pending payments between WR & SR utilities would be taken up subsequently.

d) In the 50th meeting of Commercial Sub-Committee (28.01.2022), it was noted that the issue is under deliberation in Commercial Sub-Committee meetings of WRPC. Further course of action may be decided based on the outcome of the WR meetings.

e) In the 51st meeting of the Commercial Sub-Committee (22.04.2022), the following were noted:

i) MS, SRPC vide letter dated 15.03.2022 had furnished the agenda for 42nd TCC/WRPC Meetings to be held on 04/05.04.2022 on the issue of outstanding dues between Southern & Western Regional Constituents and requested to include the same for the deliberation. However, the issue has not been included in the agenda of 42nd TCC/WRPC Meetings.

ii) WRPC vide letter dated 19.04.2022 has informed the following:

- The issue has been under discussion in various forum of WRPC.
- MPPMCL raised the issue that the settlement of energy exported during the period Feb 1998 till 2008-09 is also linked to excess transmission charges paid to M/s OPTCL.
- MPPMCL informed that the energy transactions between SR & Madhya Pradesh cannot be settled unless OPTCL refunds the excess amount collected from Madhya Pradesh towards wheeling Charges for these energy transactions.
- Commercial Sub Committee of WRPC has recommended that MPPMCL may file a petition with Hon'ble CERC for refund of excess payment collected by OPTCL for the above transactions.

f) KSEBL vide letter dated 16.05.2022 (refer Annexure-13) had stated that the amount is still pending. The meeting requested by KSEBL through SRPC with MPPMCL, CSPDCL and Odisha Power Transmission Corporation Ltd is yet to happen.

TCC/SRPC noted the above.

III. Implementation of Automatic Meter Reading (AMR) in Southern Region

a) In the 39th Meeting of SRPC (06.12.2021), the following were noted:

i) In the meeting held on 19.11.2020 chaired by Chairperson, CEA with the participation from PGCIL, CTU, POSOCO, RPCs etc. on the subject of Telemetry of real time Active

Power (MW) data to SLDCs, it was decided to constitute a committee for finalizing the Technical Standards (TS) for AMR. The finalized TS would put to NPC for approval. It was agreed for pilot project by Gujarat and Rajasthan STUs to provide additional energy meters in series with the existing SEM. The cost would be borne by the respective STUs.

ii) NPC Division, CEA vide letter dated 02.12.2020 had intimated that a Joint Committee comprising the members from each RPC, CEA, CTU/PGCIL & POSOCO had been constituted "*to prepare the Technical Specifications (TS) of the 5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP) for interstate transmission system may be prepared at PAN India basis*".

iii) In the 38th Meeting of TCC (22.12.2020), it was decided that after the finalization of Technical Specification by the Joint Committee, PGCIL would implement AMR in SR expeditiously.

b) CEA vide letter dated 28thJanuary 2021 has furnished the draft Technical Specifications (TS) for the 5/15 Minute IEMs with AMR/MDP.

c) The consolidated comments of SR constituents on the draft TS were finalized in the meeting held on 08.04.2021 and furnished to NPC Division, CEA on 14.04.2021 for consideration by the Joint Committee.

d) A Meeting of the Joint Committee for IEM and CDCS Technical Specification under the Chairmanship of Chairperson, CEA was held on 14.04.2021 through VC and the following are the major decisions:

i) 5/15 minute Energy accounting data shall be transmitted directly to RLDC. However, modalities for real time MW data streaming to SLDC with technical details shall be deliberated and finalized by the Joint Committee/RPCs. Further, RPCs may explore to house the servers in RPC secretariat being in proximity with RLDCs utilizing the communication facilities available at RLDCs.

ii) Responsibility of Operation & Maintenance of IEM & DCU and CDCS & MDP may be as per CEA metering Regulations. Implementation methodology shall be finalized by RPCs.

e) 4th meeting of the Joint Committee (JC) was held on 06th April 2022. Minutes of the Meeting were issued on 13th May 2022 wherein it stated that, ***' It was agreed that CTU and POSOCO may finalise their respective part of TS as per the deliberations/decisions in the meetings of the JC and send the revised Final TS again in two weeks' time for finalisation by the Joint Committee***'.

TCC deliberation

Chief Engineer, NPC Div. CEA informed that the final Technical Specifications have been prepared by CTU and POSOCO on the basis of various meetings of the Joint Committee. The same have been circulated among the members of the Joint Committee for confirmation. The final Technical Specifications of the 5/15 Minute Interface Energy Meters (IEMs) with Automatic Meter Reading (AMR) and Meter Data Processing (MDP) for interstate transmission system would be finalized within a month.

IV. Segregation of firm & infirm injection of RE generators - Procedure to be followed

In the 51st meeting of Commercial Sub-Committee (22.03.2022), it was noted that RE generators are going for part commissioning of the RE capacity. In that case, RE generators may inject infirm power along with the firm power. Hence it has been felt that a procedure for checking/segregating the firm and infirm power from RE sources (including during testing/commissioning activities) may be formulated for proper energy accounting. The firm power and infirm power during the testing/commissioning shall be furnished separately to SRPC by SRLDC.

Hence, the following procedure was formulated by SRLDC and SRPC Secretariat and Commercial Sub-Committee had requested SRLDC and RE Generators to follow the same:

i) RE developers shall furnish an undertaking to SRLDC that they would not inject the infirm power into the grid after commissioning of part capacity and no capacity would be added without intimation.

ii) The infirm injection shall be monitored through SCADA by SRLDC during real-time (by comparing the injection at ISTS metering point with inverter/turbine level injection through SCADA) and violation messages would be sent to RE generators when infirm power injection is observed without intimation.

iii) For the purpose of commissioning & testing activities, RE developers shall furnish the timings of infirm injection and capacity to SRLDC.

iv) The firm and infirm injection during the period of infirm injection to be worked out by dividing the actual injection based on firm capacity/AVC and infirm installed capacity on pro-rata basis.

V. Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations 2022

a) Accounting of deviation of NPCIL Stations:

i) CERC has published the DSM Regulations 2022 vide Notification dated 14th March 2022 and intimated that these regulations shall come into force on such date as may be notified by the Commission separately.

ii) Presently, the deviations of NPCIL stations/units (under/over injection and the drawl for auxiliary power requirement)) are settled through DSM Post-facto component and are borne by the beneficiaries of respective station in the ratio of their share allocation at applicable DSM rates (with capping). However, the Net Injection of the station (based on the actual SEM data) is apportioned among the beneficiaries in the percentage share allocation and is given in monthly Regional Energy Account (REA) for billing by the Generators at the respective energy charge rate of the station. In view of the settlement of deviations under DSM post-facto in DSM statements and in REA are at different rates, beneficiaries of NPCIL stations had raised the concern in the earlier Commercial Sub-Committee Meetings.

iii) In the 51st Meeting of the Commercial Sub-Committee (22.04.2022), the following proposal for settlement of deviation of NPCIL Stations with effect from the implementation of DSM Regulations 2022 was agreed.

The deviations by the NPCIL stations (under/over injection and the drawl for auxiliary power requirement) that are to be borne by the beneficiaries as per their percentage of allocation would be accounted under the DSM post-facto component in weekly DSM accounts and the same would be settled at the energy charge rate of the respective station with DSM Pool instead of Normal Rate of Charges for Deviation (with capping). Energy charge rate of the respective NPCIL station that was billed for the latest month would be considered for this purpose. NPCIL stations are required to furnish the energy charge rate of the respective station/unit that was billed for the latest month to SRPC secretariat as and when raised the bill for the latest month.

b) Consideration of Reference Charge Rate:

i) Clause (u) of Regulation (3) of the CERC DSM Regulations 2022 stipulates as below:

*'**Reference Charge Rate'** means (i) in respect of a general seller whose tariff is determined under Section 62 or Section 63 of the Act, **Rs/ kWh energy charge as determined by the Appropriate Commission**, or (ii) in respect of a general seller whose tariff is not determined under Section 62 or Section 63 of the Act, **the daily weighted average ACP of the Day Ahead Market segments of all the Power Exchanges**, as the case may be;*

ii) In the 51st Meeting of the Commercial Sub-Committee (22.04.2022), the following were agreed in respect of consideration of Reference Charge Rate for accounting:

- During the period of Ancillary Regulations 2015, the data in AS3 forms would be considered for the purpose of arriving the reference charge rate. If Ancillary Services Regulations 2022 will come into force, the energy charge declared upfront by the generators (Under Section 62) to NLDC will be considered the reference charge rate.
- For the generating stations whose tariff is adopted under section 63 or approved under Section 86(1)(b) of the Act, Energy Charge Rate/Contract Rate/Weighted rate shall be given through affidavit from the Generators (including WS Seller).

VI. Transmission Deviation Calculation – Drawals from STU network

a) In the 50th Meeting of Commercial Sub-Committee (28.01.2022), TANTRANSCO and APTRANSCO had raised the issue of computation of transmission deviation for Tamil Nadu and Andhra Pradesh considering the cases of NNTPP (connected to both ISTS & STU systems and 600 MW share of TN is to be evacuated through TN STU network) and NTPC Simhadri St-I (connected to only STU system and 461.10 MW share of AP is to be evacuated through AP STU network) respectively. Commercial Sub-Committee had agreed the following methodology for computing the Transmission Deviation for Tamil Nadu & Andhra Pradesh subject to the condition that the same shall be reviewed if CERC has issued any directions/Orders or any amendments in Sharing Regulations 2020 etc.

i) **For NNTPP-TANTRANSCO system:**

Transmission Deviation in a Time Block=

Actual Drawal in a Time Block furnished by SRLDC – [LTA$ +MTOA + X]

Where,

X is the net Drawal of TN through 230 kV NNTPP – NLC TNEB D/C Line in a time block

(i.e Net drawal of the state through its STU network connected to respective CGS in a time block)

$ is LTA of State includes the LTA exempted for Renewable Energy Generation of respective state as furnished by Implementing Agency.

ii) **For NTPC Simhadri Stage I – APTRANSCO system:**

Transmission Deviation in a Time Block =

Actual Drawal in a Time Block furnished by SRLDC – [LTA$ +MTOA + {(Y x Z)/100}]

Where,

Y is the net Drawal of AP through 400 kV Simhadri St I-Kalpaka D/C Line, 400 kV Simhadri St I- Kalpaka S/C Line and 400 kV Simhadri St I-Vemagiri S/C Line in a time block.

(i.e Net drawal of the state through its STU network connected to respective CGS in a time block)

Z is the Weighted Average Allocation % of AP from Simhadri St-I for the respective month as published in REA (Item No.2).

$ is LTA of State includes the LTA exempted for Renewable Energy Generation of respective state as furnished by Implementing Agency.

b) Subsequently, Implementing Agency (IA) in its Notifications of Transmission charges payable by DICs, the share of Telangana from Ramagundam STPS Stage-I & II and share of Tamil Nadu from NLC TS-II Stage-I and Madras Atomic Power Station (MAPS) have been exempted for the computation of transmission charges w.e.f the Billing Month of February 2022 (Billing Period: December 2021). The above methodology agreed in the 50th Meeting of Commercial Sub-Committee for computation of Transmission Deviation had been applied to the states for which LTA has been exempted by IA and the transmission deviation of those states is computed.

c) In the 51st meeting of Commercial Sub-Committee (22.04.2022), it was observed that for most of the time blocks, the drawal through the identified STU interface points of a state was more than the weighted average allocation (MW) of the respective state(exempted by IA) from the CGS. Since the drawl of a state is computed by aggregation of all interface points, node-wise flows cannot be considered for transmission deviation computations and it needs to be restricted to the weighted average allocation of the state. Hence, the following revised methodology was agreed subject to the condition that the same shall be reviewed if CERC has issued any directions/Orders or any amendments in Sharing Regulations 2020 etc. in this regard:

Case-1

When CGS/ISGS is connected to both ISTS & STU system and LTA to the state is exempted/ excluded:

(For:

i. NNTPP - TANTRANSCO system,
ii. NTPC, Ramagundam STG I &II – TSTRANSCO system,
iii. NLC TPS II St I - TANTRASNCO system)

Transmission Deviation of state in a Time Block=

Actual Drawal in a Time Block as furnished by SRLDC – [LTA$ +MTOA + X]

Where

X- Net drawal through identified STU interface nodes connected to respective CGS in a time block or the weighted average allocation (MW) of the State from the respective CGS for the respective month, whichever is less.

For NNTPP,

X- Net drawal through identified STU interface nodes connected to respective CGS in a time block or 560.835 MW (Ex bus of the station excluding Mines % allocation & LTA granted by CTU), whichever is less.

Case-2

When CGS/ISGS is connected to only STU network and LTA to the state is exempted:

(***For:***

i. NTPC Simhadri STPS St-I - APTRANSCO system
ii. MAPS- TANTRASNCO system)

Transmission Deviation of state in a Time Block =

Actual Drawal in a Time Block as furnished by SRLDC – [LTA$ +MTOA + {(Y x Z)/100}]

Where

Y – Injection/drawal of respective CGS in a time block.

Z - Weighted Average Percentage Allocation of the state from the respective CGS for the respective month as published in REA (Item 2).

- Weighted Average Percentage Allocation (MoP) of the respective state from CGS/IGS, if CGS/ISGS is not in ABT mechanism.

$LTA of the state includes the LTA exempted for Renewable Energy Generation of respective state as furnished by Implementing Agency (IA).

d) In the 51st meeting of Commercial Sub-Committee (22.04.2022), it was also agreed that the revised methodology will be implemented from the next Billing month i.e billing month of May 2022 and SRPC Secretariat to revise the RTDA statements w.e.f implementation of

Sharing Regulations 2020 i.e from November 2020 as per the agreed methodology along with the RTAs when the notifications of transmission charges payable by DICs from November 2020 are revised by NLDC.

e) Subsequently CTU vide letter dated 13.05.2022 had exempted 52.37 MW power of NLC TS II Stage I reallocated to Tamil Nadu from the surrendered share of Telangana from total LTA+MTOA of TANGEDCO.

VII. Fixed Charges (FC) reimbursement for the curtailed power (Payment Security Mechanism) scheduled under RRAS Up Service

a) SRPC vide letter dated 11.02.2022 (**Annexure-35a**) had requested NLDC to examine and provide clarification on the scheduling of curtailed power (Payment Security Mechanism) under RRAS- Up instruction and reimbursement of FC by the RRAS Provider in such cases.

b) NLDC vide letter dated 24.02.2022 (**Annexure –35b**) had replied the following:

"As per Payment Security mechanism, in case of non-maintenance of adequate LC or advance payment with respect to the generating station by the Distribution Company, the power supply from the generating stations is not scheduled to the concerned distribution company. However, the liability of the fixed cost lies with concerned original beneficiaries."

c) In line with the clarification from NLDC, SRPC vide letter dated 02.03.2022 (**Annexure-35c**) had communicated to the generators the FC may be adjusted by the Generators with the outstanding dues/bills raised in respect of the respective beneficiary whose power has been curtailed and scheduled under RRAS Up service.

VIII. Compliance of PCSC Recommendations

Past Reference: PCSC Meetings held during December, 2021 – April, 2022 [PCSC-99 to PCSC-101]

a) All trippings involving 220 kV & above system on account of mal-operation/ non-operation of protection systems in place are regularly discussed in the Meetings of Protection Coordination Sub-Committee (PCSC) of SRPC with a view to identify their root cause and scrutinize correctness of operation of protection systems put in place by the concerned Constituents. In the process, appropriate measures required to be taken for system improvement are being suggested/ recommended for compliance by concerned Constituents.

b) PCSC had suggested / recommended appropriate measures, required to be taken for system improvement, for compliance by constituents concerned. The constituents were also requested to report the compliance/action taken on the suggestions/recommendations of the PCSC in the subsequent meetings. These PCSC recommendations, which are yet to be complied with, are circulated regularly, vide (i) Agenda & Minutes of PCSC meetings, and (ii) e-mails. In each PCSC meeting, brief discussion on status of Pending PCSC recommendations of previous meeting is discussed and updated by SRPC constituents.

c) The detailed status of pending implementation of PCSC recommendations had been compiled and kept available on SRPC web site (as Annexure to Minutes of the Meeting (MoM) of PCSC). It was requested that Utilities concerned may take concrete and definite action in

complying with the pending PCSC recommendations.

d) **In this regard, the following essential features, which ensure healthiness of protection systems put in place, are brought to the attention of all concerned for kind implementation:**

(i) Provision of Numerical Relays for protecting transmission lines, transformers, line/bus reactors & busbar at 220 kV &above voltage level, and generating units at all voltage levels.

(ii) Ensuring time-synchronization of various Protection Relays with GPS at all 220 kV & above stations.

(iii) Configuring Disturbance Recorder (DR) and Event logger (EL) for all requisite/ mandated protections & signals.

(iv) Ensuring multi-bus operation with zone-segregation at all 220 kV & above stations.

(v) Ensuring healthiness of DC system (Protection & Communication).

(vi) Ensuring proper maintenance of transmission lines and adopting best O&M practices.

(vii) Ensuring earth-mat integrity & removal of DC leakage in the switchyard.

(viii) Adoption of stipulated Over-Voltage gradings for all 400 kV & above transmission lines.

(ix) Ensuring protection philosophy followed is in line with the Ramakrishna Committee guidelines.

(x) Ensuring furnishing of tripping files (FIR/DR/EL/TR) within 24-hrs of the occurrence of a tripping event as per IEGC Regulation 5.2 (r) & regular attendance to PCSC meetings.

IX. Regional Protection Audit of APTRANSCO Substations

a) In line with the decision taken by SRPC in their 35th meeting held on 02.02.2019, the exercise of conducting comprehensive Regional Protection Audit (RPA) of all 220 kV & above Stations in Southern Region (SR) in phases had been started by covering 78 no. of stations in its first leg in October-November, 2019. Though this exercise was to be continued in the following years, due to Covid-19 pandemic the said exercise could not be taken up in 2020 & 2021.

b) Now with the almost full level restoration of normalcy, it has been planned to resume the above exercise in 2022. Since the contribution to various audit teams has to come from the SR Utilities, and since it has been decided to cover some 100 stations in every year, in order not to inconvenience any Utility, RPA exercise in every year would be conducted in two spells (Feb – March & Oct – Nov) each spreading over two weeks.

c) In this connection, APTRANSCO vide their letter dated 06.04.2022 approached SRPC Secretariat, and requested to kindly arrange for Regional Protection Audit of their 220 kV stations (20 in number) by SRPC so that the audit reports could be used by them in obtaining PSDF funding for undertaking R&M works of those substations.

d) APTRANSCO's request was discussed in PCSC-101 meeting held on 13.04.2022, and was agreed to be carry out in the second half of May, 2022 by forming regional teams, involving officers of various SR-Utilities (Transcos & Gencos & CPSUs).

e) Accordingly, the details of the said RPA have been worked out by SRPC Secretariat in consultation with APTRANSCO (Auditee Utility) and various SR-Utilities (Auditor Utilities, and is scheduled to take place during 23-27 May, 2022 as given below:

Team Name	Team Members	Team Substations	Audit Dates (For each Team, 27.05.2022 is a Reserve Day)
T1	PGCIL (SR-I), TSTANSCO, KSEBL, APGENCO	220/132 kV SS Gudiwada	23 - 24 May, 2022
		220/132 kV SS Nuzividu	25-26 May, 2022
T2	PGCIL (SR-I), TSTRANSCO, KSEBL, TSGENCO	220/132 kV SS Narasaraopet	23 - 24 May, 2022
		220 kV SwS Tallapalli	25-26 May, 2022
T3	PGCIL (SR-I), TANTRANSCO, TSGENCO, TSTRANSCO	220/132 kV SS Podili	23 - 24 May, 2022
		220/132 kV SS Nellore	25-26 May, 2022
T4	PGCIL (SR-I), NTPC-Kudgi, TANTRANSCO, SRLDC	220/132 kV SS Gajuwaka	23 - 24 May, 2022
		220/132 kV SS Gangavaram Port	25-26 May, 2022
T5	PGCIL (SR-I), TSTRANSCO, SRLDC, KPTCL	220/132 kV SS Tekkali	23 - 24 May, 2022
		220/132 kV SS Garividi	25-26 May, 2022
T6	PGCIL (SR-I) , SRLDC, KSEBL, KPTCL	220/33 kV SS Rampachodavaram	23 - 24 May, 2022
		220/132 kV SS Undi (Bhimavaram)	25-26 May, 2022
T7	PGCIL (SR-I) , TANTRANSCO, KPTCL, APGENCO	220 kV SwS Gooty	23 - 24 May, 2022
		220 kV RTSS Gooty	25-26 May, 2022
T8	PGCIL (SR-I), KPTCL, TANTRANSCO , TSGENCO	220/132 kV SS Tadipathri	23 - 24 May, 2022
		220/11 kV SS Gaddamvaripalli	25-26 May, 2022
T9	PGCIL (SR-I),	220/11 kV SS Lakkasagaram	23 - 24 May, 2022

	SRLDC, KPTCL, TANTRANSCO	220/132 kV SS Nandyala	25-26 May, 2022
T10	PGCIL (SR-I), SRPC, SRLDC, KSEBL	220 kV SwS Boyareddypalli	23 - 24 May, 2022
T11	TSTRANSCO, KSEBL, APGENCO	220/132 kV SS Brandix	23 - 24 May, 2022

f) **TCC deliberations**

- It was noted that the Regional Protection Audit of the APTRANSCO Substations (20 in number) was successfully completed during 23 – 27 May 2022 with committed cooperation of all nominated Officers of various SR-Utilities as per the schedule given.
- **In this regard, it was pointed out that since the Regional Protection Audit is a continuous activity, all Utilities were requested to maintain a panel of Officers (Transcos → 10 – 20; Gencos → 5- 10; CPSUs → 10 – 20; IPP's → 3- 5) in their respective Organizations so that their services can be readily utilized, when required, for conducting bi-annual RPA exercises.**

SRPC noted the above

X. Implementation of Protection Suite / Protection Management System (PMS) for Southern Region

Past Reference- Approval of SRPC in the 26th meeting held on 20thDecember, 2014.

a) Based on the approval of SRPC in the 26th meeting held on 20thDecember, 2014 at Visakhapatnam, implementation of Protection Management System in Southern Region [Web-based Management Software and Protection Setting Calculation Tool for Southern Region] has been undertaken through PSDF funding. The project has been awarded, through open bidding process, to M/s PRDC Pvt. Ltd. (PRDC) [Project Implementing Agency – PIA] on 09.08.2017. The execution period for the Project is about 18 months from the date of placement of LoA (also called "Effective Date"), and is followed by an Extended Technical Services period of 5 years. The details of the project implementation including Milestone-wise status and the highlights of the project implemented so far are given at **Annexure- 35d**.

b) The Go-Live meeting of the PMS project was conducted by the Executive Committee of the PMS project with PRDC in attendance of PCSC-Members on 19.04.2021, 20.04.2021, 22.04.2021, 23.04.2021 & 03.05.2021, to verify and assess the readiness of PMS project for being operationalized. Even though majority of the features had been successfully demonstrated by PIA, the shortcomings observed in the meeting were intimated to PIA vide SRPC letter dated 14.05.2021 for expeditious resolution by May, 2021.

c) Subsequently, the Project's Operationalization was also hampered on account of Covid-19 pandemic (2nd & 3rd waves). Nonetheless, readiness of the Project for Operationalization was regularly ascertained & diligently pursued by the Project's Monitoring Committee & Executive Committee by conducting monthly Review Meetings.

d) The Project's status made in terms of closure/ resolution of various outstanding issues was also regularly apprised to PCSC forum in their bi-monthly meetings. Since the PMS project had been given time extension by PSDF only up to May, 2022, and since most of the pending issues had been attended by PIA, concurrence of PCSC forum to operationalize the project w.e.f. 01.06.2022 was taken in their 101st meeting held on 13.04.2022.

e) **Accordingly, the Project is scheduled to be operationalized w.e.f. 01.06.2022**. Further, post Operationalization, a three to five day Training Program on PSCT Modules is proposed to be arranged to all PSCT licensees in online mode during **20-24 June, 2022**, the details of which would be communicated later to all concerned.

f) **TCC deliberations**

- **It was noted that the Protection Management Systems (PMS) Project for Southern Region had been operationalized w.e.f. 01.06.2022.** With this, the Project had entered into Extended Technical Services (ETS) period of 5-years, during which the full support of the Project Implementing agency (PRDC) would be available for Modelling/Updation/ Periodic Verification of PMS Database (PDMS Database, PSCT Database) and Protection SLD's, and for various other Activities including carrying out System Studies, conducting Training Programs, Consultancy and R&D Support, up-keep of PMS Systems (PDMS, PSCT, DMNS, AFAS), etc.
- **All SR-Utilities were urged to make use of various features of the PMS Project** in bettering their respective networks/systems by undertaking regular system studies (including protection studies), fine-tuning of protection settings of the relays, prior-assessment of the effect of various disturbances on their respective systems so as to insulate their systems by taking timely remedial measures in advance., ensuring accountability w.r.t. the field implemented relay settings, etc.
- In this regard, all PSCT Licensees of various SR-Utilities were requested to attend the Training Program on PSCT Modules scheduled during 21 – 23 June, 2022.

SRPC noted the above

XI. Automatic Under Frequency Load Shedding (AUFLS) Scheme-Settings

(i) As per the decision in the 2nd meeting of National Power Committee (NPC) held on *16th July 2013, AUFLS scheme at four (4) stages of frequency viz.49.2 Hz, 49.0 Hz, 48.8 Hz & 48.6 Hz had been implemented in all the regions.*

(ii) *In the 10th meeting of NPC held on 09th April 2021, it was decided to implement revised frequency setting of AUFLS scheme (with 4 stages) viz.**49.4, 49.2, 49.0 & 48.8 Hz with the existing quantum of load shedding.** The quantum of load shedding would be reviewed based on the recommendation of the Sub-Committee to study the AUFLS scheme.*

(iii) Accordingly, the revised frequency setting of AUFLS scheme (with 4 stages) viz.49.4, 49.2, 49.0 & 48.8 Hz with the existing quantum of load shedding had been implemented in SR.

XII. Review of the methodology for arriving at peak/off-peak hours of SR

(i) As per clause 42(3) CERC (Terms and Conditions of Tariff) Regulations, 2019,"*The number of hours of "Peak" and "Off-Peak" periods during a day shall be four and twenty respectively. The hours of Peak and Off-Peak periods during a day shall be declared by the concerned RLDC at least a week in advance*."

(ii) The procedure being followed is as decided in the 165th meeting of OCC held on 13.03.2020.

Quote:

SRLDC will be declaring hours of "Peak" and "Off-Peak" periods during a day as per regulations and agreed procedure in the 3rd week of March 2020. The data would be used from ***1st to 15th of each month to declare peak / off-peak periods during a day for the next month****. Presently, declaration would be for one month which could be reviewed subsequently. SRLDC would be considering* ***(net demand=total demand-RE)*** *for declaring peak/off peak periods.*

Unquote

(iii) In line with the decisions taken the 189th Meeting of OCC (08.04.2022), a Special Meeting was conducted on 20.04.2022 through video conferencing with participation from all SLDCs, SRPC and SRLDC. It was decided that for next three months (May, June and July 2022) SRLDC shall declare peak hours as below:

- ✓ ***Morning: 06:00 hours to 08:00 hours***
- ✓ ***Evening: 18:30 hours to 20:30 hours***

1.1 *This will be reviewed after three months. However, in between if any state/SRLDC comes up with implementable proposal/suggestion, the same would be considered separately or in subsequent OCC.*

XIII. Relinquishment of long term PPA in the various Central Generating Stations

i. KSEBL had highlighted that several distribution licensees have proposed relinquishment of their allocation in various CGS stations recently and other distribution licensees are not aware of such relinquishment. In order to facilitate optimization of power purchase, the details of intended relinquishment at all stations will be helpful. It is requested that the matter may kindly be co-ordinated at SRPC level.

ii. The matter was deliberated in the 189thMeeting of OCC (08.04.2022), wherein it was concluded that States/CGS may inform the proposal/plan for relinquishing of PPAs to SRPC Secretariat for sharing the information with other States. This issue would be followed up in the meetings of OCC regularly**.**

XIV. Automatic Demand Side Management Scheme (ADMS)

(a) As per clauses 5.4.2 (a) & (b) of IEGC, constituents shall initiate action to restrict the drawal of its control area, from the grid, within the net drawl schedule. They shall ensure the requisite load management is carried out in its control area so that there is no overdrawl. In order to comply with the same, constituents shall

implement ADMS in line with clause 5.4.2 (d) to reduce over-drawl. Accordingly, the constituents have implemented the scheme. The following Logic had been finalized in the 189th OCC for ADMS implementation:

(i) If Frequency < 49.85 Hz and OD>250 (150 MW for Kerala) for more than 15 min then Stage-1 trip signal would be triggered (Expected relief of 200 MW for AP, TS, KAR, TN. 100MW for Kerala).

(ii) After 10 minutes, if Frequency < 49.85 Hz and OD>250 MW (150 MW for Kerala), then Stage-2 trip signal would be triggered (Expected relief of 200 MW for AP, TS, KAR, TN. 100MW for Kerala).

(iii) After 10 minutes, if Frequency < 49.85 Hz and OD>250 MW (150 MW for Kerala), then Stage-3 trip signal would be triggered (Expected relief of 200 MW for AP, TS, KAR, TN. 100MW for Kerala).

Note: ADMS loads should not be restored until overdrawal and frequency is within IEGC limits.

(b) ADMS feeders may also be mapped for enhanced visualization and analysis of ADMS operation. Any load tripped under ADMS should be brought back only under the directions of SLDC keeping in view of the frequency, overdrawal etc.

XV. A Brain Storming session was conducted on 24.04.2022 at NTPC Kudgi STPS (as decided in the 188th meeting of OCC) on the time taken by thermal generating units for synchronization from Cold, Warm and Hot Startup. The officers from KAR SLDC, YTPS, BTPS, SDSTPS, TSGENCO, NTPC Kudgi, SRLDC and SRPC had participated in the deliberations.

XVI. Rolling Plan of ISTS communication system report has been brought out by CTUIL (available at web site) wherein region wise OPGW requirement along with terminal equipment for associated communication with the ISTS plans as well as for standalone projects required for the ISTS communication system has been assessed for 2026-27 time-frame.

XVII. MoP/CEA/CERC issued Documents/Rules/Regulations/Guidelines

a) CERC had notified the Central Electricity Regulatory Commission (Ancillary Services) Regulations, 2022 on 31.01.2022 and the regulations shall come into force with effect from such date as may be notified by the Commission.

b) CERC had notified the Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2022 on 14.03.2022 and the regulations shall come into force on such date as may be notified by the Commission separately.

c) CERC vide Order dated 31.03.2022 has stated that the Commission seized of the matter regarding creation of an appropriate framework on SCED through regulations and has accordingly decided to extend the implementation of the Pilot on SCED until further orders on the same terms as contained in the Order dated 27th September, 2021 in Petition No 11/SM/2021. POSOCO is directed to act accordingly and is also directed to

apprise the Commission periodically, at least once in every six months, on the operation of SCED in the form of a detailed feedback report covering all the aspects.

d) CERC had notified the Central Electricity Regulatory Commission (Open Access in inter-State Transmission) (Fifth Amendment) Regulations, 2018 on 2nd January, 2019. Regulation 4 of the Fifth Amendment Regulations 2018 provides that NLDC shall issue the detailed procedure to operationalize open access through NOAR and on any residual matter not covered under Fifth Amendment Regulations 2018, after carrying out stakeholders' consultation and due approval of the Commission. Accordingly, NLDC vide its letters dated 12.07.2019 and 17.05.2021 submitted the "*Procedure for Short Term Open Access in inter-State Transmission through National Open Access Registry (NOAR)".*The Commission has examined the detailed procedure submitted by NLDC and after incorporating suitable changes hereby approved the Procedure.

e) MoP vide letter dated 12.04.2022 had published the Revised Scheme for Flexibility in Generation and Scheduling of Thermal/Hydro Power Stations through bundling with Renewable Energy and Storage Power 2022.

f) CERC had directed Power Exchanges vide order dated 01.04.2022 that in exercise of powers under Regulation 51 (1) of PMR 2021 directs the power exchanges until further orders, to re-design, with immediate effect, the bidding software in such a way that members can submit their bids in the price range of Rs.0/kWh to Rs.12/kWh for DAM and RTM. The Commission is of the view that this price moderation will be in keeping with the present market realities and shall not have any significant impact on the volume transacted and safeguard the consumer interests. Further, CERC had directed Power Exchanges vide order dated 06.05.2022 in Petition No. 05/SM/2022 that from the date of this Order till 30th June 2022, to redesign, with immediate effect, their software in such a way that members can quote price in the range of Rs.0/kWh to Rs.12/kWh in DAM (including GDAM), RTM, Intra-day, Day Ahead Contingency and Term-Ahead (including GTAM) Contracts. The contracts which have already been transacted till the date of issuance of this Order shall be delivered and settled as per the earlier terms and conditions.

g) MoP vide circular dated 26.03.2022 has brought out certain action plan and also highlighted that in view of the increasing demand for electricity and associated need of coal to ensure smooth functioning, as a short term measure, Ministry of Power on 07.12.2021 had issued advisories to domestic coal based power plants to import coal to meet their requirements by blending with imported coal to the extent of 4% by State Gencos & Independent Power Producers (IPPs). It is requested that necessary action may be taken to import coal in a transparent and competitive manner for blending purpose based on demand assessment to deal with shortfall of coal availability. Subsequently, keeping in view the rapidly increasing demand for power, it was recommended that all Gencos should endeavour to import coal for blending up to 10 per cent. State-wise and Genco wise targets were fixed and it was urged to ensure delivery of coal for blending purposes before the onset of monsoon as domestic coal supply gets affected during the rainy season.

h) MoP via notification dated 20.04.2022 had communicated the rules called Electricity (Rights of Consumers), Amendment Rules, 2022.

i) CEA vide letter dated 28.04.2022 has issued first Amendment to CEA's Technical Specifications for Bird Flight Diverter (BFD) along with test procedures for various tests for information and necessary action

j) CEA had invited comments on Draft Guidelines for usage of Multi Circuit Towers for Transmission Lines Traversing Through Wild Life/ Protected Areas All stakeholders/utilities are requested to provide comments/valuable inputs on the draft Standard technical Specification by 20th May 2022 by post or email : [cepsetd@gov.in] so that the document can be finalized within the assigned timeframe.

k) Ministry of Power vide letter dated 09.03.2022 has communicated the guidelines named as "*Guidelines on Planning of Communication System for Inter-State Transmission System (ISTS)".* This guideline defines the categories of Communication System Schemes for ISTS and their approval procedure.

l) Green Hydrogen Policy had been published by MoP vide communication dated 17.02.2022 for compliance/implementation by all the concerned stake holders.

m) MoP vide their letter dated 05.05.2022 had issued directions to imported coal based power plants under Section 11 of the Electricity Act 2003.

36. Additional Agenda

36.1 Blending of Coal Issues

TANGEDCO vide letter dated 27.05.2022(**Annexure- 36**) has intimated that M/s. NTPC and M/s. NTECL in letters dated 06.05.2022 and 20.05.2022 had stated that they have imported coal to mitigate the shortage from domestic sources and for blending purposes. Further, blending has already started in few stations and is expected to begin in other stations in the coming months. M/s. NTPC and M/s. NTECL had requested the consent of TANGEDCO for scheduling power in case the ECR exceeds the 20% / 30% limit as mentioned in Tariff Regulations 2019 due to blending import coal. NTPC may be requested to make a presentation on the issue of blending of coal covering all the aspects/details in this regard.

TCC suggested TANGEDCO that the matter may be routed through Commercial Sub-Committee.

37. Roster for Hosting Physical Meetings of SRPC

1.2 Revised Roster for Hosting Meetings of SRPC is given below:

1	**Telangana**	**9**	**PTC**
2	**JSWEL**	**10**	**NTECL**
3	**SEIL**	**11**	**Kerala**
4	**NPCIL**	**12**	**NLCIL/NTPL**

5	**Andhra Pradesh**	**13**	**HNPCL**
6	**NTPC**	**14**	**Tamil Nadu**
7	**UPCL/APL**	**15**	**PGCIL**
8	**Karnataka**	**16**	**IL&FS**

Note: 1. Telangana has hosted 37th Meeting of SRPC

2. JSWEL has hosted 42nd Meeting of SRPC

1.3 SEIL kindly consented to host the next physical Meeting of SRPC preceded by meeting of TCC. The date and venue of the meetings would be communicated in due course in consultation with Chairperson, SRPC.

1.4 NPCIL was requested to be prepared for hosting the physical meetings after SEIL. NPCIL agreed to take up with higher management to facilitate hosting of TCC/SRPC meetings.

38. Closing Remarks

(A) 40th Meeting of TCC:

(i) Chairperson, TCC thanked all the TCC Members and participants for the meaningful and fruitful deliberations. Recommendations of TCC would be put up to SRPC for approval/discussion.

(ii) Member Secretary, SRPC stated that the issues had been deliberated elaborately and consensus was arrived on a number of issues. Few issues are to be further discussed in the sub-committee meetings and accordingly to be brought to TCC forum. He noted that some of the items which were received late were not included in the agenda as directed by Chairperson SRPC and requested all the entities to submit the agenda item well in advance from next meeting onwards. He thanked one and all for their active contribution during deliberation and thanked JSWEL for making wonderful arrangement for the conduct of the Meeting.

(B) 42nd Meeting of SRPC:

(i). Chairperson, SRPC mentioned that SRPC meeting was constructive based on the discussion in TCC meeting held on the previous day. He observed that all the members have expressed their concerns/views on various issues which would be taken care of up to the extent possible. He thanked all the Members, delegates and participants for the meaningful and fruitful deliberations.

(ii). Member Secretary SRPC thanked Chairperson, SRPC for the guidance and directions during the proceedings. He also thanked the Members and other Participants for their valuable contributions. He informed that as decided in the meeting issues to be taken up with higher bodies like

MoP/CEA/CERC etc will be arranged at the earliest. Regular follow ups on the issues wherever needed will be looked into. He informed that JSWEL (host) has set a vision of becoming a 10 GW company by 2025 and 20 GW company by 2030 in India and there is no doubt that they will play a significant role in Southern India power sector in future as well.

****

उत्तर प्रदेश राज्य भार प्रेषण केन्द्र लि०
यू0पी0एस0एल0डी0सी0 परिसर, विभूति
खण्ड – II, गोमती नगर, लखनऊ–226010
ई–मेल : cepso@upsldc.org

U.P. State Load Despatch Centre Ltd.
UPSLDC Complex, Vibhuti Khand – II
Gomti Nagar, Lucknow- 226010
E-mail: cepso@upsldc.org

No 461 CE(PSO) /EE(R&A)-II /Varanasi islanding Date: - 08-02- 2024

Member Secretary, NRPC,
18 – A, SJSS Marg, Katwaria Sarai,
New Delhi, 110016.
(ms-nrpc@nic.in)

Subject: Agenda in 216th OCC meeting of NRPC -Varanasi Islanding Scheme.

In the 215th OCC meeting of NRPC, UPSLDC was instructed to put up steady state study of Varanasi Islanding Scheme.

Kindly find enclosed herewith the requisite study for discussion in 216th OCC meeting to be held on 14.02.2024.

Encl: Study Report
PSSE File (soft copy)

(Amarendu)
Chief Engineer (PSO)

No CE(PSO) /EE(R&A)-II /Varanasi islanding Date: - 2024

Copy forwarded to following for information and necessary action:-

1. Director, UPSLDC, Vibhuti Khand – II, Gomti Nagar, Lucknow. (Via email)
2. Director (Operation), UPPTCL, 11th Floor, Shakti Bhawan Extn., Lucknow.
3. General Manager, NRLDC 18-A, SJSS Marg, Katwaria Sarai, New Delhi–110016.

(Amarendu)
Chief Engineer (PSO)

Study on Varanasi Islanding Scheme

Brief Description- Varanasi Islanding Scheme is proposed using generation from Anpara BTPS (2x500MW) and essential load of Varanasi Region. Following cases of Load- Generation scenario has been considered for steady state study:-

Sl. No.	Case	Generation	Load
1	Case-1	2x460 MW	905 MW (Summer Peak)
2	Case-2	2x460 MW	687 MW (Summer Average)
3	Case-3	2x460 MW	462 MW (Winter Off Peak)
4	Case-4	1X460 MW	440 MW (Summer Peak)
5	Case-5	1X460 MW	233 MW (Winter Off Peak)

- **In case number 1,2 and 3 larger Island is considerd. List of the substations are as follows (Refer to Annexure-I)**

S.no	Name of Substation	S.no	Name of Substation
1	220kV Gajokhar	9	132kV Raja Ka Talab
2	132kV Sarnath	10	220kV Raja Ka Talab
3	132kV Kaithi	11	132kV Manduadih
4	220 kV Bhelupur	12	220kV Virapatti TSS
5	132 KV Varanasi Cantt	13	132kV Aurihar TSS
6	132KV DLW	14	220kV Sahupuri
7	132 KV BHU	15	132kV Bina
8	132kV Kursato		

- **In case number 4 and 5 larger Island is considered. List of the substations are as follows (Refer to Annexure-II)**

S.no	Name of Substation	S.no	Name of Substation
1	220kV Gajokhar	5	132kV Manduadih
2	132 KV Varanasi Cantt	6	220kV Virapatti TSS
3	132KV DLW	7	132kV Aurihar TSS
4	132 KV BHU	8	132kV Bina

1. Case 1

- Actual Ex- bus Generation =886 (2x443)MW
- Actual load met =771MW
- **In this scenario of Load-Generation, low voltages are observed at many substations. Voltage profile of various buses of island is as follows-**

Bus Number	Bus Name	Base kV	Voltage (pu)		Bus Number	Bus Name	Base kV	Voltage (pu)
151055	SAHUPR1	132	0.4454		151662	DLW	132	0.474
151056	SARNATH1	132	0.5798		151664	BHU	132	0.4283
151069	ANPARA1	132	1.0247		151884	ALAIPUR	132	0.5046
151113	CHUNNAR	132	0.4412		151950	CHOLAPUR	132	0.5338
151136	GAJOKHAR	132	0.506		152065	SAHUPU_N	220	0.4507
151170	BINA	132	1.0217		152066	SARNATH2	220	0.7007
151173	RAJAKATALAB	132	0.4443		152078	GAJOKHA	220	0.6057
151212	VARANSI CANT	132	0.4897		152085	BHELUPUR	220	0.447
151222	LEEDOPUR	132	0.547		152119	HARAUA	220	0.6776
151267	MANDUADI	132	0.4376		152169	BHADAURA	220	0.5577
151301	NARAINPU	132	0.4368		152173	RAJA KATALAB	220	0.4465
151436	KURSATO	132	0.4443		152245	SAHUPURI_4_2	220	0.4499
151534	AURIHAR_TSS	132	0.5702		152260	VEERAPATTI	220	0.6962
151600	RAJAKATALB_2	132	0.4443		154014	ANPARA4	400	1.03
151661	KAITHI	132	0.5763		154019	SARNATH4	400	0.8025

- **List of lines under overloading**

Sl. No.	Name of Transmission line	% Overloading
1.	132kV Sahupuri-Alaipur line	275.1
2.	132kV Sarnath-Varanasi cantt line	190.8
3.	132kV Sarnath-Leedupur line	259.4
4.	132kV Sarnath-Leedupur line	259.4
5.	132kV Sarnath-Cholapur line	149.6
6.	132kV Sarnath-Sanath (220) line	114.2
7.	132kV Gajokhar-Manduadi line	183.3
8.	132kV Gajokhar-Kursato line	224.3
9.	132kV Raja ka Talab-Raja ka Talab line	158.3
10.	132kV Leedopur –Alaipur line	274.4
11.	132kV Kursato –Raja ka Talab line	181.6
12.	220kV Sahupuri-Bhadaura line	119.2
13.	220kV Sarnath-Gajokhar line	221.7
14.	220kV Sarnath-Bhadaura line	118.4

2. Case 2

- Actual Ex- bus Generation =714 (2x357)MW
- Actual load met =687MW
- Voltage profile of various buses of island is as follows-

Bus Number	Bus Name	Base kV	Voltage (pu)		Bus Number	Bus Name	Base kV	Voltage (pu)
151055	SAHUPR1	132	0.869		151662	DLW	132	0.8847
151056	SARNATH1	132	0.9185		151664	BHU	132	0.8623
151069	ANPARA1	132	1.0247		151884	ALAIPUR	132	0.8896
151113	CHUNNAR	132	0.8714		151950	CHOLAPUR	132	0.9068
151136	GAJOKHAR	132	0.8954		152065	SAHUPU_N	220	0.8723

151170	BINA	132	1.0217		152066	SARNATH2	220	0.9452
151173	RAJAKATALAB	132	0.8701		152078	GAJOKHA	220	0.9176
151212	VARANSI CANT	132	0.889		152085	BHELUPUR	220	0.8709
151222	LEEDOPUR	132	0.9037		152119	HARAUA	220	0.9465
151267	MANDUADI	132	0.8648		152169	BHADAURA	220	0.9075
151301	NARAINPU	132	0.863		152173	RAJA KATALAB	220	0.8714
151436	KURSATO	132	0.8701		152245	SAHUPURI_4_2	220	0.872
151534	AURIHAR_TSS	132	0.9121		152260	VEERAPATTI	220	0.9422
151600	RAJAKATALB_2	132	0.8701		154014	ANPARA4	400	1.03
151661	KAITHI	132	0.9167		154019	SARNATH4	400	0.9676

- **List of lines under overloading**

Sl. No.	**Name of Transmission line**	**% Overloading**
1.	132kV Sahupuri-Alaipur line	132.5
2.	132kV Sarnath-Leedupur line	142.4
3.	132kV Sarnath-Leedupur line	142.4
4.	132kV Gajokhar-Kursato line	114.9
5.	132kV Leedopur –Alaipur line	132.4
6.	220kV Sarnath-Gajokhar line	109.0

3. Case 3

- Actual Ex- bus Generation =470 (2x235)MW
- Actual load met =462 MW
- **Steady state generation of units is less than technical minimum**
- No under voltage and over loading is oberseved

4. Case 4

- Actual Ex- bus Generation =460 (1x460)MW
- Actual load met =440 MW
- Voltage profile of various buses of Islanding is as follows-

Bus Number	Bus Name	Base kV	Voltage (pu)		Bus Number	Bus Name	Base kV	Voltage (pu)
151056	SARNATH1	132	0.9521		151662	DLW	132	0.8724
151069	ANPARA1	132	1.0247		151664	BHU	132	0.8679
151136	GAJOKHAR	132	0.9217		151950	CHOLAPUR	132	0.9336
151170	BINA	132	1.0217		152066	SARNATH2	220	0.9735
151212	VARANSI CANT	132	0.9059		152078	GAJOKHA	220	0.9477
151222	LEEDOPUR	132	0.9448		152260	VEERAPATTI	220	0.9705
151267	MANDUADI	132	0.8707		154014	ANPARA4	400	1.03
151534	AURIHAR_TSS	132	0.946		154019	SARNATH4	400	0.9889

- List of lines under overloading

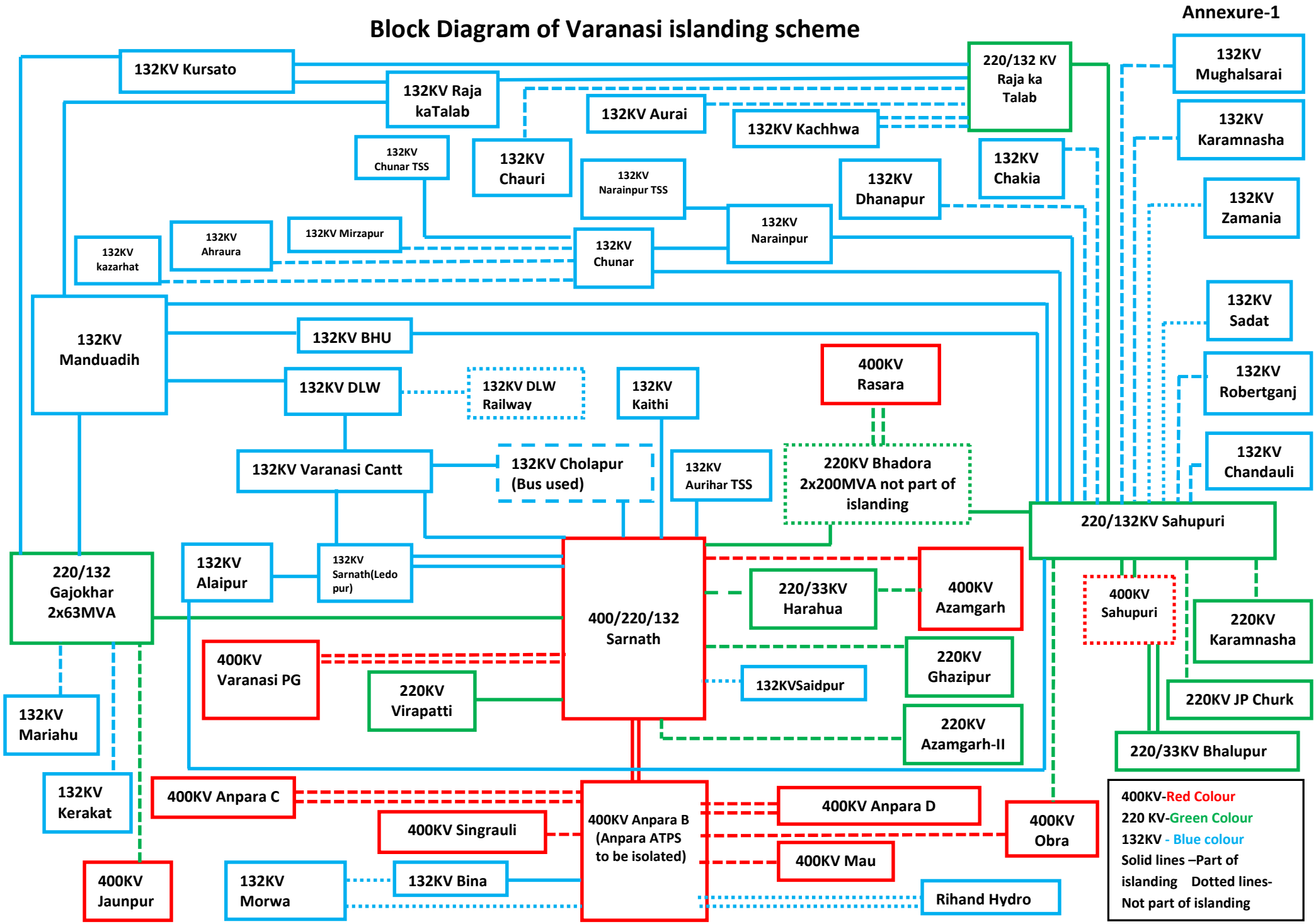
Sl. No.	**Name of Transmission line**	**% Overloading**
1.	132kV Sarnath-Varanasi Cantt line	106.0
2.	132kV Gajokhar-Manduadi line	133.9
3.	132kV Varanasi Cantt-Leedupur line	122.1
4.	132kV Varanasi Cantt-DLW line	139.9

5. Case 5

- Actual Ex- bus Generation =238 (1x238)MW
- Actual load met =233 MW
- **Steady state generation of unit is less than technical minimum**
- No under voltage and over loading is oberseved

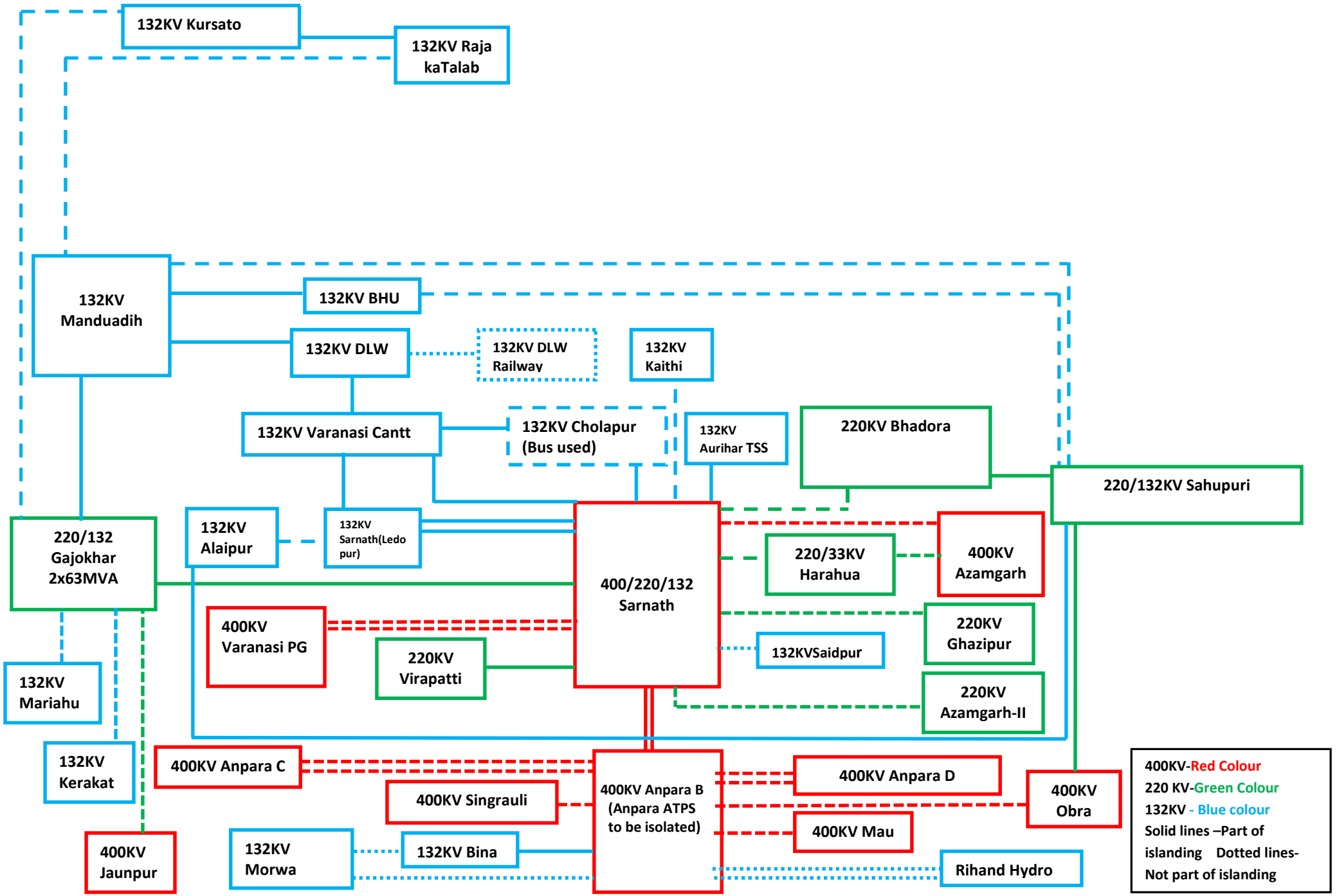
Annexure-1

Block Diagram of Varanasi islanding scheme



Annexure-2

Block Diagram of Varanasi islanding scheme with one Unit of Anpara BTPS



National Load Despatch Centre
Import Capability of Punjab for March 2024

\

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	9500	500	9000	5497	3503		https://www.punjabsldc.org/ATC_TTC.aspx
Limiting Constraints		N-1 contigency of 400/220KV ICTs at Rajpura, Ludhiana, Jalandhar Loading close to N-1 contingency limits of 400/220kV Patran, Malerkotla, Moga and Patiala ICTs 220 kV underlying network at Jalandhar, Ludhiana and Amritsar						

National Load Despatch Centre
Import Capability of Uttar Pradesh for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	16100	600	15500	9779	5721		https://www.upsldc.org/documents/20182/0/ttc_atc_24-11-16/4c79978e-35f2-4aef-8c0f-7f30d878dbde
Limiting Constraints	N-1 contingency of 400/220kV Azamgarh, Allahabad(PG), Gorakhpur (UP), Sarnath, Lucknow (PG) ICTs							

National Load Despatch Centre
Import Capability of Haryana for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	9100	250	8850	5418	3432		https://hvpn.org.in/#/atcttc
Limiting Constraints	N-1 contingency of 400/220kV ICTs at Deepalpur and Panipat(BBMB)							

National Load Despatch Centre
Import Capability of Rajasthan for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	7600	600	7000	5689	1311		https://sldc.rajasthan.gov.in/rrvpnl/scheduling/downloads
Limiting Constraints		N-1 contingency of 400/220kV Heerapura, Jodhpur, Bikaner, Ajmer, Merta, Hindaun and Bhinmal ICTs						

National Load Despatch Centre
Import Capability of Delhi for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	7300	300	7000	4810	2190		https://www.delhisldc.org/resources/atcttcreport.pdf
Limiting Constraints	N-1 contingency of 400/220kV Mundka, HarshVihar and Bawana (bus-split) ICTs.							

National Load Despatch Centre
Import Capability of HP for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	1680	100	1580	1130	450		https://hpsldc.com/mrm_category/ttc-atc-report/
Limiting Constraints		High loading of 220kV Hamirpur-Hamirpur D/C. Overloading of 2*200MVA Kunihar transformers						

National Load Despatch Centre
Import Capability of Uttarakhand for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	1700	100	1600	1402	198		https://uksldc.in/ttc-atc
Limiting Constraints		N-1 contingency of 400/220kV Kashipur ICTs. High loading of 220kV Roorkee-Roorkee and 220kV CBGanj-Pantnagar lines						

National Load Despatch Centre
Import Capability of J&K for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	2900	100	2800	1977	823		
Limiting Constraints		N-1 contigency of 400/220KV ICTs at Amargarh 220 kV underlying network at Amargarh, Wagoora						

National Load Despatch Centre
Import Capability of Chandigarh for March 2024

Issue Date: - Issue Time: 1600 Revision No. 0

Date	Time Period in IST (hrs)	Total Transfer Capability (TTC) (MW)	Reliability Margin (MW)	Available Transfer Capability (ATC) (MW)	Approved General Network Access (MW)	Margin Available for Temporary General Network Access(MW)	Changes in TTC w.r.t. Last Revision	Comments
1st March 2024 to 31st March 2024	00-24	400	20	380	342	38		
Limiting Constraints		N-1 contigency of 220kV Nallagarh-Kishengarh						

Sr No	Element Name	Outage Date	Outage Time	Reason
1	220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt-1	02-Jan-24	05:40	Phase to Ground Fault B-N.
		04-Jan-24	02:48	Transient fault
		05-Jan-24	04:57	Transient fault
		11-Jan-24	03:32	Phase to earth fault Y-N
		14-Jan-24	02:24	Phase to earth fault Y-N
		17-Jan-24	02:12	Phase to earth fault R-N
		21-Jan-24	04:05	Phase to earth fault Y-N
2	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-1	05-Jan-24	05:34	Transient fault
		16-Jan-24	04:56	Phase to earth fault B-N
		25-Jan-24	05:18	Phase to earth fault R-N
3	220 KV RAPS_A(NP)-Sakatpura(RS) (RS) Ckt-2	03-Jan-24	05:18	Transient fault
		04-Jan-24	05:44	Transient fault
		05-Jan-24	07:02	Hand tripped
		17-Jan-24	03:22	Phase to earth fault R-N
		20-Jan-24	07:44	Phase to earth fault B-N
		23-Jan-24	01:47	Phase to earth fault R-N
		25-Jan-24	03:24	Phase to earth fault R-N
4	220 KV RAPS_B(NP)-Sakatpura(RS) (RS) Ckt-1	17-Jan-24	02:18	Phase to earth fault R-N
		20-Jan-24	07:44	Phase to earth fault B-N
		29-Jan-24	03:40	Phase to earth fault R-N
5	400 KV Akal-Barmer (RS) Ckt-1	04-Jan-24	05:53	Transient fault
		08-Jan-24	06:58	Phase to earth fault R-N
		12-Jan-24	12:07	86A relay operated. Line tripped from Akal end only.
6	400 KV Bikaner-Bhadla (RS) Ckt-1	15-Jan-24	13:59	Phase to Phase Fault R-B
		24-Jan-24	12:17	Phase to Phase Fault Y-B
		10-Jan-24	12:20	Phase to phase fault Y-B.
7	400 KV Bikaner-Bhadla (RS) Ckt-2	10-Jan-24	12:20	Phase to phase fault Y-B.
		15-Jan-24	14:06	Phase to Phase Fault R-Y
		25-Jan-24	08:00	Snapping of Conductor
8	400 KV Agra-Unnao (UP) Ckt-1	13-Jan-24	02:48	Phase to Ground Fault R-N
		13-Jan-24	21:14	Phase to earth fault R-N
		15-Jan-24	02:21	Phase to earth fault R-N
		15-Jan-24	06:41	Phase to earth fault Y-N
		17-Jan-24	21:19	Phase to earth fault Y-N
9	400 KV Bareilly-Unnao (UP) Ckt-1	04-Jan-24	19:10	Phase to Ground Fault B-N
		30-Jan-24	00:57	Phase to earth fault R-N
		30-Jan-24	14:50	Phase to earth fault R-N
		29-Jan-24	12:59	Phase to earth fault B-N

10	400 KV Bareilly-Unnao (UP) Ckt-2	29-Jan-24	22:16	Phase to earth fault B-N
		31-Jan-24	05:19	Phase to earth fault R-N
11	400 KV Muradnagar_2-Mathura (UP) Ckt-1	03-Jan-24	20:34	Earth fault
		09-Jan-24	05:53	Phase to earth fault Y-N
		13-Jan-24	22:34	Phase to earth fault B-N
		31-Jan-24	04:50	Phase to earth fault Y-N
		31-Jan-24	08:10	Phase to earth fault Y-N
12	400 KV Muktsar-Makhu (PS) Ckt-2	12-Jan-24	06:02	Phase to earth fault R-N
		14-Jan-24	03:27	Phase to earth fault R-N
		31-Jan-24	05:25	Phase to earth fault R-N

Grid Event summary for January 2024

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
1	GI-2	1) 400/220 kV 500 MVA ICT 1 at Akal(RS) 2) 400/220 kV 500 MVA ICT 2 at Akal(RS) 3) 400/220 kV 315 MVA ICT 3 at Akal(RS) 4) 400/220 kV 500 MVA ICT 4 at Akal(RS)	Rajasthan	RVPNL	2-Jan-24	07:28	2-Jan-24	10:00	02:32	i) 400/220kV Akal(RS) has one and half breaker scheme at 400kV level and double main transfer bus scheme at 220kV level. ii) As reported, at 07:28hrs, 220 KV Akal(RS)-Bhu(RS) Ckt-1 tripped on B-N phase to earth fault due to heavy fog. iii) At the same time, 400/220 kV 500 MVA ICT-1, 2 & 4 and 315MVA ICT-3 at Akal(RS) also tripped. (Exact reason yet to be shared, but it is suspected that there is delay in CB opening due to which ICTs also got tripped. Also O/C protection settings of ICTs need to be shared.) iv) As per DR of 400/220 kV 500 MVA ICT 2 at Akal(RS), O/C E/F protection operated and fault current was Ib=~5.157kA. v) As per DR of 400/220 kV 315 MVA ICT 3 at Akal(RS), O/C E/F protection operated and fault current was Ib=~2.288kA. vi) As per SCADA SOE, 220kV Akal(RS)-Barmer(RS) Ckt also tripped during the same time. (Exact reason yet to be shared) vii) As per PMU at Jodhpur(RS), two consecutive B-N phase to earth faults are observed with delayed fault clearance time of 320ms and 1400ms respectively. viii) As per SCADA, change in demand of approx. 160MW is observed in Rajasthan control area. ix) As per SCADA, change in Rajasthan wind generation of approx. 690MW is observed.	0	0.405	690	160	1.611	0.325	42839	49201	1400
2	GD-1	1) 220kV KTPS-Beawar ckt 2) 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt 3) 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt 4) 220kV KTPS-Vatika ckt 5) 220kV RAPS_C(NP)-Anta(NT) ckt 6) 200 MW RAPS-A Unit-2 7) 220 MW RAPS-B Unit-4 8) 220 MW RAPS-C Unit-5 9) 220 MW RAPS-C Unit-6 10) 110 MW Kota TPS Unit-1 11) 210 MW Kota TPS Unit-4 12) 210 MW Kota TPS Unit-5 13) 195 MW Kota TPS Unit-6 14) 195 MW Kota TPS Unit-7	Rajasthan	RVPNL, RVUNL, NTPC, NPCIL	5-Jan-24	05:16	5-Jan-24	06:43	01:27	i) During the antecedent condition, 220kV Kota(PG)-KTPS(RVUN) (RS) Ckt-1 & 2, 220kV KTPS-Heerapura Ckt, 220kV KTPS-Beawar Ckt, 220 KV Debari(RS)-RAPS_A(NP) (RS) Ckt and 220 KV Anta(NT)-Sakatpura(RS) (RS) Ckt were out of service and 110MW Unit-1, 210MW Unit 4 & 5 and 195MW Unit 6 & 7 at 220kV KTPS (generating total ~803MW), 200MW Unit-2 at RAPS-A (generating ~200MW), 220MW Unit-4 at RAPS-B (generating ~185MW), 220MW Unit-5 & 6 at RAPS-C (generating total ~452MW), 43MW Unit-1, 3 & 4 at RPS HEP (generating total ~91MW), 33MW Unit-1, 2 & 3 at JS HEP (generating total ~91MW) were in service. ii) Before the event, at 05:15 hrs, 220kV KTPS-Bundi Ckt, 220kV KTPS-Vatika Ckt, 220kV RAPS-A-RAPS-B Ckt and 220kV RAPS-C-Anta220 Ckt were already carrying 288MW, 214MW, 273MW and 289MW respectively and limited connectivity with the grid was available (220kV Vatika, Bundi and Anta). iii) At 05:15:56 hrs, 220kV Bundi-Gulabpura (RS) ckt was manually opened on SLDC instruction to avoid line tripping on overloading. iv) After this, as per DR, 220kV KTPS-Vatika Ckt current reached ~850A (~320MW) and tripped on over-current protection operation from KTPS end. At the same time, as per DR, 220kV RAPS-C(NP)-Anta(NT) ckt current reached ~1800A (~600MW) and tripped due to over-loading v) Due to tripping of above lines, KTPS/RAPS-A/RAPS-B got isolated from the grid with only radial load available at 220kV Debari, 220 KV Ranpur and 220kV Chittorgarh. This led to over frequency; frequency reached to 51.63Hz. vi) Subsequent to this, RAPS-B unit-4 tripped on over frequency and came to house load. RAPS-B unit-4 operated on house load for approx. 1.5 hours but couldn't able to come back to grid mode due to issue in governing system (as intimated by RAPS) vii) RAPS-A unit-2 (no provision to come to house load) and KTPS Units also tripped on over frequency protection. viii) RAPS-C unit-5&6 tripped due to loss of auxiliary supply (auxiliary supply changeover from 220kV to 400kV blocked due to frequency mismatch). ix) As per PMU, no fault is observed in the system. x) As per SCADA, load loss of approx. 410 MW is observed in Rajasthan control area and total change in generation of approx. 1817MW is observed.	0	0.595	1817	410	5.726	0.965	31732	42496	NA
3	GI-1	1) 220/33 kV 125 MVA ICT 1 at Saurya Urja Solar(SU)	Rajasthan	Saurya Urja(IP)	5-Jan-24	12:19	5-Jan-24	14:07	01:48	i) Total MW generation of CSP Bhadla and SBE4PL is evacuated through five 220/33kV 125MVA ICTs at Saurya Urja(IP) which are again connected to 220kV Saurya Urja(IP)-Bhadla(PG) Ckt-1 & 2. During antecedent condition, total MW generation of Saurya Urja(IP) (CSP Bhadla+SBE4PL) was ~500MW and ICTs were carrying ~100MW each. ii) As reported, at 12:19hrs, 220/33 kV 125 MVA ICT 1 at Saurya Urja Solar(SU) tripped due to earth fault in LV side of ICT (exact location and nature of fault yet to be shared). iii) As per PMU at Saurya Urja(IP), Y-B phase to phase fault with fault clearance time of 80ms is observed in the system. iv) As per PMU, no generation loss occurred at Saurya Urja(IP). But reduction in solar generation of approx. 385MW in total is observed (150MW at AHEJ2L, 100MW at RSEPL and 135MW at RSUPL).	0	0.000	385	0	0.786	0.000	48977	62168	80
4	GI-2	1) 400/220 kV 500 MVA ICT 1 at Dwarka (PG) 2) 400/220 kV 500 MVA ICT 2 at Dwarka (PG) 3) 220kV Dwarka-Pappankalan(DTL) Ckt-1 4) 220kV Dwarka-Pappankalan(DTL) Ckt-2 5) 220kV Dwarka-Naraina (DTL) Ckt-1 6) 220kV Dwarka-Naraina (DTL) Ckt-2	Delhi	PGCIL, DTL	9-Jan-24	11:03	9-Jan-24	12:36	01:33	i) 400/220kV Dwarka(PG/DTL) has one and half breaker scheme at 400kV level (owned by PG upto ICTs) and double main bus scheme at 220kV level (owned by DTL). ii) As reported, at 11:03 Hrs, during the maintenance work of 220kV bus sectionalizer 1 at Dwarka(DTL), bus-bar protection operated at 220kV Dwarka(DTL). iii) Due to bus bar protection operation, 400/220 kV 500 MVA ICT 1 & 2 at Dwarka (PG) tripped from 220kV side only, 400kV side remained connected. 220kV Dwarka-Pappankalan(DTL) Ckt-1 & 2 and 220kV Dwarka-Naraina (DTL) Ckt-1 & 2 also tripped. Both the buses at 220kV level became dead. iv) As per PMU, no fault is observed in the system. v) As per SCADA, change in demand of approx. 360MW is observed in Delhi control area. vi) As reported, after tripping power was restored from Ridge valley and Bamnoli within 10 minutes.	0	0.558	0	360	0.000	0.589	45066	61169	NA
5	GI-2	1) 800 KV HVDC Kurukshetra(PG) Pole-01 2) 800 KV HVDC Kurukshetra(PG) Pole-02 3) 800 KV HVDC Kurukshetra(PG) Pole-03 4) 800 KV HVDC Kurukshetra(PG) Pole-04	Haryana	PGCIL	9-Jan-24	14:01	9-Jan-24	14:32	00:31	i) During antecedent condition, 800kV HVDC Champa-Kurukshetra Bipole was carrying total 2500MW (625MW each pole). ii) As reported at 14:00:20hrs, ''commutation failure detected'' and "Pole 4 Instability Detected by SSAD" protection latched in Pole 4 which initiated CAT A2 sequence for blocking of Pole 4 and isolated Pole 4 from parallel Pole 2. iii) Further after ~800msec of initiation of CAT A2 sequence by Pole 4 on Instability protection, opening sequence to HVHS at both ends didn't initiate which led to failure of protective isolation of faulty Pole 4 and generated CAT B alarm leading to tripping of parallel Pole 2 also. iv) Further at 14:01:17 hrs, "Instability detected" protection latched in Pole 1 also which initiated CAT A2 sequence for protective isolation from Pole 3. v) Further at 14:01:18hrs, like Pole 4, CAT A2 sequence in Pole 1 also failed to initiate HVHS opening leading to protective sequence failure which generated CAT B alarm that resulted in tripping of parallel Pole 3. vi) Due to tripping of all four (04) poles, power order reduced from 2500MW to 0MW. vii) As per PMU, fluctuation in power order was observed.	0	0	0	0	0.000	0.000	47825	58747	NA
6	GI-2	1) 400kV Bhadla(RS)-Bikaner(RS) Ckt-2 2) 220/33kV 100MVA ICT-1 at RSKPL(IP) 3) 220/33kV 100MVA ICT-3 at RSKPL(IP)	Rajasthan	RVPNL, RSKPL	10-Jan-24	12:19	5-Jan-24	13:51	01:32	i) As reported, at 12:19hrs, 400kV Bhadla(RS)-Bikaner(RS) Ckt-2 tripped on Y-B phase to phase fault with fault distance of 50.19km and fault current of 9.176kA and 8.29kA in Y and B phase respectively from Bhadla(RS). As per information received from SLDC Rajasthan, fault was traced by Patrolling from team of M/s Ramlex pvt. Ltd. and the broken conductor was repaired after taking shutdown of 400kV Bhadla(RS)-Bikaner(RS) Ckt-1 & 2. (Exact location of conductor snapping need to be shared) ii) As per DR at Bikaner(RS) end of 400kV Bhadla(RS)-Bikaner(RS) Ckt-2, fault was sensed in zone-1; fault current was 4.799kA and 5.723kA in Y and B phase respectively from Bikaner(RS) end and fault clearing time was ~55ms. iii) As per SCADA, change in NR total solar generation of approx. 1360MW is observed out of which approx. 900MW is recovered within 2 minutes. iv) As per PMU at Bhadla(PG), Y-B phase to phase fault is observed with fault clearance time of 120 ms. v) As per SCADA SOE, 220/33kV 100MVA ICT-1 & 3 at RSKPL(IP) also tripped during the same time. (Exact reason yet to be shared)	0	0	1360	0	2.542	0.000	53506	64858	120
7	GD-1	1) 400kV Ludhiana(PG)-Koldam(NT) (PG) Ckt-1 2) 400 KV Nallagarh(PG)-Koldam(NT) (PG) Ckt 3) 400 KV Koldam(NT)-Parbati Pooling Banala(PG) (PKTCL) Ckt 4) 400KV Bus 1 at Koldam(NT) 5) 400KV Bus 2 at Koldam(NT)	Himachal Pradesh	PGCIL, NTPC, PKTCL	10-Jan-24	20:29	10-Jan-24	23:31	03:02	i) 400kV Koldam(NT) has one and half breaker scheme. ii) As reported, at 20:29 Hrs, during hand tripping of 400kV Ludhiana(PG)-Koldam(NT) (PG) Ckt-1 from Koldam(NT) end, one pole of tie CB 1432 failed to open which resulted in bus bar protection operation. iii) Fault was severe and got extended to both the buses and all the elements connected to Bus-1 & 2 tripped and 400kV Koldam(NT) S/s became dead. iv) As per PMU, R-Y phase to phase fault with fault clearing time of 80ms is observed in the system. v) As per SCADA, no change in demand is observed in HP control area.	0	0	0	0	0.000	0.000	40641	58974	80
8	GI-2	1) 400/220 KV 315 MVA ICT-3 at Muzaffarnagar(UP) 2) 400/220 KV 500 MVA ICT-4 at Muzaffarnagar(UP) 3) 220/132kV 160MVA ICT-4 at Muzaffarnagar(UP) 4) 220 KV Muzaffarnagar(UP)– Badhni Kalan Ckt 5) 220 KV Muzaffarnagar(UP)– Jansath Ckt 6) 220 KV Muzaffarnagar(UP)– Khatauli Ckt	Uttar Pradesh	UPPTCL	11-Jan-24	19:12	11-Jan-24	19:49	00:37	i) As reported, at 19:12hrs, B-phase isolator jumper broke at 400/220kV Muzaffarnagar(UP) and bus-bar protection operated at 220kV Bus-1 at Muzaffarnagar(UP). ii) Due to bus-bar protection operation, all the elements connected to 220kV Bus-1 at Muzaffarnagar(UP) tripped and Bus-1 became dead. iii) As reported, 132kV Muzaffarnagar-Khatauli Ckt and 132kV Muzaffarnagar-Bukhari Ckt also tripped during the same time (exact reason yet to be shared). iv) As per PMU at Muzaffarnagar(UP), B-N phase to earth fault with fault clearance time of 80ms is observed. v) As per SCADA, change in demand of approx. 150 MW is observed in UP control area.	0	0.093	0	150	0.000	0.238	43682	63083	80
9	GI-2	1) 400 KV Bikaner-Bhadla (RS) Ckt-1	Rajasthan	RVPNL	15-Jan-24	13:59	19-Jan-24	21:45	55:46:00	i) As reported, at 13:59hrs on 15th January, 2024, 400kV Bhadla(RS)-Bikaner(RS) Ckt-1 tripped on R-B phase to phase fault with fault distance of 17.88km and fault current of 13.35kA and 12.73kA in R and B phase respectively from Bikaner(RS) and fault distance of 147.5km and fault current of 2.911kA and 3.572kA in R and B phase respectively from Bhadla(RS); fault was observed in zone-1 at both the ends. ii) As per information received from SLDC Rajasthan, line patrolling was done by representatives of M/s Ramelex Pvt. Ltd. and it was observed that conductor was broken between tower location no. 456-457. iii) As per SCADA, change in NR total solar generation of approx. 2020MW is observed at 13:59hrs. iv) As per PMU at Bhadla(PG), R-B phase to phase fault is observed with fault clearance time of 80 ms at 13:59hrs.	0	0	2020	0	4.027	0.000	50162	61237	80
10	GI-2	1) 400 KV Bikaner-Bhadla (RS) Ckt-2 2) 220/33kV 100MVA ICT-3 at Rising Sun(RSDCL4)	Rajasthan	RVPNL, RSDCL4	15-Jan-24	14:06	19-Jan-24	21:50	55:44:00	i) As reported, at 14:06hrs, 400kV Bhadla(RS)-Bikaner(RS) Ckt-2 tripped on R-Y phase to phase fault with fault distance of 147.1km and fault current of 3.865kA and 4.392kA in R and Y phase respectively from Bikaner(RS) and fault distance of 34.9km and fault current of 11.07kA and 10.64kA in R and Y phase respectively from Bhadla(RS); fault was observed in zone-1 at both the ends. ii) As per information received from SLDC Rajasthan, line patrolling was done by representatives of M/s Ramelex Pvt. Ltd. and it was observed that conductor was broken between tower location no. 120-121. iii) As per DR at Bikaner(RS) end of 400kV Bhadla(RS)-Bikaner(RS) Ckt-2, fault was sensed in zone-1; fault current was 4.55kA and 5.14kA in R and Y phase respectively from Bikaner(RS) end and fault clearing time was ~55ms. iv) At the same time, 220/33kV 100MVA ICT-3 at Rising Sun(RSDCL4) tripped due to relay mal-operation (exact reason yet to be shared). v) As per SCADA, change in NR total solar generation of approx. 1760MW is observed at 14:06hrs. vi) As per PMU at Bhadla(PG), R-Y phase to phase fault is observed with fault clearance time of 80 ms at 14:06hrs.	0	0	1760	0	3.539	0.000	49728	60568	80
11	GI-1	1) 220KV Bus 1 at Jamalpur(BB) 2) 220 KV Jalandhar-Jamalpur (BB) Ckt-1 3) 220 KV Bhakra_R-Jamalpur (BB) Ckt-1 4) 220 KV Ganguwal-Jamalpur (BB) Ckt-1 5) 220 KV Ganguwal-Jamalpur (BB) Ckt-2 6) 220 KV Jamalpur(BB)-Dandhari Kalanl(PS) (PSTCL) Ckt-2 7) 220/66kV 100 MVA ICT-1 at Jamalpur(BBMB) 8) 220/66kV 160 MVA ICT-3 at Jamalpur(BBMB) 9) 220/132kV 100 MVA ICT-1 at Jamalpur(BBMB)	Punjab	PSTCL, BBMB	23-Jan-24	11:38	23-Jan-24	13:45	02:07	i) As reported, at 11:38hrs, LBB protection of Bus Coupler-1 CB operated at 220kV Jamalpur(BBMB). On inspection at switch yard, kite thread was found near 220kV Bus Coupler-1 (A-7) and Bus Coupler-2 (A-17). ii) Due to LBB protection operation, all the elements connected to 220kV Bus-1 at Jamalpur(BBMB) tripped and 220kV Bus-1 at Jamalpur(BBMB) became dead (Bus-wise arrangement of elements yet to be shared). iii) As per SCADA SOE, main CBs of all the elements connected to 400kV Bus-1 at Amritsar(PG) opened at the same time and 400kV Bus-1 at Amritsar(PG) became dead. However, lines remained connected through tie CBs. Hence it is suspected that bus bar protection operated at 400kV Bus-1 at Amritsar(PG) (Exact reason of the same yet to be shared). iv) As per PMU at Bhakra(BB), no fault is observed in the system. v) As per SCADA, load loss of approx. 440 MW is observed in Punjab control area.	0	0.931	0	440	0.000	0.683	48653	64418	NA
12	GD-1	1) 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt-1	Rajasthan	PGCIL, AHEJ3L	24-Jan-24	10:44	24-Jan-24	12:17	01:33	i) During antecedent condition, total generation of 220kV AHEJ3L was evacuating through 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt which was carrying approx. 260 MW. ii) As reported, at 10:44 hrs, 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt tripped on Y-N phase to earth fault, fault occurred due to snapping of jumper. iii) As per PMU plots of voltage at Fatehgarh2 end of Fatehgarh-Fatehgarh II ckt-1, Y-N phase to earth fault is observed which cleared within 100msec. Voltage dropped to ~0.96pu during the fault. iv) Due to tripping of 220 KV Fatehgarh_II(PG)-AHEJ3L PSS HB_FGRAH_PG (AHEJ3L) (AHEJ3L) Ckt, RE generation of AHEJ3L affected. As per SCADA, total reduction in NR RE generation of approx. 260MW is observed. v) As per PMU at 220kV AHEJ3L, MW generation loss of approx. 260MW is observed at AHEJ3L.	0	0	260	0	0.564	0.000	46099	61089	80

S.No.	Category of Grid Disturbance (GD-I to GD-V)	Name of Elements (Tripped/Manually opened)	Affected Area	Owner/ Agency	Outage		Revival		Duration (hh:mm)	Event (As reported)	Energy Unserved due to Generation loss (MU)	Energy Unserved due to Load loss (MU)	Loss of generation / loss of load during the Grid Disturbance		% Loss of generation / loss of load w.r.t Antecedent Generation/Load in the Regional Grid during the Grid Disturbance		Antecedent Generation/Load in the Regional Grid		Fault Clearance time (in ms)
					Date	Time	Date	Time					Generation Loss(MW)	Load Loss (MW)	% Generation Loss(MW)	% Load Loss (MW)	Antecedent Generation (MW)	Antecedent Load (MW)	
13	GI-2	1) 400kV Bhadla(RS)-Bikaner(RS) Ckt-1	Rajasthan	RVPNL	24-Jan-24	12:16	27-Jan-24	19:49	79:33	i) As reported, at 12:16hrs, 400kV Bhadla(RS)-Bikaner(RS) Ckt-1 tripped on Y-B phase to phase fault with fault distance of 70.45 km and fault current of 6.947 kA and 6.167 kA in Y and B phase respectively from Bhadla(RS) end and fault distance of 103.6 km and fault current of 4.568 kA and 5.264 kA in Y and B phase respectively from Bikaner(RS) end. ii) As per information received from SLDC Rajasthan, line patrolling was done by representatives of M/s Ramelex Pvt. Ltd. and it was observed that conductor was broken between tower location no. 242-243. iii) As per SCADA, change in NR total solar generation of approx. 1225MW is observed out of which approx. 1090MW is recovered within 3 minutes. iv) As per PMU at Bhadla(PG), Y-B phase to phase fault is observed with fault clearance time of 120 ms.	0	0	1225	0	2.300	0.000	53261	64337	120
14	GI-2	1) 400/220 kV 315 MVA ICT 1 at Ajmer(RS) 2) 220kV Ajmer-Beawar (RS) Ckt 3) 220kV Ajmer-Kishangarh (RS) Ckt 4) 220kV Ajmer-Bherunda (RS) Ckt-1 5) 220kV Ajmer-Bherunda (RS) Ckt-2	Rajasthan	RVPNL	28-Jan-24	16:32	28-Jan-24	18:44	02:12	i) As reported, at 16:32hrs, 220kV side of 400/220 kV 315 MVA ICT 1 at Ajmer(RS) tripped on operation of 86.2 relay due to inter trip cable fault. ii) As per scheme "SPS for Transformers at 400KV Ajmer (RVPN) substation", if any of the two 400/220kV 315 MVA ICT trips on fault/protection then tripping command will be extended from 86(Master-trip) of that ICT to following feeders: 220kV Ajmer-Beawar (RS) Ckt, 220kV Ajmer-Kishangarh (RS) Ckt, 220kV Ajmer-Bherunda (RS) Ckt-1 & 2. Hence, the above said lines tripped on SPS operation due to tripping of ICT-1. iii) Further as reported, as remedial action taken, the faulty cable was already removed. iv) As per PMU at Bhadla(PG), no fault is observed in the system. v) As per SCADA, load loss of approx. 160MW is observed in Rajasthan control area.	0	0.352	0	160	0.000	0.311	39146	51415	NA
15	GI-2	1) 400/220 kV 315 MVA ICT 1 at Ratangarh(RS) 2) 220 KV Ratangarh(RS)-Sikar(PG) (PG) Ckt-1 3) 220 KV Ratangarh(RS)-Sri Dungargarh (RS) Ckt 4) 220kV Ratangarh-Ratangarh220 (RS) Ckt-1 5) 220kV Ratangarh-Ratangarh220 (RS) Ckt-2	Rajasthan	RVPNL, PGCIL	28-Jan-24	14:58	28-Jan-24	16:24	01:26	i) As reported, at 14:58hrs, 220kV Isolator (489B) B-phase jumper of 220kV Bus Coupler-1 broke and the fault reflected on the 220kV bus bar at Ratangarh(RS). ii) Due to this fault, 400/220 kV 315 MVA ICT 1 at Ratangarh(RS), 220 KV Ratangarh(RS)-Sikar(PG) (PG) Ckt-1, 220 KV Ratangarh(RS)-Sri Dungargarh (RS) Ckt, 220kV Ratangarh-Ratangarh220 (RS) Ckt-1 & 2 tripped (Bus-wise arrangement of elements yet to be shared). iii) As per SCADA SOE, 220kV Ratangarh220-Jhunjhunu (RS) Ckt also tripped during the same time. (Exact reason yet to beshared) iv) As per PMU at Sikar(PG), Y-N phase to earth fault is observed with delayed fault clearance time of 280 ms (Phase sequence issue is observed). v) As per SCADA, load loss of approx. 540MW is observed in Rajasthan control area. vi) Further as reported, broken 220kV Isolator (489B) B-phase jumper of 220kV Bus Coupler-1 was already replaced.	0	0.774	0	540	0.000	1.014	41369	53271	280
16	GD-1	1) 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt-1	Rajasthan	AREPRL, AHEJ4L	30-Jan-24	07:13	30-Jan-24	07:49	00:36	i) Generation of 220kV AHEJ4L PSS IV RE stations evacuates through 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt. During antecedent condition, AHE4L PSS IV RE station was generating approx. 77MW. ii) As reported, at 07:13hrs, 220 KV Adani RenewPark_SL_FGARH_FBTL (AREPRL)-AHEJ4L PSS 4 HB_FGRAH_FBTL (AHEJ4L) (AREPRL) Ckt tripped on B-N phase to earth fault, fault sensed by distance protection in zone-1 (30km, ~45%). As per DR, successful A/R operation is observed at AFSPS end and no A/R operated at AHEJ4L end. iii) As per PMU at Fatehgarh2(PG) end, R-N phase to earth fault is observed. As per DR at AFSPS end, B-N fault is observed. Phase sequence mapping issue either at Fatehgarh2 end or at AFSPS end is suspected. iv) As per PMU data, due to tripping of 220kV AHEJ4L PSS IV line, RE (wind) generation (77MW) of the RE station lost due to loss of evacuation path. v) As per PMU plots of voltage at Fatehgarh2 end of Fatehgarh-Fatehgarh II ckt-1, phase to earth fault cleared within 100msec is observed. Voltage dropped to ~0.97pu during the fault.	0	0	77	0	0.167	0.000	46099	61089	80
17	GI-2	1) 220kV Chittorgarh-Sawa ckt-2 2) 400/220 kV 315 MVA ICT 2 at Chittorgarh(RS) 3) 400/220 kV 315 MVA ICT 3 at Chittorgarh(RS) 4) 220kV Chittorgarh-Pratapgarh ckt	Rajasthan	RVPNL	30-Jan-24	08:15	30-Jan-24	08:50	00:35	i) 400/220kV Chittorgarh(RS) has double main single breaker bus scheme at 220kV side and one and half bus scheme at 400kV side. There are three (03) 315MVA ICTs at Chittorgarh and five 220kV feeders: Sawa-I & II, Pratapgarh, Nimbahera, Chittorgahr and Debari. 220/132kV Debari is having two (02) source: one is from 400/220kV Chittorgarh and another from 220kV Amberi. ii) During antecedent condition, 315MVA ICT-1, 220kV feeders to Debari, Pratapgarh were connected to 220kC Bus-1 and 315MVA ICT-2&3, 220kV feeders to Sawa-I&II, Nimbahera were connected to 220kV Bus-2. 400/220kV 315MVA ICT-1, 2 & 3 were carrying approx. 232MW, 228MW & 244MW respectively. iii) As reported, at 08:15:22hrs, 220kV Chittorgarh-Sawa ckt-2 tripped on B-N phase to earth fault. Fault occurred due to snapping of B-ph jumper at tower location no. 74 at distance approx. 26km from Chittorgarh end. iv) As per PMU, B-N phase to earth fault with delayed clearance of 280msec is observed. As per DR of 220kV Chittorgarh-Sawa ckt-2 of Chittorgarh end, B-N fault in Z-2 picked up by distance protection. Further after ~200msec, Z-1 picked up and tripping initiated to B-ph pole. However, simultaneously A/R blocked and all three phase tripped. (Reason of A/R block and 3-ph tripping yet to be shared by Rajasthan) v) At the same time, 400/220kV 315MVA ICT-2 at Chittorgarh and bus coupler at 220kV side also tripped. As informed, ICT-2 tripped with LBB re-trip flag and bus coupler tripped on over current protection. (Exact reason of tripping of ICT-2 and bus coupler along with its DR not received.) vi) With the tripping of bus coupler CB, 220kV Bus-1&2 got split. 315MVA along with 220kV feeders to Pratapgarh & Debari at 220kV Bus-1 and 315MVA ICT-3 along with 220kV feeders to Nimbahera, Sawa-1 at 220kV Bus-2. vii) Load of ICT-2 also shifted on ICT-3. ICT-1 also got overloaded due to shifting of complete load of Pratapgarh on ICT-1. As per DR of ICT-1, its loading increased to ~325MVA. viii) At 08:15:33:410hrs (as per DR), 315MVA ICT-3 also tripped on over current protection operation. Loading recorded in DR just before the tripping was ~400MVA. ix) After tripping of ICT-3, load of Nimbahera not started drawing power from Pratapgarh which led to further overloading of 315MVA ICT-1 and 220kV Chittorgarh-Pratapgarh feeder. As per DR of ICT-1, loading of ICT-1 increased from 325MVA to 495MVA within span of 250msec. x) At 08:15:33:790hrs, 220kV Chittorgarh-Pratapgarh ckt tripped on over current protection from Pratapgarh end. With the tripping of Pratapgarh feeder, loading of ICT-1 relieved. xi) As per SCADA, total change in demand of approx. 700MW observed at 08:15hrs.	0	0.408	0	700	0.000	1.192	46655	58711	280
18	GD-1	1) 220kV Amberi-Debari ckt 2) 400/220 kV 315 MVA ICT 1 at Chittorgarh(RS)	Rajasthan	RVPNL	30-Jan-24	09:00	30-Jan-24	09:54	00:54	i) 400/220kV Chittorgarh(RS) has double main single breaker bus scheme at 220kV side and one and half bus scheme at 400kV side. There are three (03) 315MVA ICTs at Chittorgarh S/s and five (05) 220kV feeders: Sawa-I & II, Pratapgarh, Nimbahera, Chittorgahr and Debari. 220/132kV Debari is having two (02) source: one is from 400/220kV Chittorgarh and another from 220kV Amberi. ii) As reported, at 08:50hrs, 220kV Chittorgarh-Pratapgarh ckt was charged and loading of ICT-1 at Chittorgarh again started increasing. ICT-1 was feeding load of Pratpgarh, Nimbahera via Pratapgarh and Debari. iii) At 08:58:45:770hrs, over current protection in B-ph of ICT-1 started. And at 09:00hrs, 220kV Amberi-Debari ckt also tripped. iv) With the tripping of 220kV Amberi-Debari ckt, total load of Debari shifted to Chittorgarh ICT-1. v) At 09:00:21:660, 315MAV ICT-1 at Chittorgarh also tripped on overcurrent protection operation. As per DR, loading recorded was ~365MVA. vi) As per SCADA, change in demand of approx. 450MW observed at 09:00hrs.	0	0.405	0	450	0.000	0.764	45401	58932	NA
19	GD-1	1) 400 KV Bawana-Mundka (DV) Ckt-1 2) 400 KV Bawana-Mundka (DV) Ckt-2 3) 400 KV Maharanibagh(PG)-Bawana(DV) (DTL) Ckt-1 4) 400 KV Maharanibagh(PG)-Bawana(DV) (DTL) Ckt-2 5) 400 KV Abdullapur(PG)-Bawana(DV) (PG) Ckt 6) 400 KV Deepalpur(JHKT)-Bawana(DV) (PG) Ckt 7) 400 KV Bawana CCGTB(DTL)-Bhiwani(PG) (PG) Ckt 8) 400 KV Bawana CCGTB(DTL)-Bahadurgarh(PG) (PG) Ckt 9) 216 MW Bawana GPS - UNIT 4 (GT-4) 10) 253 MW Bawana GPS - UNIT 6 (STG-2)	Delhi	DTL, JHKT, PGCIL	31-Jan-24	03:17	31-Jan-24	04:54	01:37	i) During antecedent condition, 400kV interconnectors 41952 and 42352 between 400kV Buses at Bawana(DTL) and 400kV Buses at Bawana CCGTB(DTL) were in closed position. 400/220kV 315MVA ICT-1, 4, 5 & 6 were connected to Bawana CCGTB(DTL) and 315 MVA ICT-2 & 3 were connected to Bawana(DTL). 216 MW Bawana GPS - UNIT 4 (GT-4) and 253 MW Bawana GPS - UNIT 6 (STG-2) were generating approx. 165MW and 96MW respectively. ii) As reported, at 03:17 Hrs, 400 KV Bawana-Mundka (DV) Ckt-1 & 2 tripped from Mundka end only on R-N phase to ground fault with fault distance of 22.42 km and 24.09 km respectively from Bawana end. iii) At the same time, 400 KV Bawana CCGTB(DTL)-Bahadurgarh(PG) (PG) Ckt and 400 KV Abdullapur(PG)-Bawana(DV) (PG) Ckt tripped from both the ends on distance protection operation. iv) Rest of the 400kV ckts connected at Bawana CCGTB(DTL) and Bawana(DTL) tripped from the remote end only. (Exact reason, nature and location of fault yet to be shared). v) As communicated telephonically by Delhi, current through interconnectors was towards Bawana CCGTB(DTL), hence it is suspected that fault was on Bawana CCGTB(DTL) bus side and bus bar protection did not operate, hence lines tripped from remote ends in zone-2. (Reason of non-operation of bus bar protection yet to be shared) vi) Due to tripping of all 400kV ckts, both the 400kV buses became dead at Bawana(DTL) and Bawana CCGTB(DTL) and blackout occurred at 400/220/66kV Bawana(DTL) & 400kV CCGT Bawana (DTL) S/s. vii) As reported by SLDC-Delhi, the load of 220kV Shalimar Bagh, SGTN, DSIDC Bawana and Rohini-I & II, Bawana and Khanjawala S/s got affected. viii) As per SCADA, no change in demand is observed in Delhi control area, but as reported by SLDC Delhi, load loss of approx. 350MW is observed out of which approx. 250MW was normalized within 30 minutes and remaining load was changeover to alternate sources. ix) As per PMU, R-N phase to ground fault with delayed fault clearing time of 560ms is observed. x) Further as reported, 216 MW Bawana GPS - UNIT 4 (GT-4) and 253 MW Bawana GPS - UNIT 6 (STG-2) tripped during the same time and generation loss of approx. 261MW is observed.	0	0.566	261	350	0.873	0.950	29888	36823	560
20	GD-1	1) 220 KV Ballabhgarh(BB)-BTPS(DTL) (BB) Ckt-1 2) 220 KV Ballabhgarh(BB)-BTPS(DTL) (BB) Ckt-2 3) 220 KV Tughlakabad(PG)-BTPS(DTL) Ckt-1 4) 220 KV Tughlakabad(PG)-BTPS(DTL) Ckt-2 5) 220 KV BTPS(DTL)-Okhla Ckt-1 6) 220 KV BTPS(DTL)-Okhla Ckt-2 7) 220 KV BTPS(DTL)-Sarita Vihar Ckt-1 8) 220 KV BTPS(DTL)-Sarita Vihar Ckt-2 9) 220 KV BTPS(DTL)-Alwar Ckt 10) 220 KV BTPS(DTL)-Noida Sec 38 Ckt	Delhi	BBMB, DTL, PGCIL	31-Jan-24	21:22	31-Jan-24	22:37	01:15	i) During antecedent condition, 220 KV Ballabhgarh(BB)-BTPS(DTL) (BB) Ckt-1 & 2 and 220 KV Tughlakabad(PG)-BTPS(DTL) Ckt-1 & 2 were catering the part load of 220kV Okhla and 220kV Sarita Vihar through 220 KV BTPS(DTL)-Okhla Ckt-1 & 2 and 220 KV BTPS(DTL)-Sarita Vihar Ckt-1 & 2. 220 KV BTPS(DTL)-Alwar Ckt and 220 KV BTPS(DTL)-Noida Sec 38 Ckt were on no-load. 220kV bus coupler at BTPS was in closed condition. ii) As reported, at 21:22 Hrs, 220 KV Ballabhgarh(BB)-BTPS(DTL) (BB) Ckt-1 tripped on Y-N phase to ground fault with fault distance of 17.01 km and fault current of 4.2 kA from Ballabgarh end; zone-1 distance protection operated at Ballabgarh end and zone-4 distance protection operated at BTPS end. On inspection, 220kV Bus-2 PT isolator Y-ph LA jumper was found broken at BTPS S/s. iii) At the same time, all other 220kV ckts connected at BTPS(DTL) tripped on zone-4 distance protection operation at BTPS end (reason of non-operation of bus bar protection yet to be shared). iv) Due to tripping of all 220kV ckts, both the 220kV buses became dead at BTPS(DTL) and blackout occurred at 220kV BTPS(DTL) S/s. v) As reported by SLDC-Delhi, the load of Okhla, Batra, Malviya Nagar, Shivalik, Sirifort, DC Saket, Select City mall, Sarita Vihar, Meethapur, Jamia, Sarai Julena, Jasola got affected. vi) As per SCADA, change in demand of approx. 220MW is observed in Delhi control area out of which approx. 90MW is restored within 10 minutes. But as reported by SLDC Delhi, load loss of approx. 160MW is observed. vii) As per PMU, Y-N phase to ground fault with delayed fault clearing time of 160ms is observed. viii) Further as reported, at 21:29 hrs, load of Okhla was normalized through 220kV Tughlakabad-Okhla Ckt-1 & 2. At 21:45 hrs, load of 220kV Sarita Vihar was attempted to normalize through 220kV Maharanibagh-Sarita Vihar ckt at Sarita Vihar, but line could not hold and a blast occurred in 220kV Bus coupler CB at Sarita Vihar; R-ph pole was found damaged. Later at 23:20 hrs, load of 220kV Sarita Vihar was normalized through 220kV Maharanibagh-Sarita Vihar ckt.	0	0.2	0	160	0.000	0.323	34570	49549	160
21	GD-1	1) 220 KV Pithoragarh-Jauljivi (PG) Ckt-1 2) 220 KV Pithoragarh-Jauljivi (PG) Ckt-2 3) 220/132 kV 100 MVA ICT 1 at Pithoragarh(PG) 4) 220/132 kV 100 MVA ICT 2 at Pithoragarh(PG) 5) 132 KV Pithoragarh(PG)-Pithoragarh(PTCUL) (PTCUL) Ckt 6) 132 KV Lohaghat(PTCUL)-Pithoragarh(PG) (PTCUL) Ckt 7) 132 KV Pithoragarh(PTCUL)-Almora(PTCUL) (PTCUL) Ckt 8) 25 MVAR Bus Reactor No 1 at 220 KV Pithoragarh(PG)	Uttarakhand	PGCIL, PTCUL	31-Jan-24	18:13	31-Jan-24	19:19	01:06	i) As reported, at 18:13 Hrs, 220 KV Pithoragarh-Jauljivi (PG) Ckt-1 tripped on R-N phase to ground fault with fault distance of 8.2 km and fault current of 1.5kA from Pithoragarh end. ii) Further as reported, at the same time, 220 KV Pithoragarh-Jauljivi (PG) Ckt-2 also tripped on Y-N phase to ground fault with fault distance of 9.7 km and fault current of 2.27kA from Pithoragarh end. iii) Due to tripping of 220 KV Pithoragarh-Jauljivi (PG) Ckt-1 & 2, supply to 220/132 kV 100 MVA ICT 1 & 2 at Pithoragarh(PG) and all 132kV ckts were lost, resulting in tripping of all the elements connected at both 220kV and 132kV level at Pithoragarh(PG) which led to 220/132kV Pithoragarh(PG) S/s blackout. iv) As per PMU, 3-phase to ground fault with fault clearing time of 80ms is observed. v) As per SCADA, load loss of approx. 173MW is observed in Uttarakhand control area. vi) As reported by CPCC3, the load of Pithoragarh (~40MW), Almora (~63MW), Bhawani (~40MW), Ranikhet (~20MW) and Bageshwar (~10MW) S/s got affected.	0	0	0	173	0.000	0.306	44228	56581	80

S. No.	Name of Transmission Element Tripped	Owner/ Utility	Outage		Brief Reason (As reported)	Category as per CEA Grid standards	# Fault Clearance Time (>100 ms for 400 kV and 160 ms for 220 kV)	*FIR Furnished (YES/NO)	DR/EL provided in 24 hrs (YES/NO)	Remarks
			Date	Time						
1	765 KV Chittorgarh-Banaskantha (PG) Ckt-1	POWERGRID	7-Jan-24	12:12	Phase to Phase Fault R-Y	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	As per DR of Chittorgarh end, R-Y ph-ph fault is observed. Ir=9.9kA, Iy=9.8kA
2	220 KV Auraiya(NT)-Malanpur(MP) (PG) Ckt-1	POWERGRID	9-Jan-24	05:02	Phase to earth fault R-N	NA	NA	NO	NO	
3	800 KV HVDC Kurukshetra(PG)-Champa(PG) (PG) Ckt-2	POWERGRID	9-Jan-24	14:01	Relay maloperation	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	As per details received, following flags initiated: a) commutation failure detected b) failure of protective isolation c)Instability protection Necessary corrective actions need to be taken to ensure the reliability of HVDC Champa-Kurukshetra link
4	800 KV HVDC Kurukshetra(PG)-Champa(PG) (PG) Ckt-1	POWERGRID	9-Jan-24	14:01	Relay maloperation	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	
5	800 KV HVDC Kurukshetra(PG)-Champa(PG) (PG) Ckt-3	POWERGRID	9-Jan-24	14:01	Relay maloperation	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	
6	800 KV HVDC Kurukshetra(PG)-Champa(PG) (PG) Ckt-4	POWERGRID	9-Jan-24	14:01	Relay maloperation	NA	NA	YES (After 24 hrs)	YES (After 24 hrs)	
7	800 KV HVDC Kurukshetra(PG) Pole-03	POWERGRID	10-Jan-24	19:53	Relay maloperation	NA	NA	NO	NO	Details not received
8	800 KV HVDC Kurukshetra(PG) Pole-1	POWERGRID	10-Jan-24	19:53	Relay maloperation	NA	NA	NO	NO	Details not received
9	765 KV Balia-Gaya (PG) Ckt-1	POWERGRID	11-Jan-24	10:33	Phase to earth fault Y-N	NA	NA	NO	YES (After 24 hrs)	As per DR of Chittorgarh end, Y-B ph-ph fault is observed. Iy=12.8kA, Ib=13.3kA

10	800 KV HVDC Kurukshetra(PG) Pole-4	POWERGRID	11-Jan-24	23:30	Relay maloperation	NA	NA	NO	NO	Details not received
11	400 KV Gorakhpur(PG)-Muzaffarpur(PG) (POWERLINK) Ckt-1	POWERLINK	15-Jan-24	11:20	Phase to Phase Fault R-Y	NA	NA	NO	YES (After 24 hrs)	As per DR of Gorakhpur end, R-Y ph-ph fault is observed. Ir=6kA, Iy=6.2kA
12	765 KV Fatehpur-Sasaram (PG) Ckt-1	POWERGRID	17-Jan-24	15:09	Phase to Phase Fault Y-B	NA	NA	NO	YES (After 24 hrs)	As per DR of Fatehpur end, Y-B ph-ph fault is observed. Iy=5.2kA, Ib=5.4kA
13	765 KV Orai-Jabalpur (PG) Ckt-1	POWERGRID	20-Jan-24	12:25	Phase to earth fault Y-N	NA	NA	NO	NO	Details not received

 # Fault Clearance time has been computed using PMU Data from nearest node available and/or DR provided by respective utilities (*Annexure-* ***II)***

****Yes, if written Preliminary report furnished by constituent(s)***

R-Y-B phase sequencing (Red, Yellow, Blue) is used in the list content.All information is as per Northern Region unless specified.

^^ tripping seems to be in order as per PMU data, reported information. However, further details may be awaited.

Reporting of Violation of Regulation for various issues for above tripping

1	Fault Clearance time(>100ms for 400kV and >160ms for 220kV)	1. CEA Grid Standard-3.e 2. CEA Transmission Planning Criteria
2	DR/EL Not provided in 24hrs	1. IEGC 5.2(r) 2. CEA Grid Standard 15.3
3	FIR Not Furnished	1. IEGC 5.9.6.a 2. CEA Grid Standard 12.2 (Applicable for SLDC, ALDC only)
4	Protection System Mal/Non Operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.A 2. CEA (Technical Standards for connectivity to the Grid) Regulation, 2007: Schedule Part 1. (6.1, 6.2, 6.3)
5	A/R non operation	1. CEA Technical Standard of Electrical Plants and Electric Lines: 43.4.C 2. CEA Technical Planning Criteria

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel: 011 26519406, 26523869, Fax: 011 26852747

Ref: NRLDC/SO/TS-3B/65-69 **Date : 25 January,2024**

To,

1. Chief Engineer/ZCE (T&C), Jaipur, Vidyut Bhawan, Janpath, Jaipur- 302005	**2. Station Director, Rajasthan Atomic Power Station (B& C), Anu Shakti via Kota, Anu Shakti, Rajasthan-323303**

Subject: Actions required based on analysis of Grid event dated 05.01.2024.

Sir,

A major grid disturbance on 5th January 2024 during early morning hours, involving multiple element tripping and load-generation loss (1800MW generation loss & 400MW load loss) was reported in NR grid involving RVPN, RVUN and NPCIL. Subsequently to analyse the event in detail an online meeting was convened by NRLDC on 10.01.2024 with participation from RVPN, RVUN, NPCIL and Rajasthan SLDC. Based on the analysis done at NRLDC end, a report has been prepared which is available at following link: https://drive.google.com/file/d/1NO2mzCd8S9LApFUO8PmIvQ1lhAl4jRR0/view?usp=sharing

Further, as per the analysis, following actions have been suggested to RVPN and NPCIL:

Actions required from RVPN/ RVUN/ Rajasthan SLDC side:

- STU to carry out required Operation &Maintenance measures to control frequent tripping of lines. The lines with old string to be closely monitored and any tripping to be immediately reported to SLDC. To minimise the occurrence of fault due to damage of insulators, porcelain insulators in 220kV lines may be replaced with polymer insulators.
- Measures to be taken to avoid issues at KTPS switchyard side in 220kV Kota(PG)-KTPS D/C line (frequent damage to jumper has been reported due to which lines are kept open)
- Necessary actions to be taken for RTU healthiness at site to ensure healthiness of SCADA data. To ensure the healthiness of SCADA data, as a long term measure, STU to explore replacement of old RTUs which are beyond repair.
- Dedicated SCADA display to be made for major load- generation pockets to ensure effective monitoring of loading of lines and subsequent instructions from SLDC to DISCOMs and generating stations.

- SLDC Rajasthan to deploy additional manpower for close monitoring of such pockets and list out actions for immediate intervention in emergency situations.
- SPS may be implemented in RAPS, Debari, Chittorgarh to avoid overloading of line and further possibility of cascade tripping. SLDC-Rajasthan/ STU to study the same and propose in OCC meeting.

Actions required from RAPP (NPCIL) side:

- RAPS-C to immediately explore the possibility to have complete auxiliary supply from 400 kV level. RAPS-C to review for necessary changes required in auxiliary supply switchover mechanism to avoid such grid incident in future. Possibility of connecting 220kV and 400kV part of RAPS-C via ICTs may be explored.
- Review the availability of SUTs at 400 KV RAPS-C & D station. As Unit-7&8 at RAPS-D (1400MW) is to be commissioned in near future, availability of SUTs at 400kV side is necessary to ensure the reliability of auxiliary supply.
- The tripping of SUTs of RAPS-C on high frequency to be reviewed so that disturbance in 220 KV system does not affect unit operation at 400 KV system.
- An alarm system to flag any deficiency in wiring and control system to be implemented. It will be helpful in early detection of discrepancy in system and further in decision making during real time scenario so as to avoid situation as observed on 5th Jan 2024 which led to delayed synchronization of units to the grid

It is requested to take appropriate measures to avoid disturbance due to the reasons reported on 5th Jan 2024. Your cooperation shall be highly appreciated for maintaining safe and reliable grid operation.

Yours Faithfully

Alok Kumar
Sr. General Manager (System Operations)
NRLDC, New Delhi

Copy for kind information :

1. Director (Technical), Rajasthan Rajya Vidyut Prasaran Nigam Limited, Vidyut Bhawan, Jyotinagar, Vidyut Marg, Jaipur-302 005
2. Director(Technical), Rajasthan Rajya Vidyut Utpadan Nigam, Vidyut Bhawan, Jyotinagar, Vidyut Marg, Jaipur-302 005
3. Chief Engineer (LD), Rajasthan Rajya Vidyut Prasaran Nigam Limited, Ajmer Road, Heerapura,Jaipur-302024
4. Member Secretary, Northern Regional Power Committee, 18-A Qutub Institutional Area, SJSS Marg, New Delhi-110016
5. Director (System Operations), Grid-India, B-9 Qutub Institutional Area, SJSS Marg, New Delhi-110016
6. Executive Director, NRLDC, 18-A Qutub Institutional Area, SJSS Marg, New Delhi-110016
7. Executive Director, NLDC, B-9 Qutub Institutional Area, SJSS Marg, New Delhi-110016
8. Chief General Manager (System Operations), NRLDC, 18-A Qutub Institutional Area, SJSS Marg, New Delhi-110016

ग्रिड-इंडिया GRID-INDIA
ग्रिड कंट्रोलर ऑफ इंडिया लिमिटेड
भारत सरकार का उद्यम
GRID CONTROLLER OF INDIA LIMITED
(A Government of India Enterprise)
[formerly Power System Operation Corporation Limited (POSOCO)]
उत्तर क्षेत्रीय भार प्रेषण केन्द्र / Northern Regional Load Despatch Centre
कार्यालय : 18-ए, शहीद जीत सिंह सनसनवाल मार्ग, कटवारिया सराय, नई दिल्ली-110016
Office : 18-A, Shaheed Jeet Singh Sansanwal Marg, Katwaria Sarai, New Delhi-110016
CIN : U40105DL2009GOI188682, Website : www.nrldc.in, E-mail : nrldc@grid-india.in, Tel.: 011 26519406, 26523869, Fax: 011 26852747

संदर्भ संख्या/ उ°क्षे°भा°प्रे°के /TS-24/ 624-627 दिनांक: 15 दिसम्बर 2023

सेवा में,
Chairman & Managing Director,
Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Vidyut Bhawan, Janpath,
Jaipur, Rajasthan, PIN- 302005

विषय: Expeditious actions to ensure the reliability and security of Rajasthan regional grid.

References:
1. NRLDC Letter (Ref no. NRLDC/SO-II/TS-24/42-45/ dated 13.01.2023)
2. NRLDC Letter (Ref no. NRLDC/SO-II/TS-24/11-17/ dated 04.01.2023)
3. NRLDC Letter (Ref no. NRLDC/SO-II/TS-24/1348/ dated 23.11.2022)
4. NRLDC Letter (Ref no. उ°क्षे°भा°प्रे°के/151/328/11 नवंबर, 2022)
5. NRLDC Letter (Ref no. NRLDC/SO-II/TS-24/603/dated 20.06.2022)

महोदय/महोदया,

This is in reference to the recent tripping incident on 13th December'2023, wherein both 400/220KV ICTs in 400/220KV Hindaun S/s tripped in cascade, resulting in load loss to the tune of 450-500MW in the area. This incident in Hindaun S/S is a repeat of similar tripping/load-loss incident in November'2023 and seventh (7th) such incident over the last one year, each time resulting in load loss of ~550MW & consequent black-outs. Details of these grid incidents in 400/220kV Hindaun S/s are given in **Annexure-I.** It is apprehended that with the increasing winter season demand, such incidents shall recur regularly unless urgent remedial measures are taken. As you may be aware partly the malice lies, inter alia in ICTs N-1 non-compliance and also sustained low voltages operations due to inadequate Reactive energy compensation in the pocket, which is impacting reliability of the Rajasthan grid.

N-1 violation at 400/220kV Hindaun and the inadequate Reactive energy compensation in that pocket has been brought out regularly by NRLDC through individual communications as well as in multiple OCC meetings. Whatever long term corrective actions that have been planned by Rajasthan to address the above systemic weakness are yet to take shape on the ground, while the unwarranted and repeated grid incidents in that pocket has become a major area of concern. As an interim protective measure, a suitable special protection scheme (SPS) for the pocket was suggested for immediate implementation; however same is also yet to be implemented.

Considering the upcoming winter season high demand scenario in Rajasthan system, I request your kind attention to the issue and seek your intervention in quickly implementing the designed SPS and to expedite the capacitor banks installation/commissioning to augment the reactive energy capability and consequent voltage profile improvement in Hindaun load area. With the above immediate measures, it is expected that we may tide over the winter season crisis period without any major grid disturbance in that pocket.

We look forward to your continued support and active participation in maintaining the security and resilience of the grid.

धन्यवाद।

Encl. : As stated above

भवदीय
(एन रॉय) 15/12/2023
कार्यकारी निदेशक, उ°क्षे°भा°प्रे°के

Copy for kind information:

1. Member (GO&D), CEA, Sewa Bhawan, R.K.Puram, Sector-1,New Delhi-110 066
2. Member Secretary, NRPC, 18-A, SJSS Marg, Katwaria Sarai – 110016
3. Director(SO), Grid-India, B-9 Qutub Institutional Area, Katwaria Sarai, New Delhi-110016

Annexure-I

Table-1: N-1 violation of 400/220kV ICTs

Sub-Station Name	Transformation Capacity (MVA)/ No. of ICTs	N-1 Loading limit (MW)	Loading (MW) observed during Nov23-Dec23	Remarks
400/220kV Hindaun	2*315 MVA	390	440-500MW	i. SPS at 400/220kV Hinduan need to be implemented. ii. Works for new 500MVA ICT at Hindaun to be expedited. iii. Commissioning of proposed 400/220kV Dholpur GSS needs to be prioritized.

Grid Disturbances since November, 2022:

1. **On 10th December 2023 at 13:03 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 450MW

2. **On 03rd November 2023 at 09:16 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 335MW

3. **On 17th January 2023 at 08:56 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 500MW

4. **On 05th January 2023 at 11:11 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 550MW

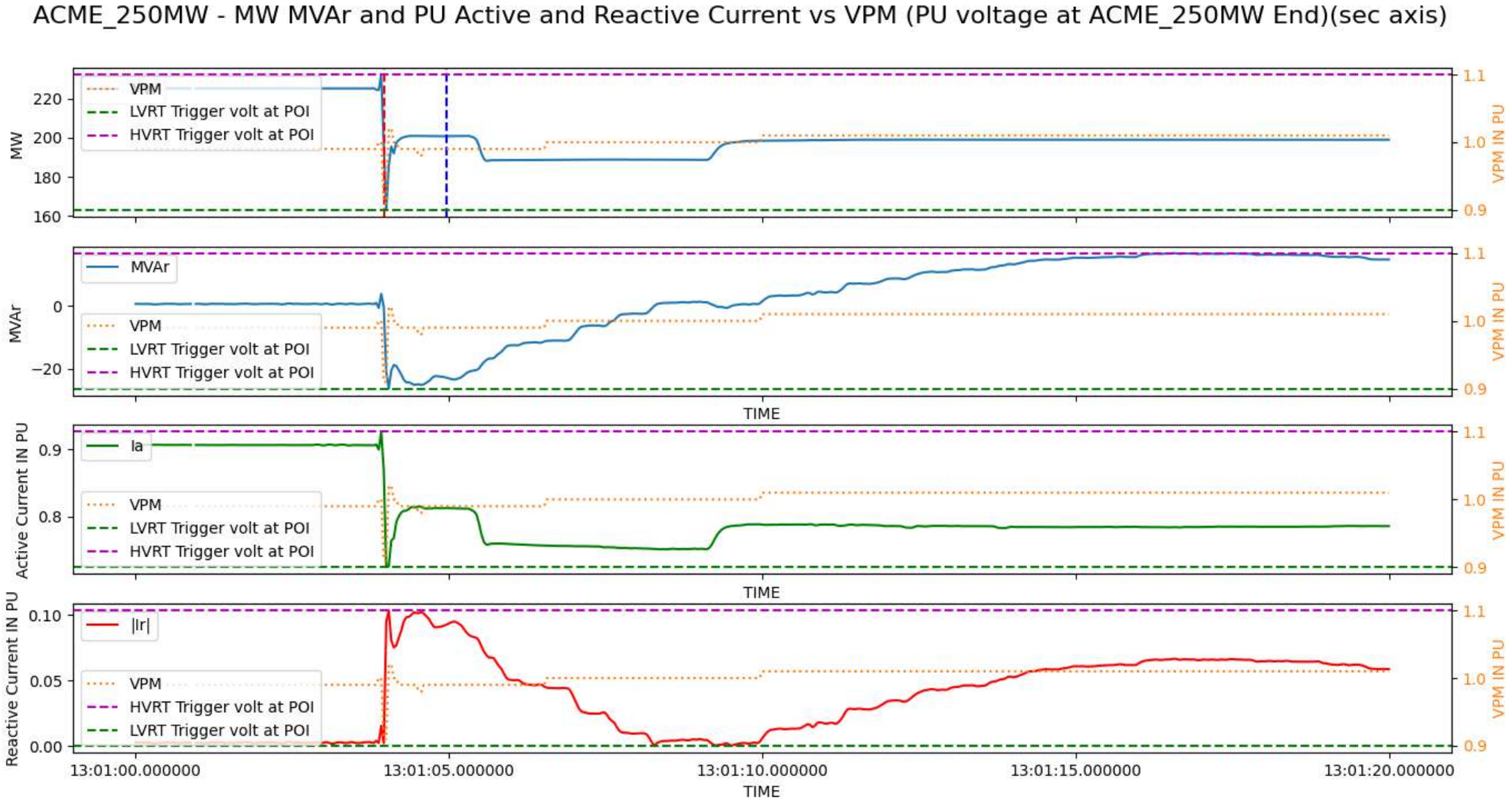
5. **On 27th December 2022 at 11:11 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 450MW

6. **On 17th November 2022 at 14:43 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 610MW

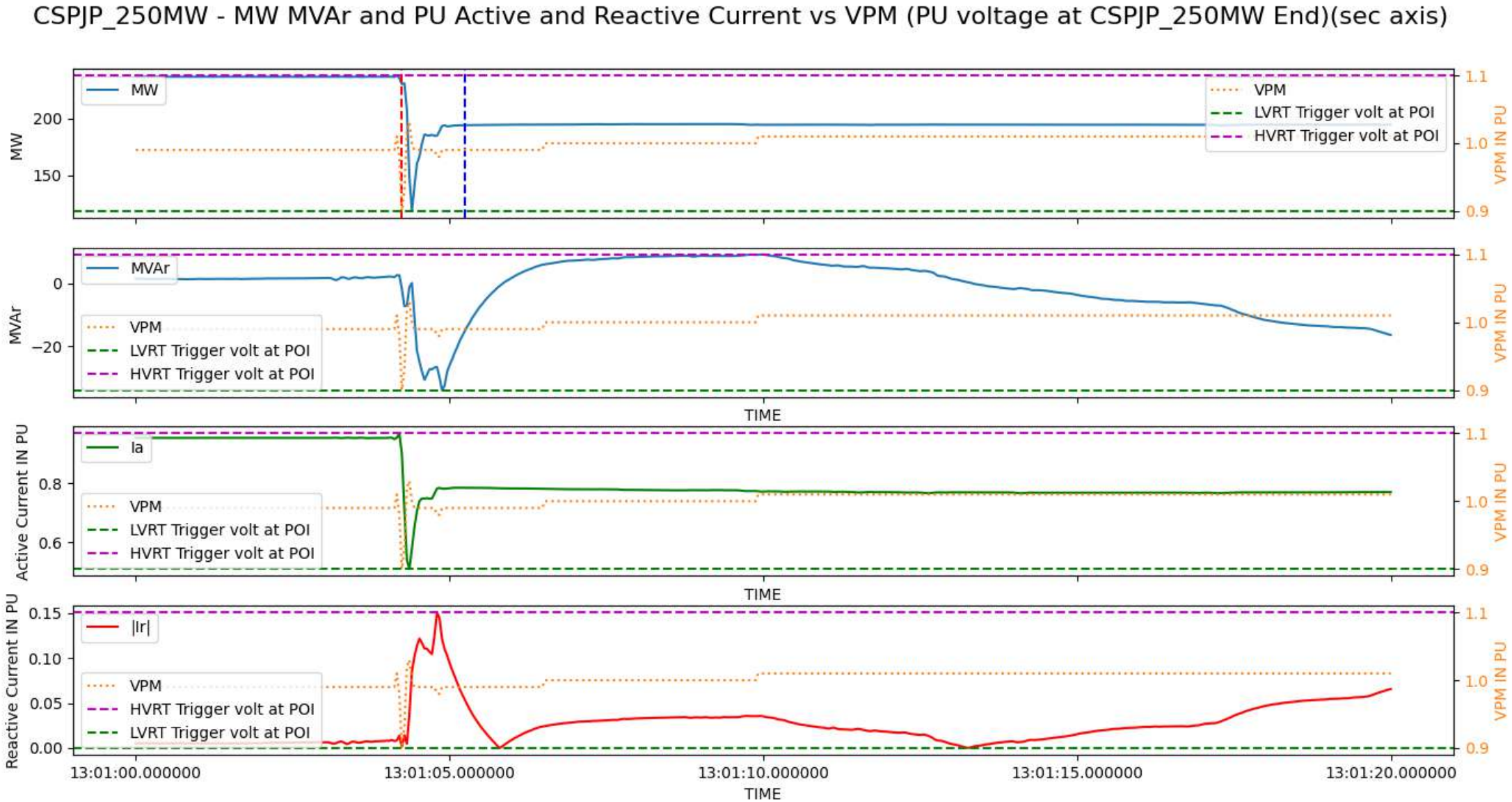
7. **On 17th November 2022 at 13:06 hrs & 14:43 hrs:**
   - 400/220kV 315MVA ICT-1&2 at Hinduan(PG) tripped due to overloading.
   - Approx. load loss in Rajasthan control area: 610MW

Non-complaint RE plants during 17th December'2023 Grid event vis-à-vis CEA Technical Standards for Connectivity to The Grid

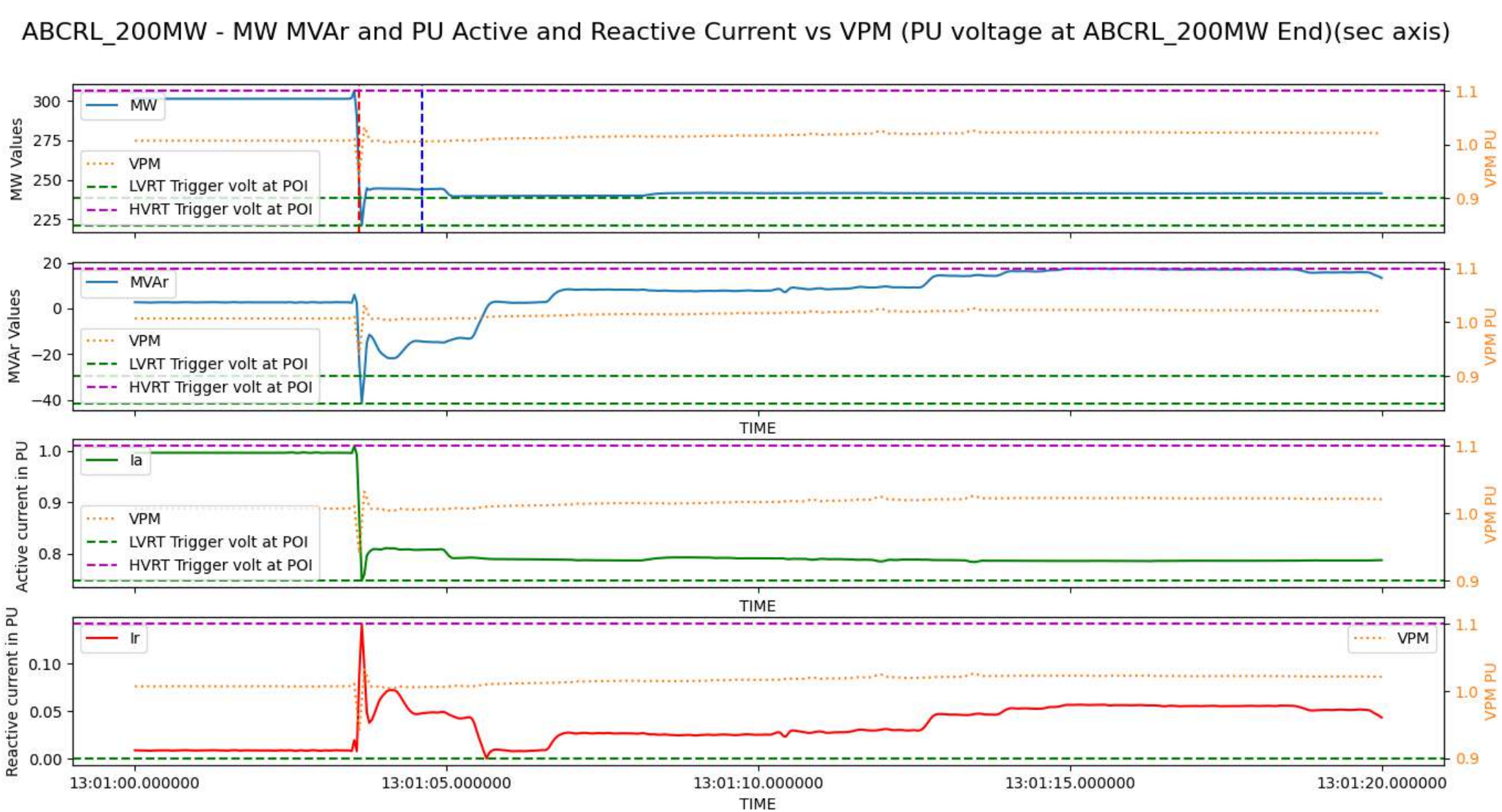
S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	Inverter/ WTG Make	PMU Code	Voltage (during fault at POI (PU) (13:01:04.360)	Highest Voltage recorded at POI (PU)	Active Power (MW)			Reactive power (MVAR			HVRT/LVRT Compliance	Reactive Power Support during fault condition (partially, fully, non-complaint)
								Before at (13:01:04.240)	After One second (13:02:04.360)	Percentage Recovered immediately after fault	Before at (13:01:04.320)	At fault Instant (13:01:04.360)	Immediately after fault clearance (13:01:04.400)		
1	Bhadla(PG)	ACME Chittorgarh Solar Energy Pvt. Ltd (ACME)	250	TBEA	ACME_IP	0.91	1.02	224	201	89%	4	0	-21	LVRT-Non compliant	opposite response
2		Clean Solar Power (Jodhpur) Pvt. Ltd.	250	SUNGROW	CSPJP_IP	0.9	1.03	237	194	82%	2	-2	-7	LVRT-Non compliant	opposite response
3	Bhadla2(PG)	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)	300	TBEA	ABCRL_IP	0.94	1.03	302	244	81%	2	-24	-41	LVRT-Non compliant	opposite response
4	Bikaner(PG)	Azure Power	600	SUNGROW	AZR43_IP	0.97	1.03	592	490	83%	-12	-28	-29	LVRT-Non compliant	opposite response
5		Renew Surya Ravi Private Limited Bikaner (RSRPL)	300	SUNGROW	RSRPL_IP	0.97	1.03	259	191	74%	10	5	12	LVRT-Non compliant	opposite response
6	Fatehgarh2(PG)	Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2)	**300**	SUNGROW	AHEJ2_IP	0.92	1.04	246	90	36%	1	0	0	LVRT-Non compliant	opposite response
7		Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2): Wind	**75**	Suzlon WTG											
8		Adani Solar Energy Jaisalmer one Limited: Solar	**209**	SUNGROW	ASJ1S_IP (ckt I)	0.919	1.068	219	141	65%	4	-6	-11	LVRT-Non compliant	opposite response
9			**212.5**	KEHUA	ASJ1S_IP (ckt II)	0.921	1.069	218	140	64%	9	-1	-8	LVRT-Non compliant	opposite response
10		ReNew Solar Urja Private Limited(RSUPL)	**300**	SUNGROW/ TBEA	RSUPL_IP	0.912	1.049	296	31	10%	7	-2	-5	LVRT-Non compliant	opposite response
11		ReNew Sun Waves Private Limited, Fatehgarh-II (RNEWJ)	**300**	SUNGROW	RNEWJ_IP	0.911	1.048	298	31	10%	7	-18	-23	LVRT-Non compliant	opposite response



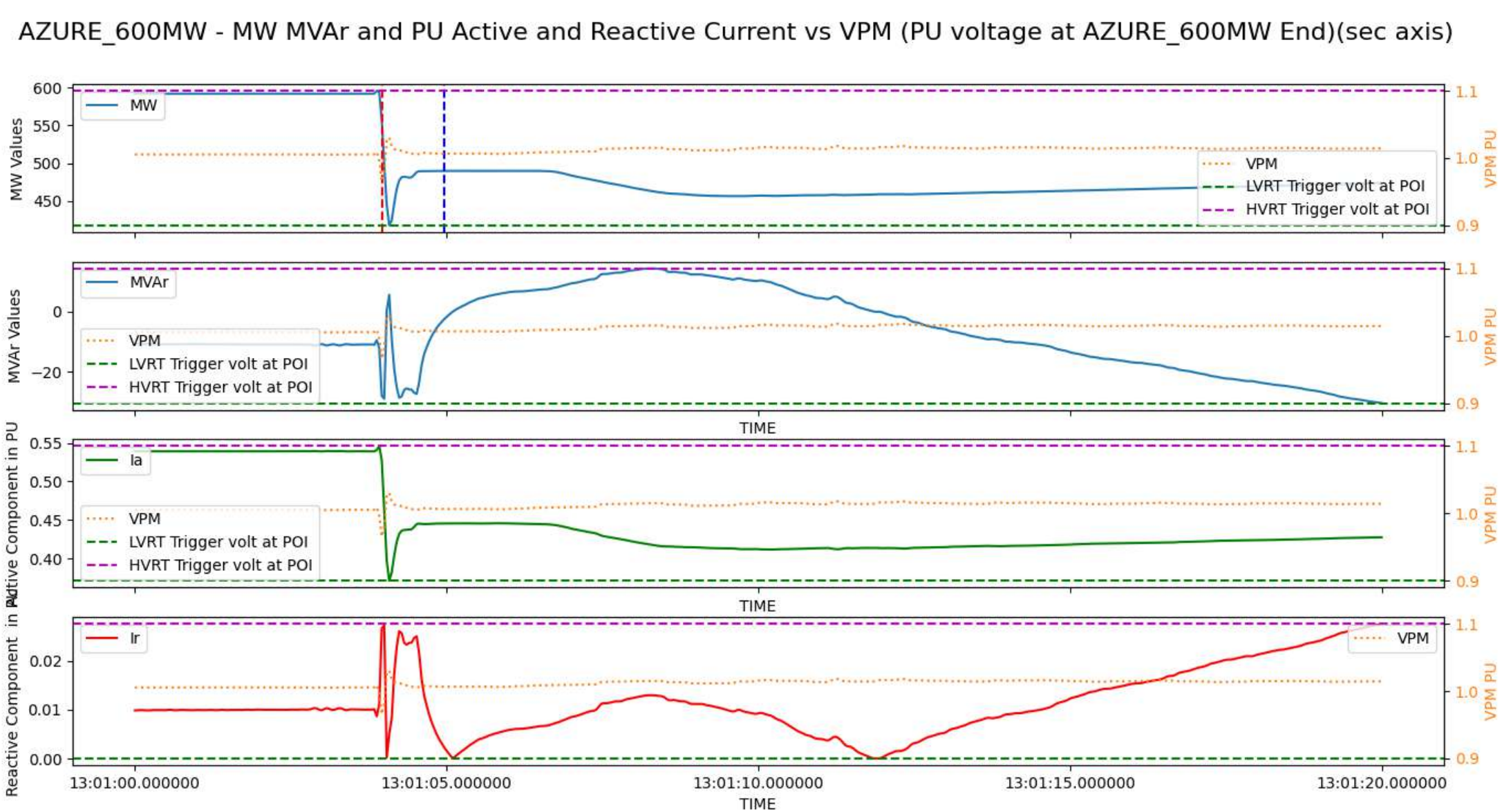
Bhadla Station



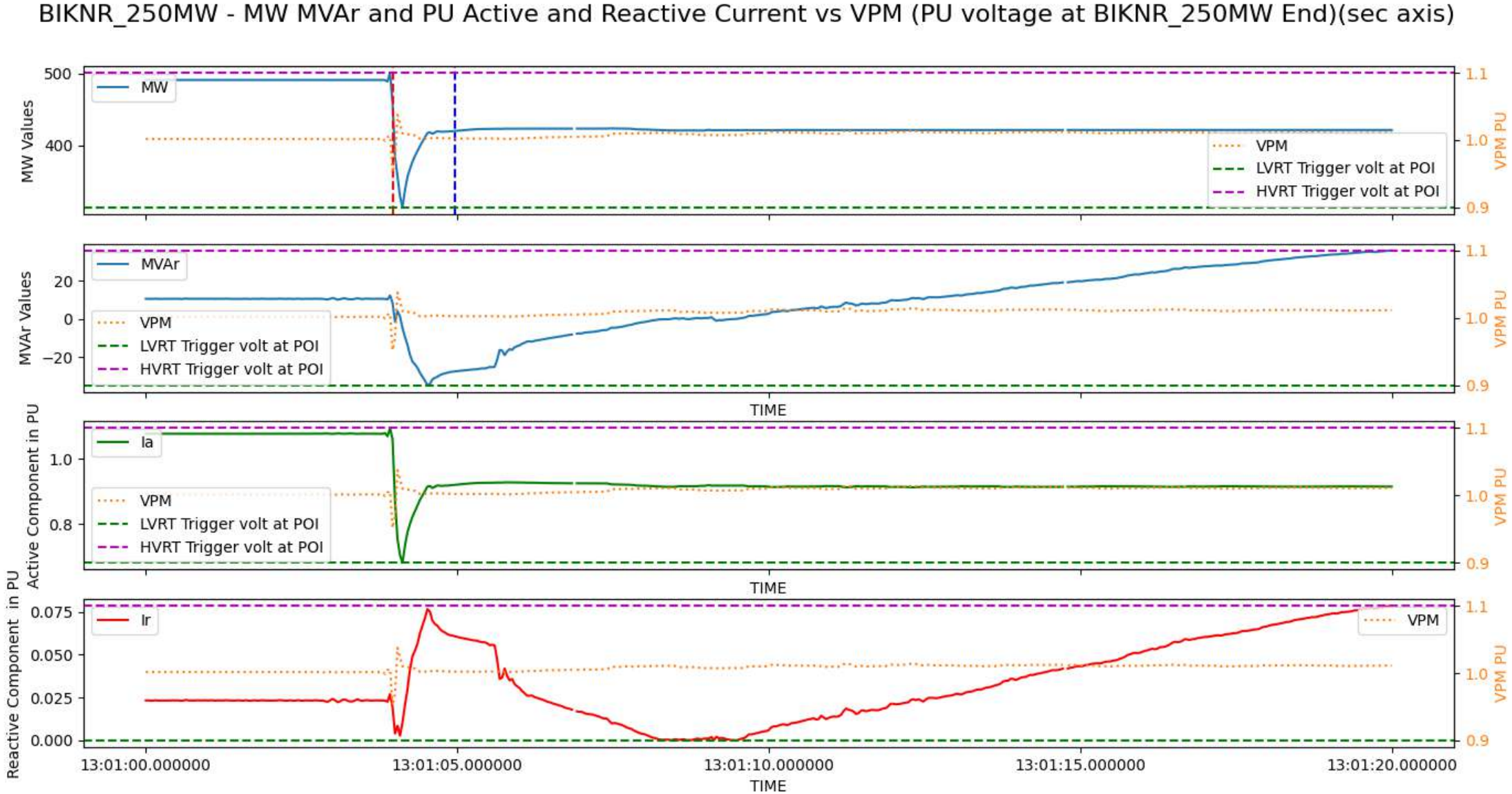
Bhadla Station



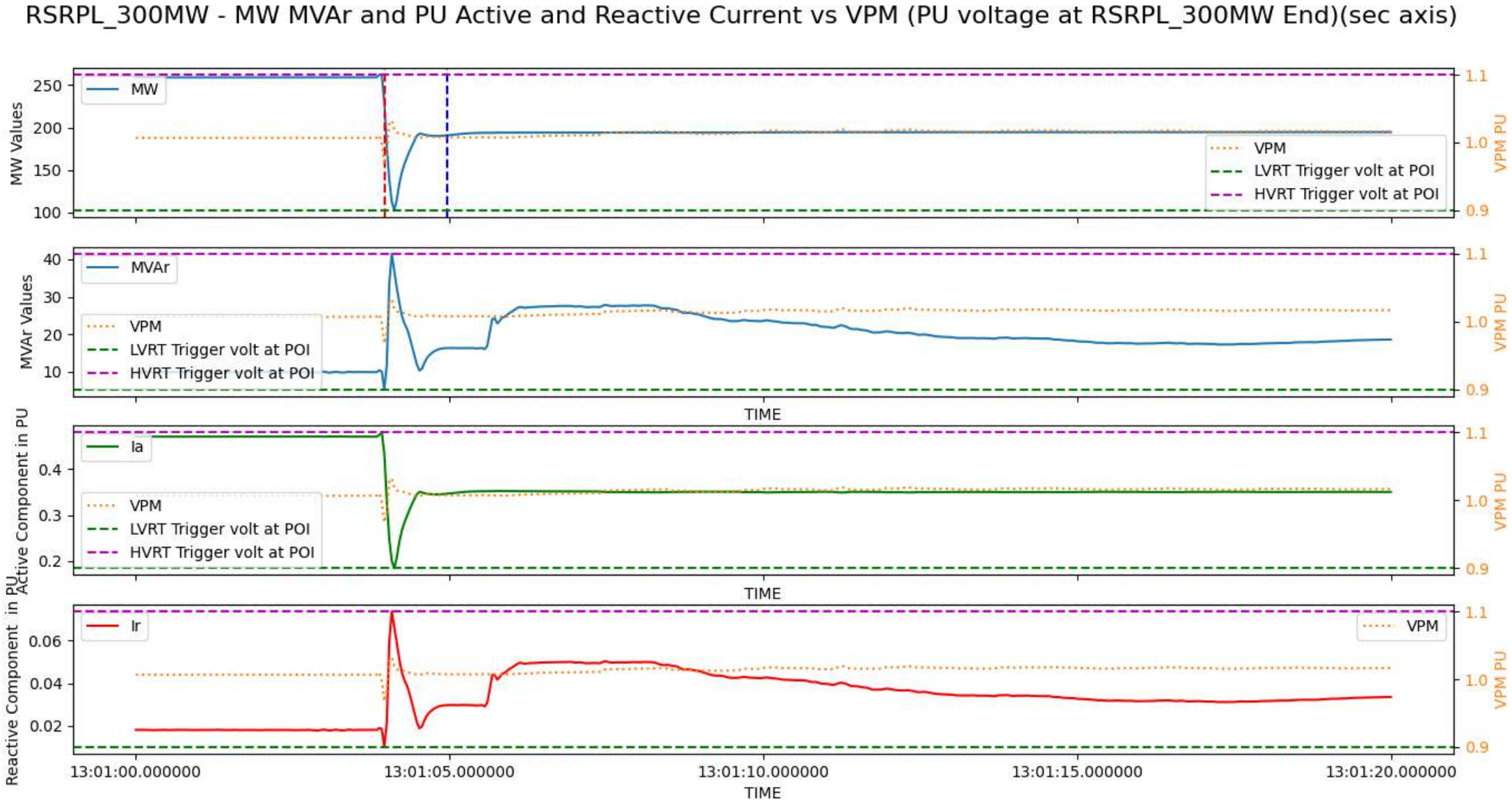
Bhadla II Station



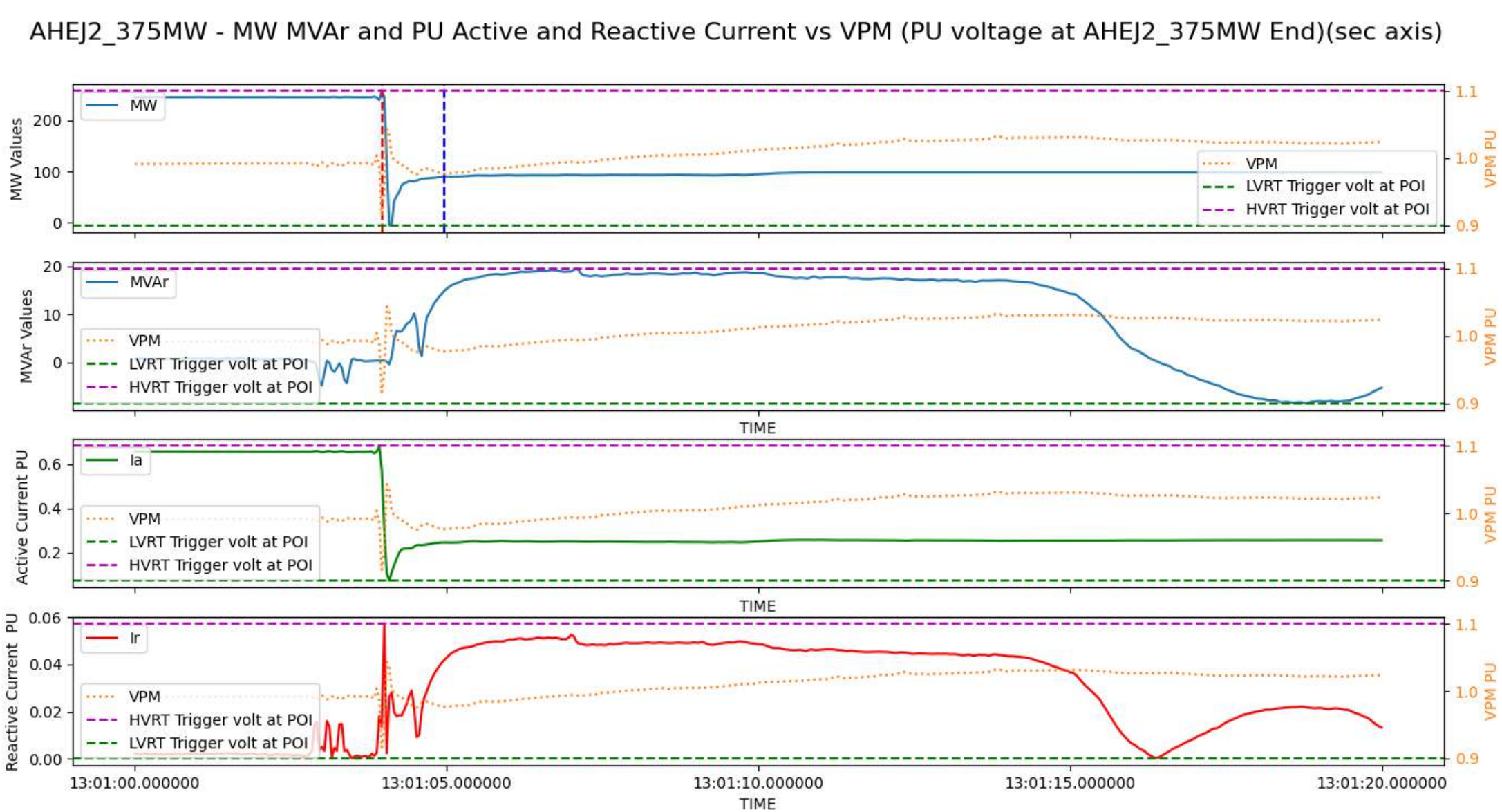
Bikaner Station



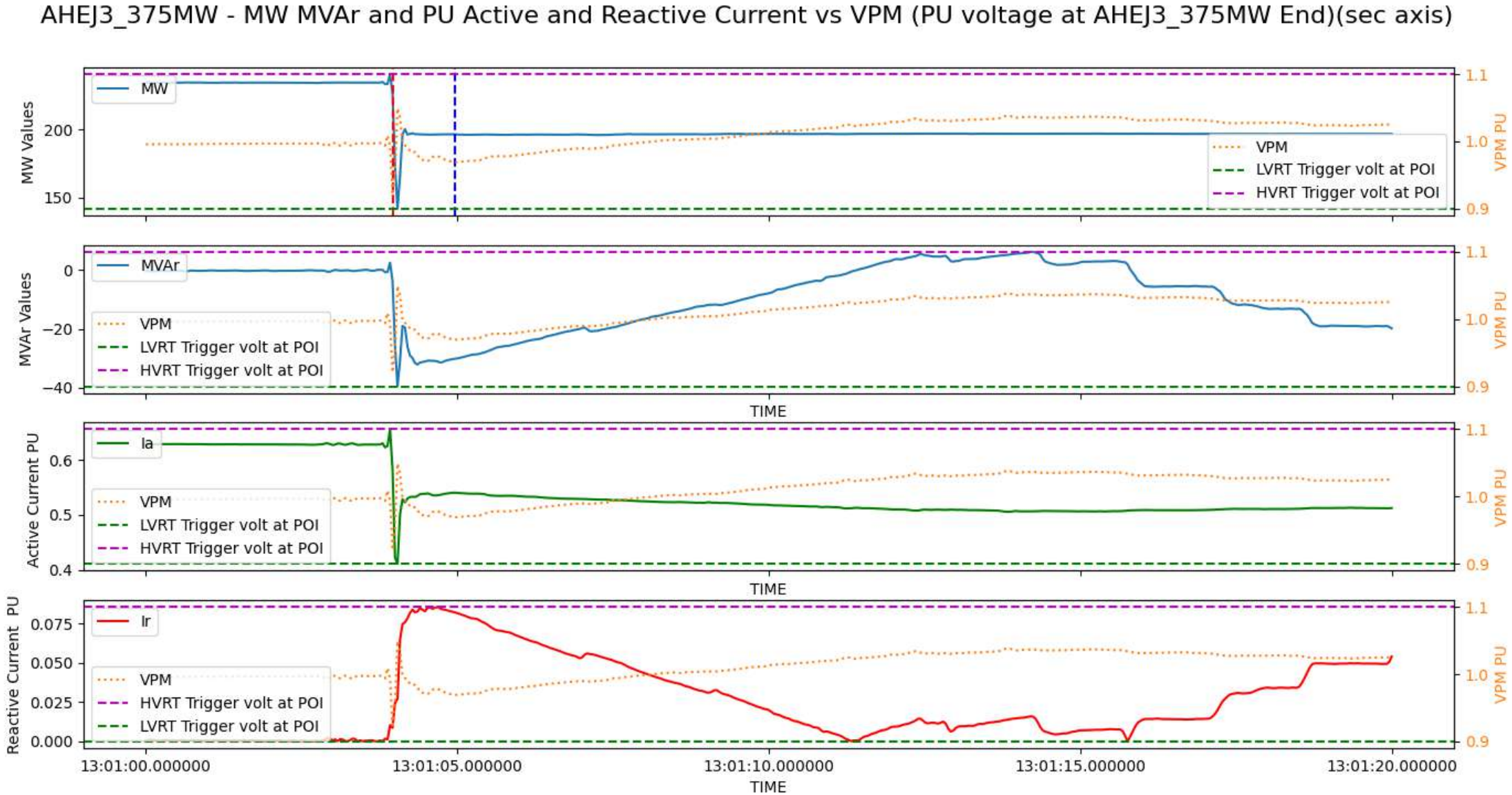
Bikaner Station



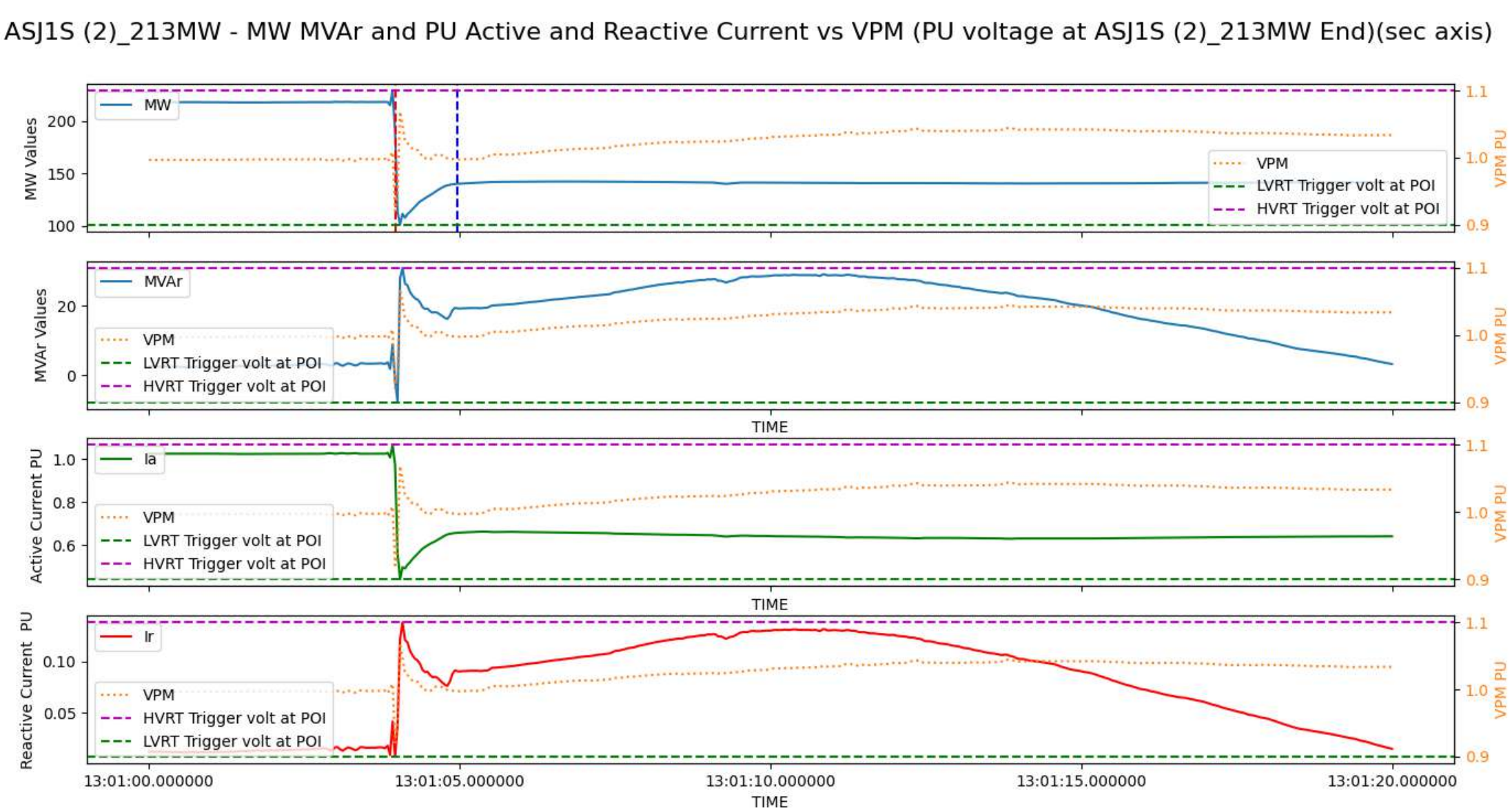
Bikaner Station



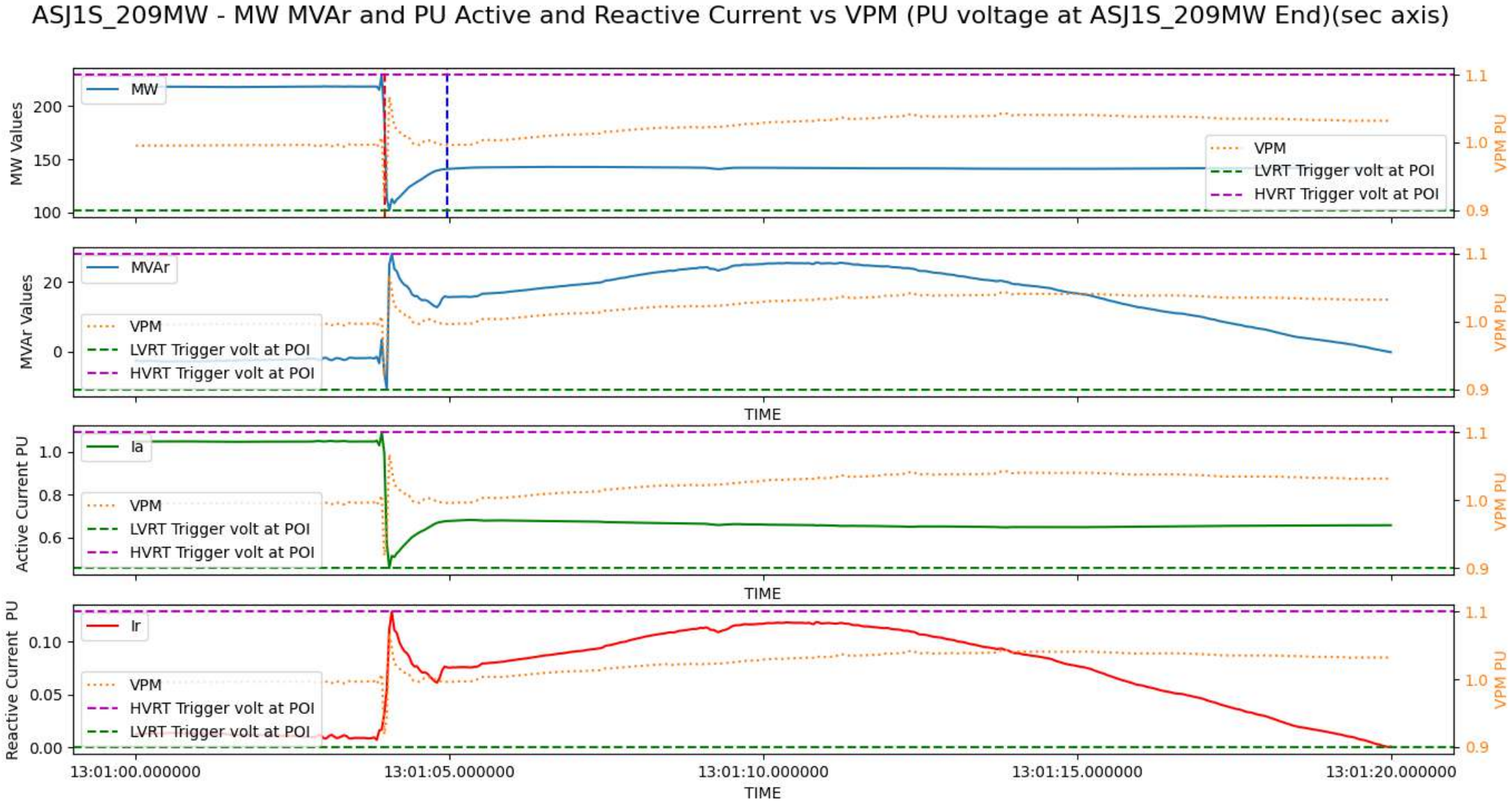
Fatehgarh II Station



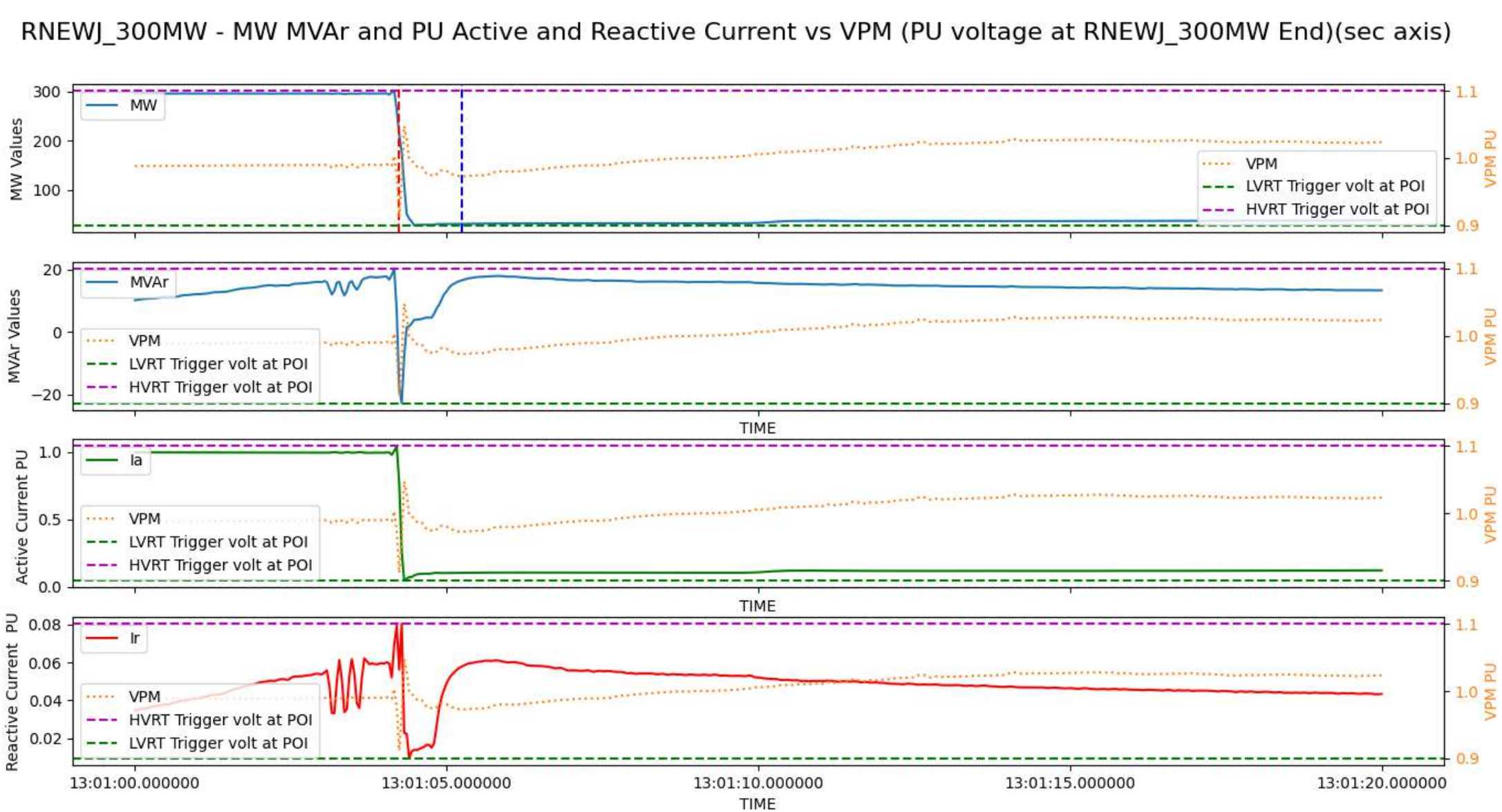
Fatehgarh II Station



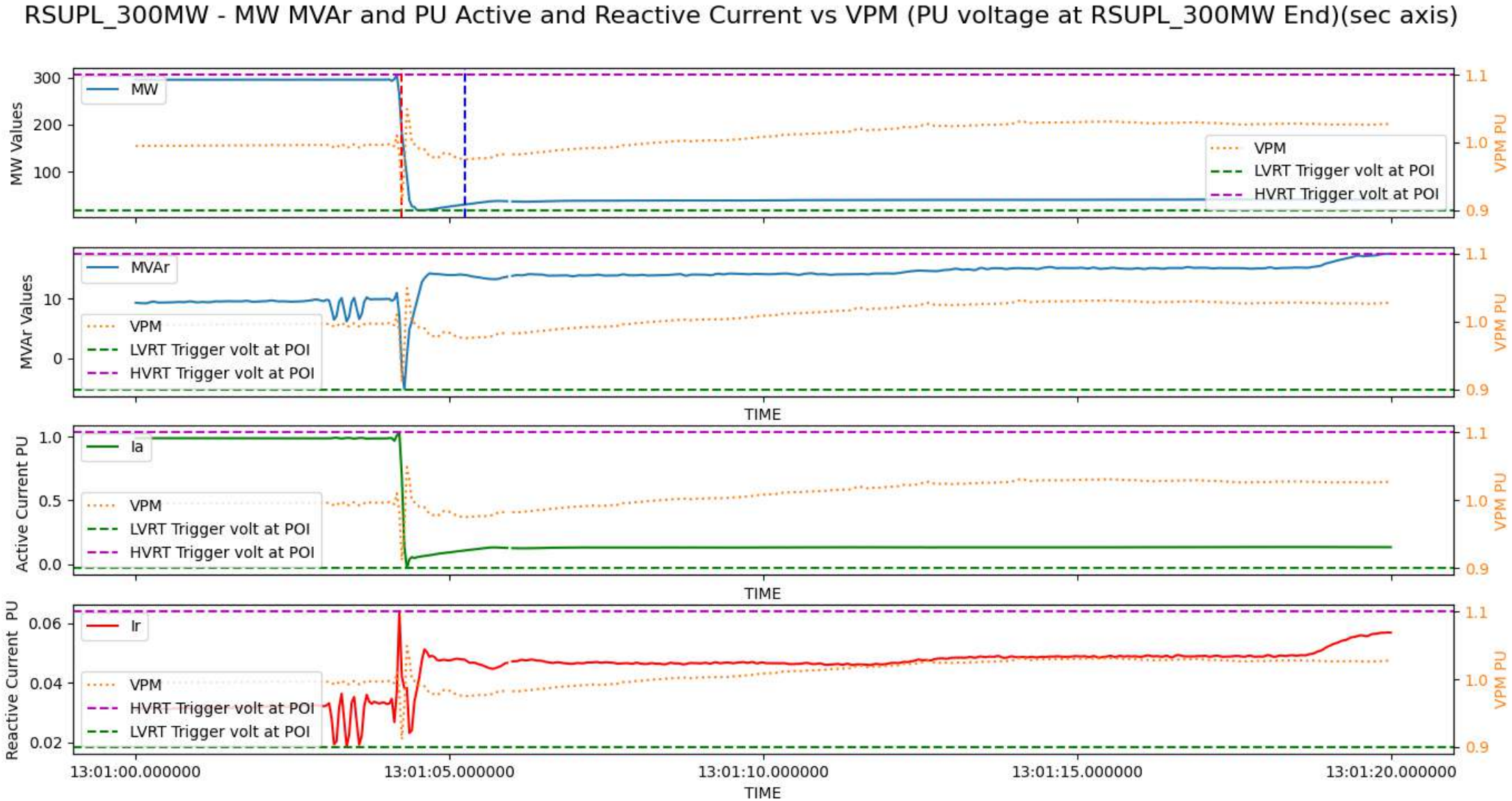
Fatehgarh II Station



Fatehgarh II Station



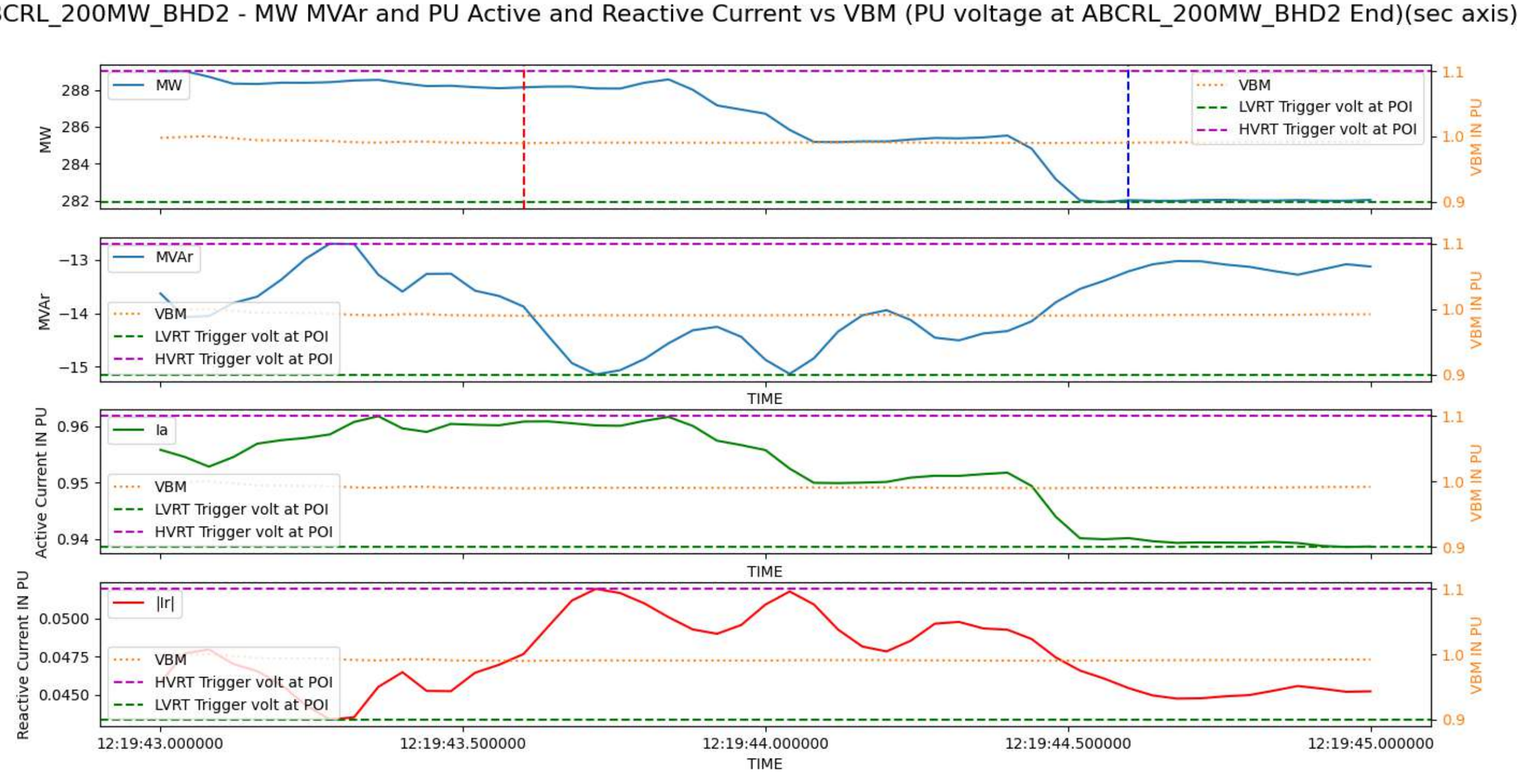
Fatehgarh II Station



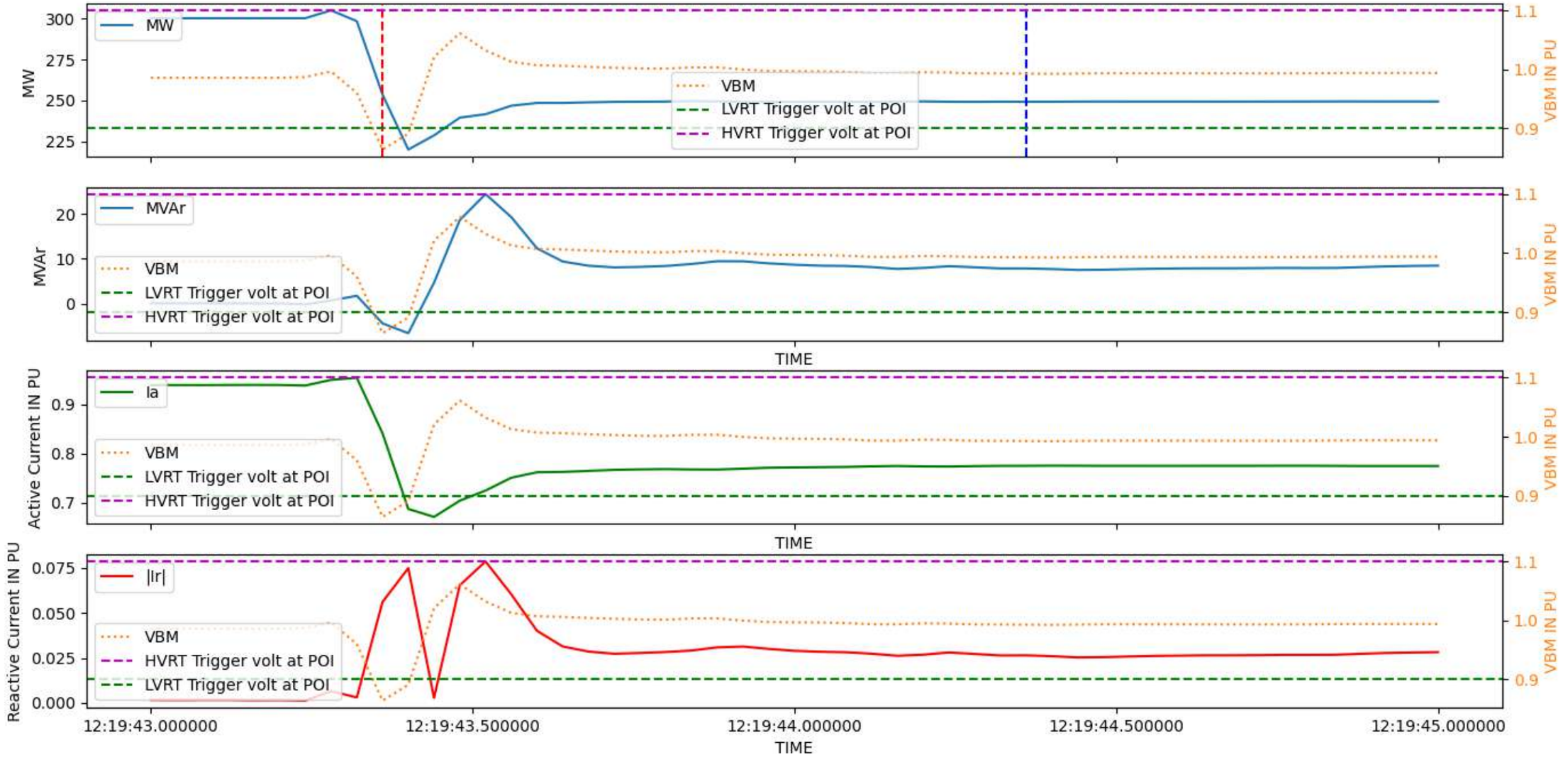
Fatehgarh II Station

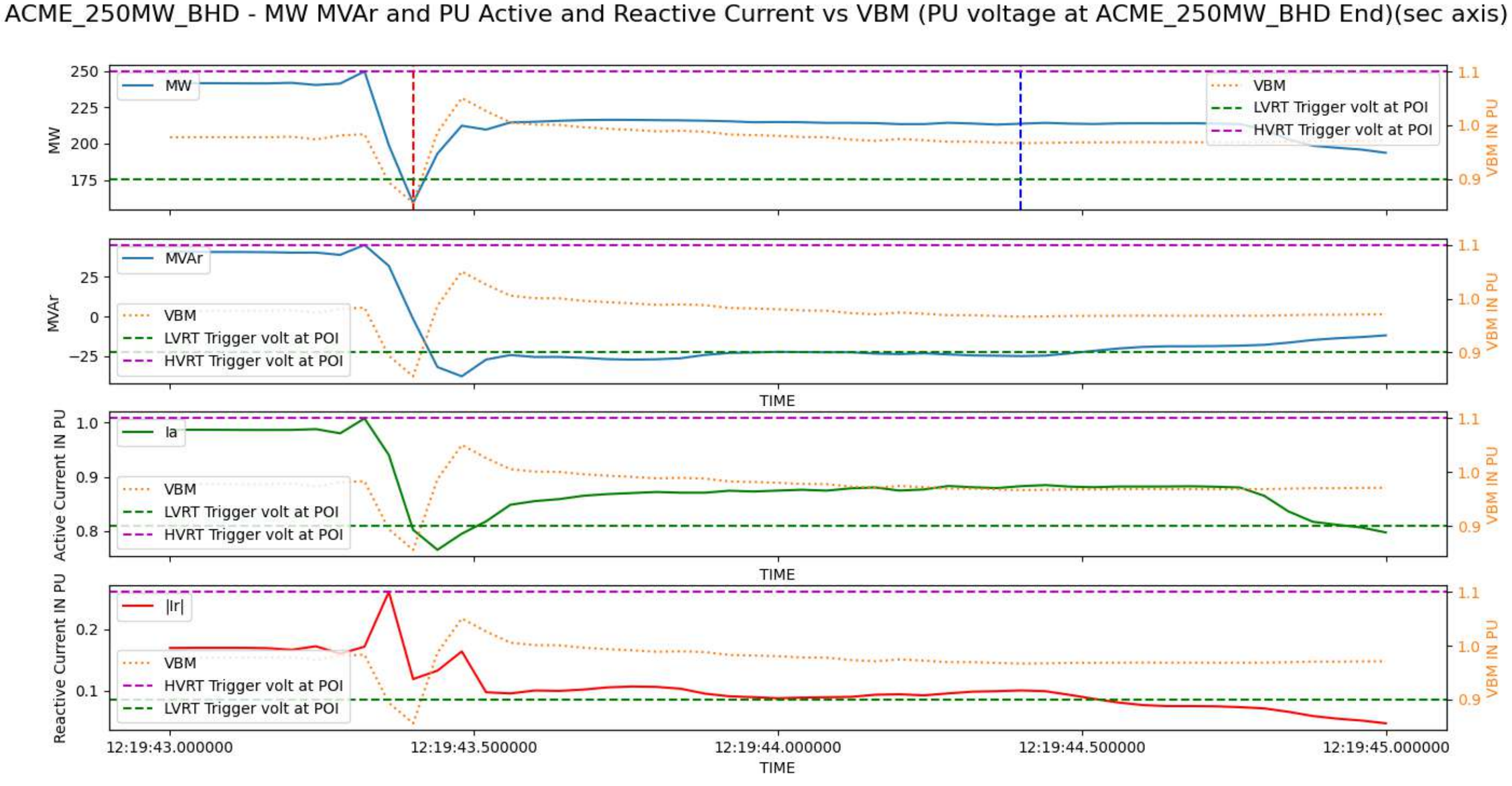
Complaince Status of RE plants vis-à-vis CEA Technical Standards for Connectivity to The Grid (12:19hrs on 10th Jan'24)

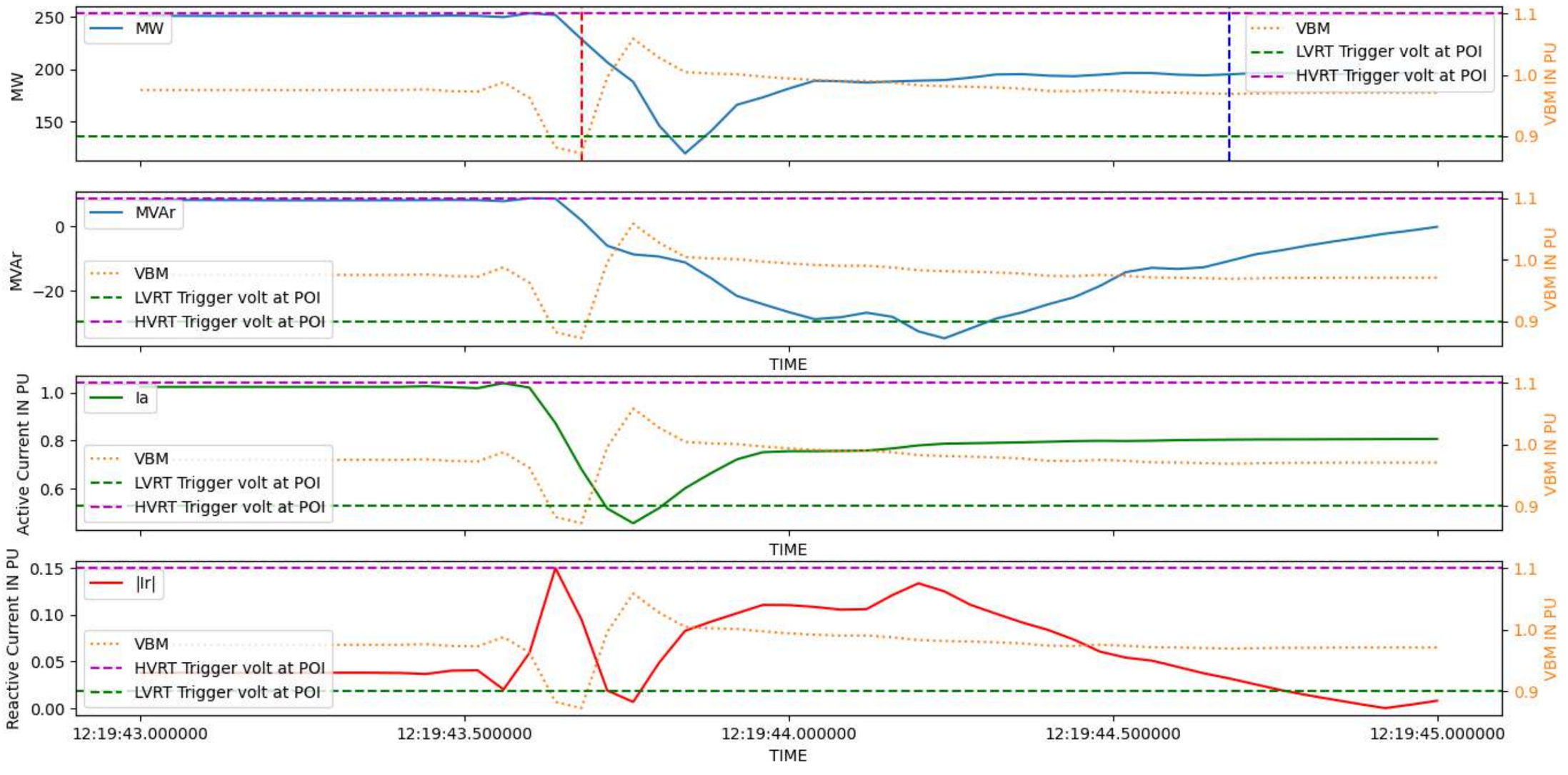
S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	Inverter/ WTG Make	PMU Code	Voltage (during fault at POI (PU) (12:19:43.360)	Highest Voltage recorded at POI (PU)	Active Power (MW)			Reactive power (MVAR			HVRT/LVRT Compliance	Reactive Power Support during fault condition (partially, fully, non-complaint)
								Before at ((12:19:43.040))	After One second(12:19:44.880)	Percentage Recovered immediately after fault	Before at ((12:19:43.400))	At fault Instant (12:19:43.360)	Immediately after fault clearance ((12:19:43.400))		
1	Bhadla 1 (PG)	ACME Chittorgarh Solar Energy Pvt. Ltd (ACME)	250	TBEA	ACME_IP	0.86	1.05	241	214	89%	32	-2	-32	LVRT-Non compliant	opposite response
2		Clean Solar Power (Jodhpur) Pvt. Ltd.	250	SUNGROW	CSPJP_IP	0.87	1.06	249.74	195	78%	9	2	-6	LVRT-Non compliant	opposite response
3	Bhadla 2 (PG)	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)	300	TBEA	ABCRL_IP	0.86	1.05	329	288	88%	-8	-47	-73	LVRT-Non compliant	opposite response
4		Avaada Sunrays Pvt. Ltd.	320		ASEPL_IP	0.86	1.06	300	249	83%	2	-4	-7	LVRT-Non compliant	opposite response
5	Bikaner (PG)	Azure Power	600	SUNGROW	AZR43_IP	0.91	1.05	594	485	82%	3	-11	-11	LVRT-Non compliant	opposite response
6		SBSR Power Cleantech Eleven Private Limited (SPCEP)	212.5	KEHUA	SPCEP_IP	0.90	1.05	283	243	86%	13	15	3	LVRT-Non compliant	Partial response
7		Renew Surya Ravi Private Limited Bikaner (RSRPL)	300	SUNGROW	RSRPL_IP	0.91	1.05	271	207	76%	8	12	34	LVRT-Non compliant	Partial response
8		Renew Solar Power Pvt Ltd, Bikaner (250MW) (BIKNP)	250	HUAWEI	BIKNR_IP	0.89	1.05	509	444	87%	8	14	23	LVRT-Non compliant	Partial response
9	Fatehgarh 2 (PG)	Renew Sun Bright Private Limited (RSBPL)	300	HUAWEI	RSBPL_IP	0.86	1.07	254	218	86%	-1	0	4	LVRT-Non compliant	no response

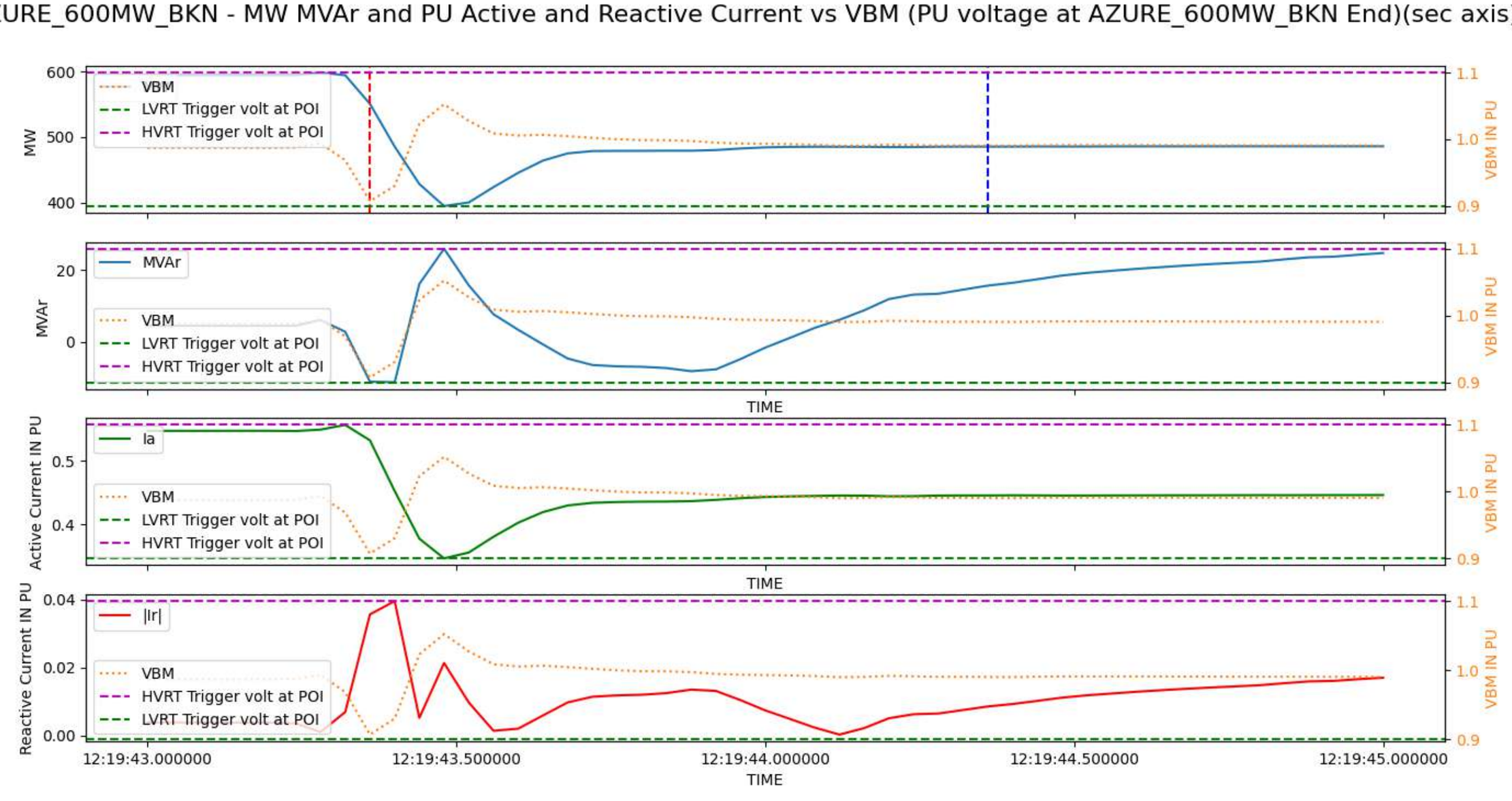

ABCRL_200MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at ABCRL_200MW_BHD2 End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VBM IN PU
TIME
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
288
286
284
282
−13
−14
−15
0.96
0.95
0.94
0.0500
0.0475
0.0450
1.1
1.0
0.9
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000

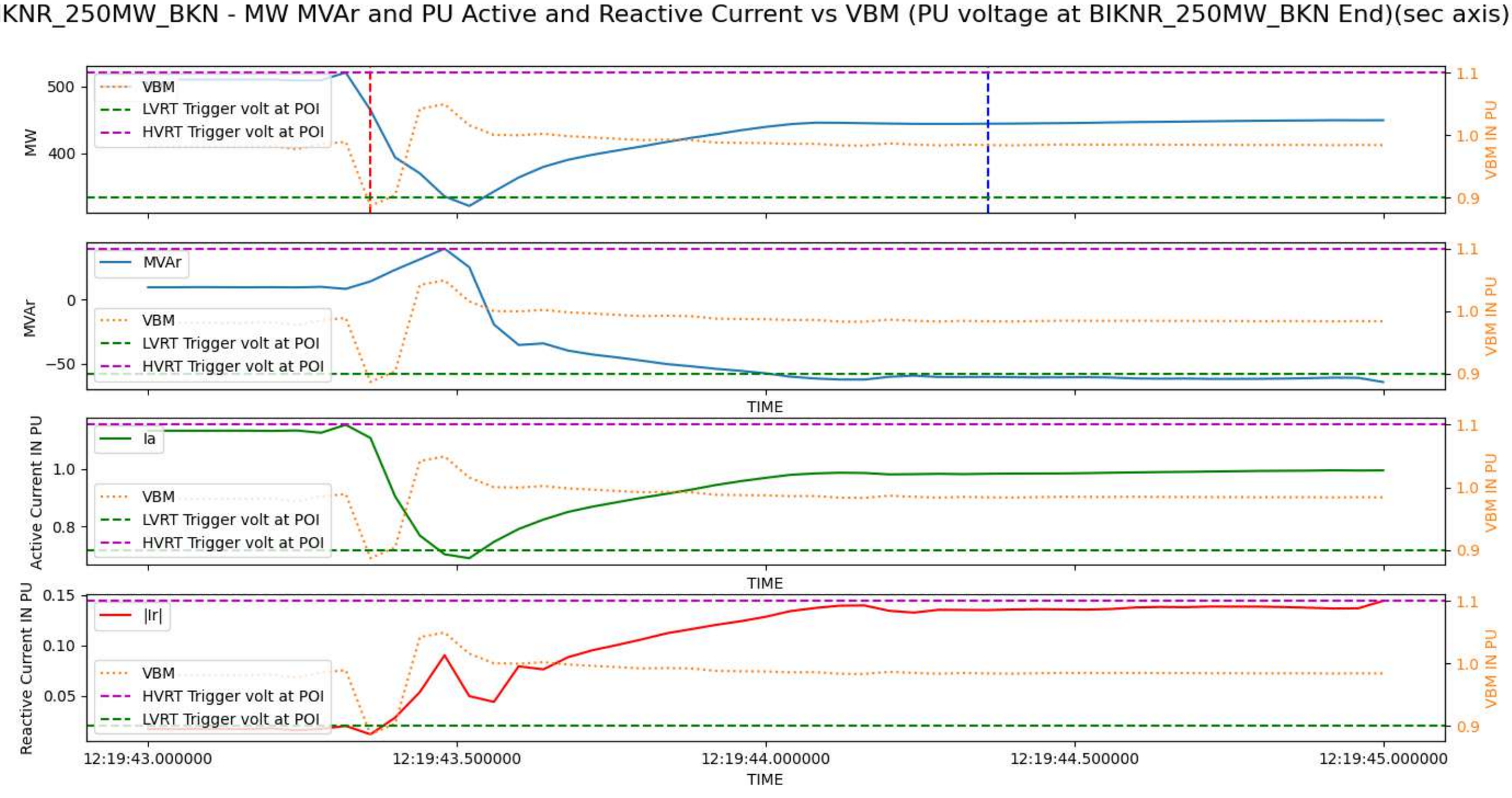
ASEPL_320MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at ASEPL_320MW_BHD2 End)(sec axis)

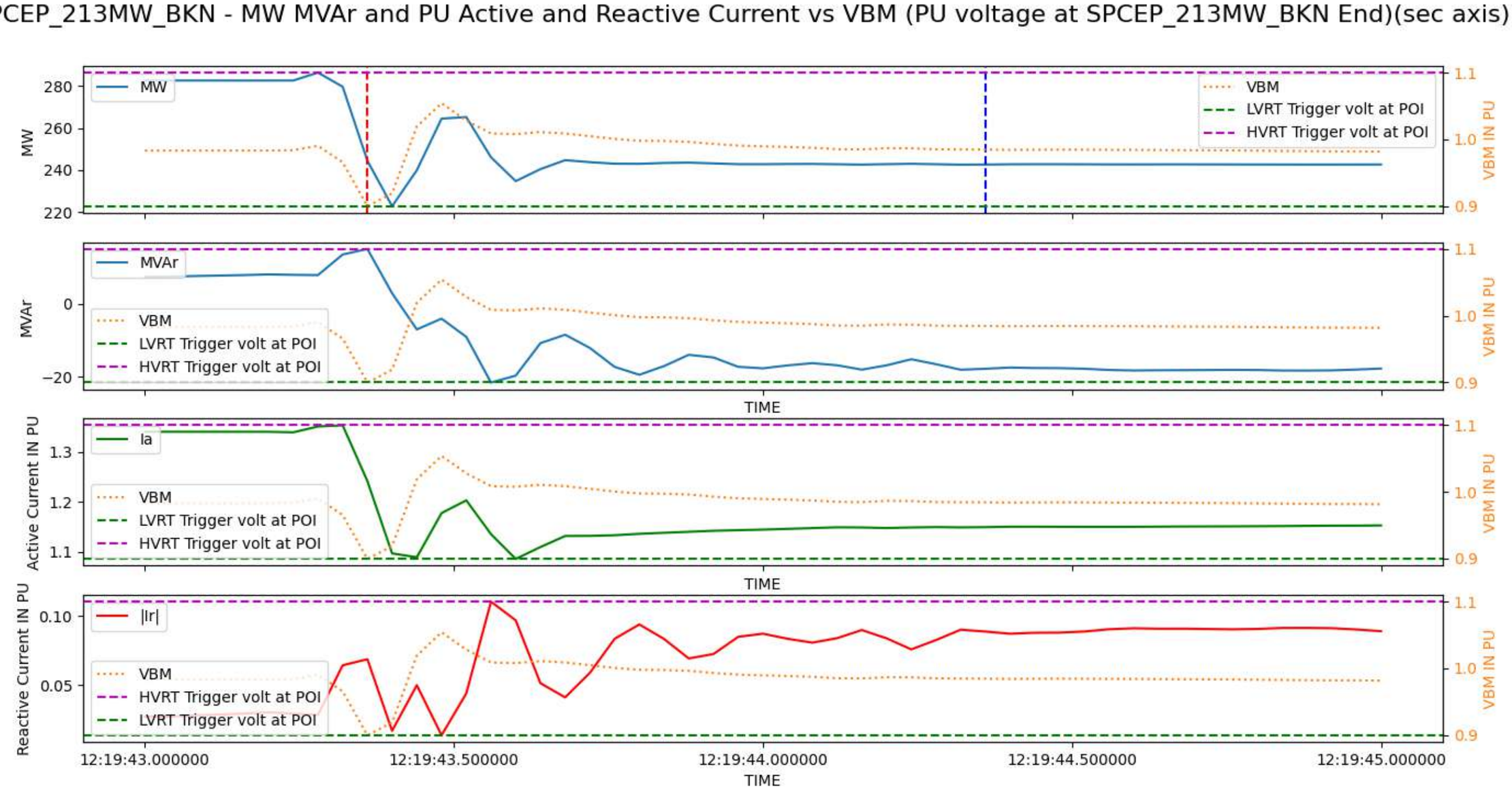


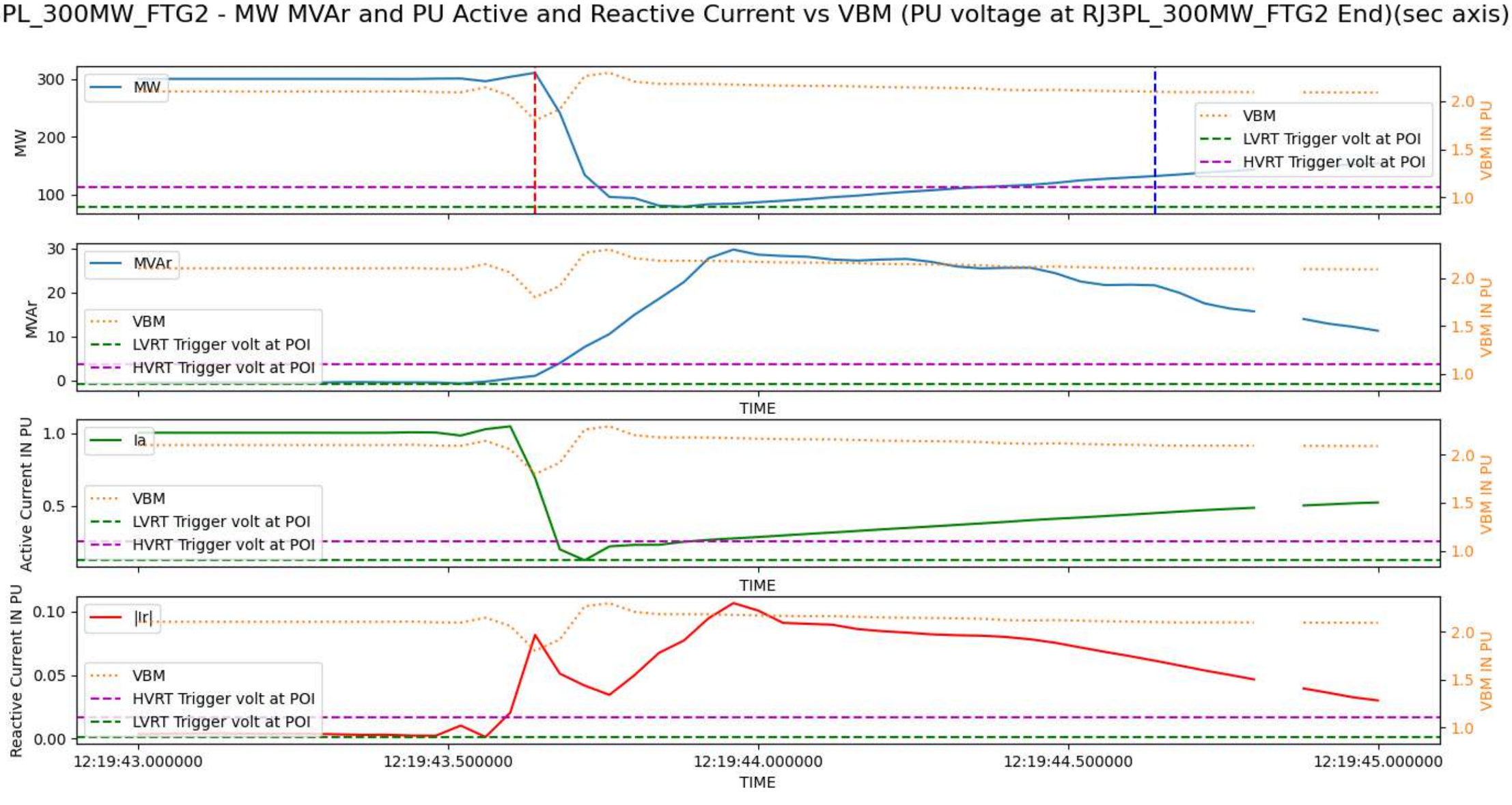

ACME_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at ACME_250MW_BHD End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VBM IN PU
TIME
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000


CSPJP_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at CSPJP_250MW_BHD End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VBM IN PU
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
TIME
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000


AZURE_600MW_BKN - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at AZURE_600MW_BKN End)(sec axis)
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
VBM IN PU
MVAr
TIME
Active Current IN PU
Ia
Reactive Current IN PU
|Ir|
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000

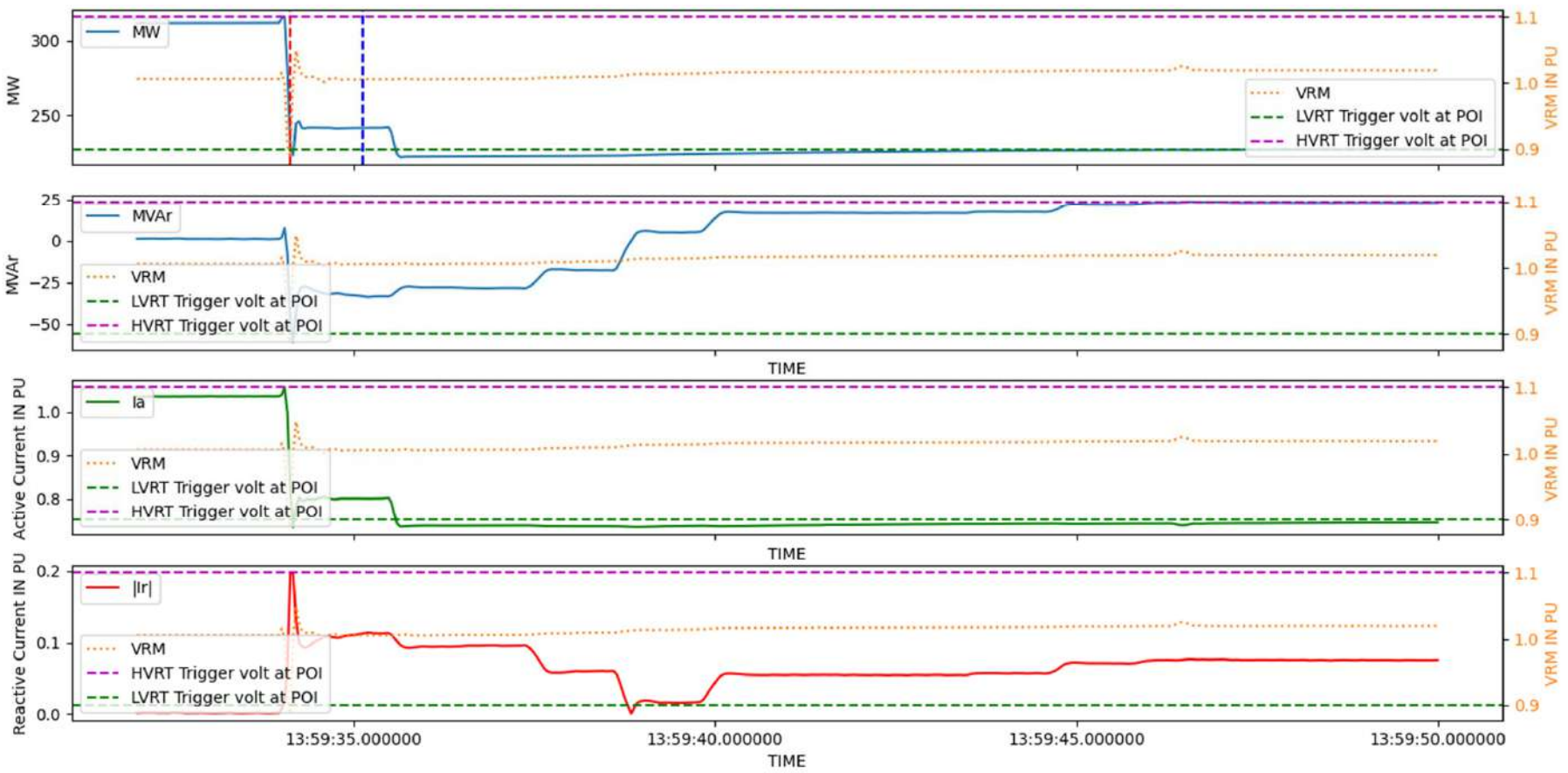

BIKNR_250MW_BKN - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at BIKNR_250MW_BKN End)(sec axis)
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
VBM IN PU
MVAr
TIME
Active Current IN PU
Reactive Current IN PU
|Ir|
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000


SPCEP_213MW_BKN - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at SPCEP_213MW_BKN End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VBM IN PU
TIME
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000

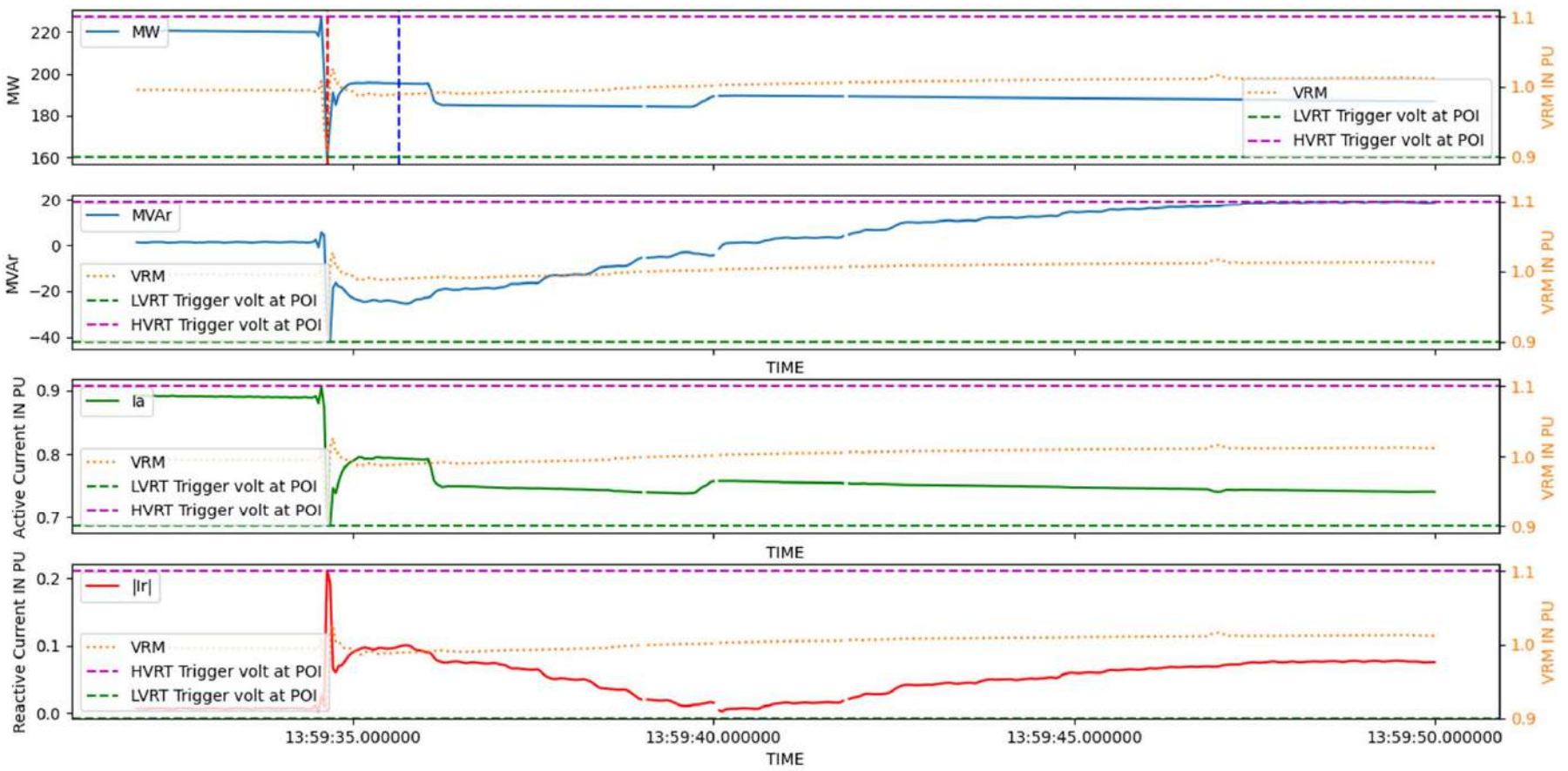

RJ3PL_300MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VBM (PU voltage at RJ3PL_300MW_FTG2 End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VBM IN PU
TIME
MW
VBM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
12:19:43.000000
12:19:43.500000
12:19:44.000000
12:19:44.500000
12:19:45.000000

Complaince Status of RE plants vis-à-vis CEA Technical Standards for Connectivity to The Grid (13:59hrs on 15th Jan'24)																
S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	Inverter/ WTG Make	PMU Code	Voltage (during fault at POI (PU) (13:59:34.640)	Highest Voltage recorded at POI (PU)	Active Power (MW)			Reactive power (MVAR			HVRT/LVRT Compliance	Reactive Power Support during fault condition (partially, fully, non-complaint)
								Before at ((13:59:34.600))	After One second(13:59:35.640)	Percentage Recovered immediately after fault	Before at ((13:59:34.600))	At fault Instant (13:59:34.640)	Immediately after fault clearance ((13:59:34.680))		
1	**Bhadla(PG)**	Clean Solar Power (Jodhpur) Pvt. Ltd.	250	SUNGROW	CSPJP_IP	0.93	1.03	248.19	154	62%	4	3	3	LVRT-Non compliant	opposite response
2	**Bhadla2(PG)**	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)	300	TBEA	ABCRL_IP	0.89	1.05	315	241	77%	-8	-48	-61	LVRT-Non compliant	opposite response
3		Avaada Sunrays Pvt. Ltd.	320		ASEPL_IP	0.91	1.06	333	235	70%	-7	-18	2	LVRT-Non compliant	opposite response
4	**Bikaner(PG)**	Azure Power	600	SUNGROW	AZR43_IP	0.94	1.06	553	437	79%	-16	-28	-36	LVRT-Non compliant	opposite response
5		Renew Surya Ravi Private Limited Bikaner (RSRPL)	300	SUNGROW	RSRPL_IP	0.94	1.05	268	202	75%	11	4	5	LVRT-Non compliant	opposite response
6		Renew Solar Power Pvt Ltd, Bikaner (250MW) (BIKNP)	250	HUAWEI	BIKNR_IP	0.90	1.05	230	232	87%	8	-5	11	LVRT-Non compliant	opposite response
7	**Fatehgarh2(PG)**	ReNew Solar Energy Jharkhand Three Pvt. Ltd (RJ3PL)	**300**	HUAWEI	RJ3PL_IP	0.88	1.07	295	87	30%	2	6	8	LVRT-Non compliant	Partial response

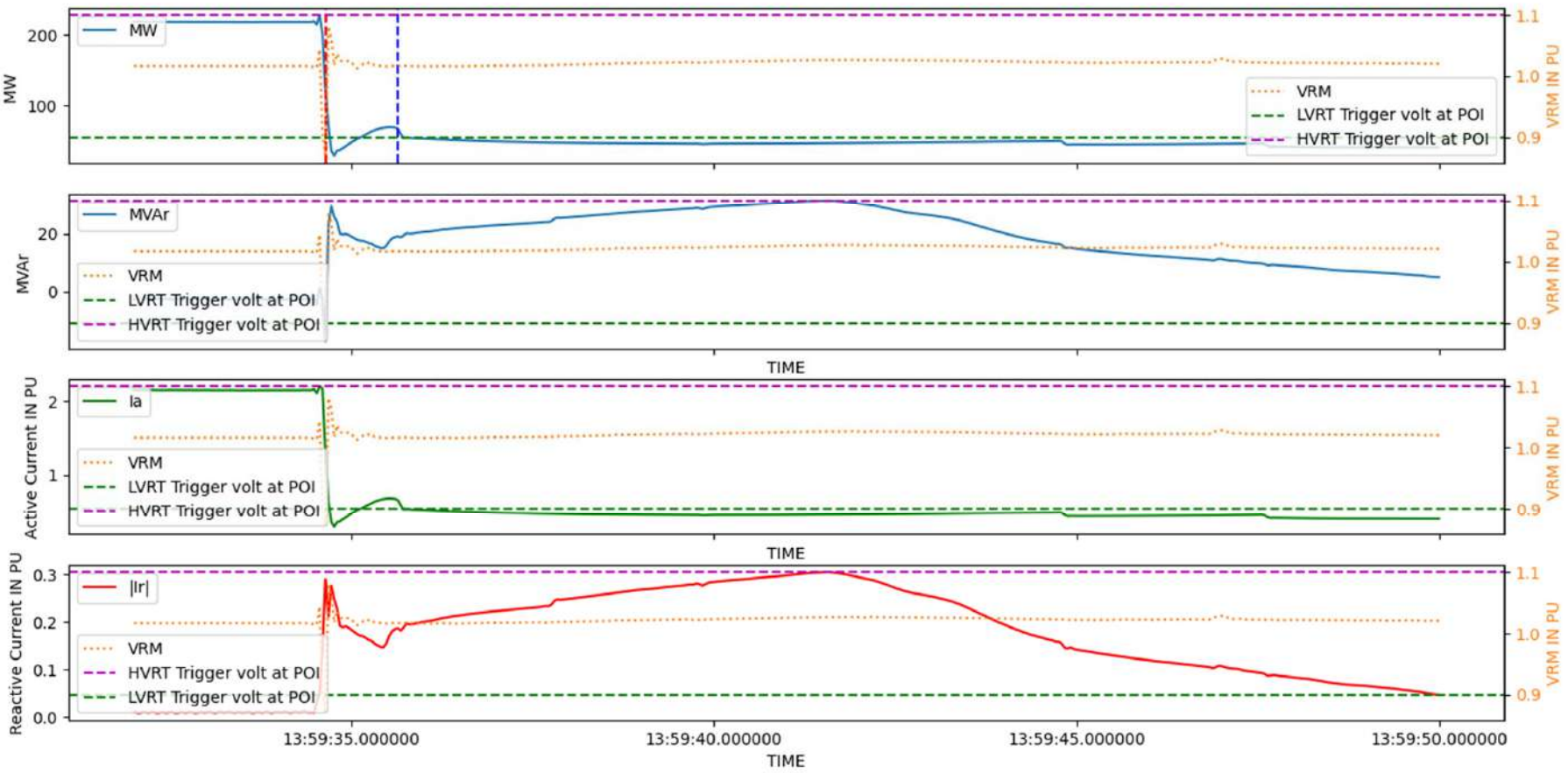
ABCRL_200MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at ABCRL_200MW_BHD2 End)(sec axis)



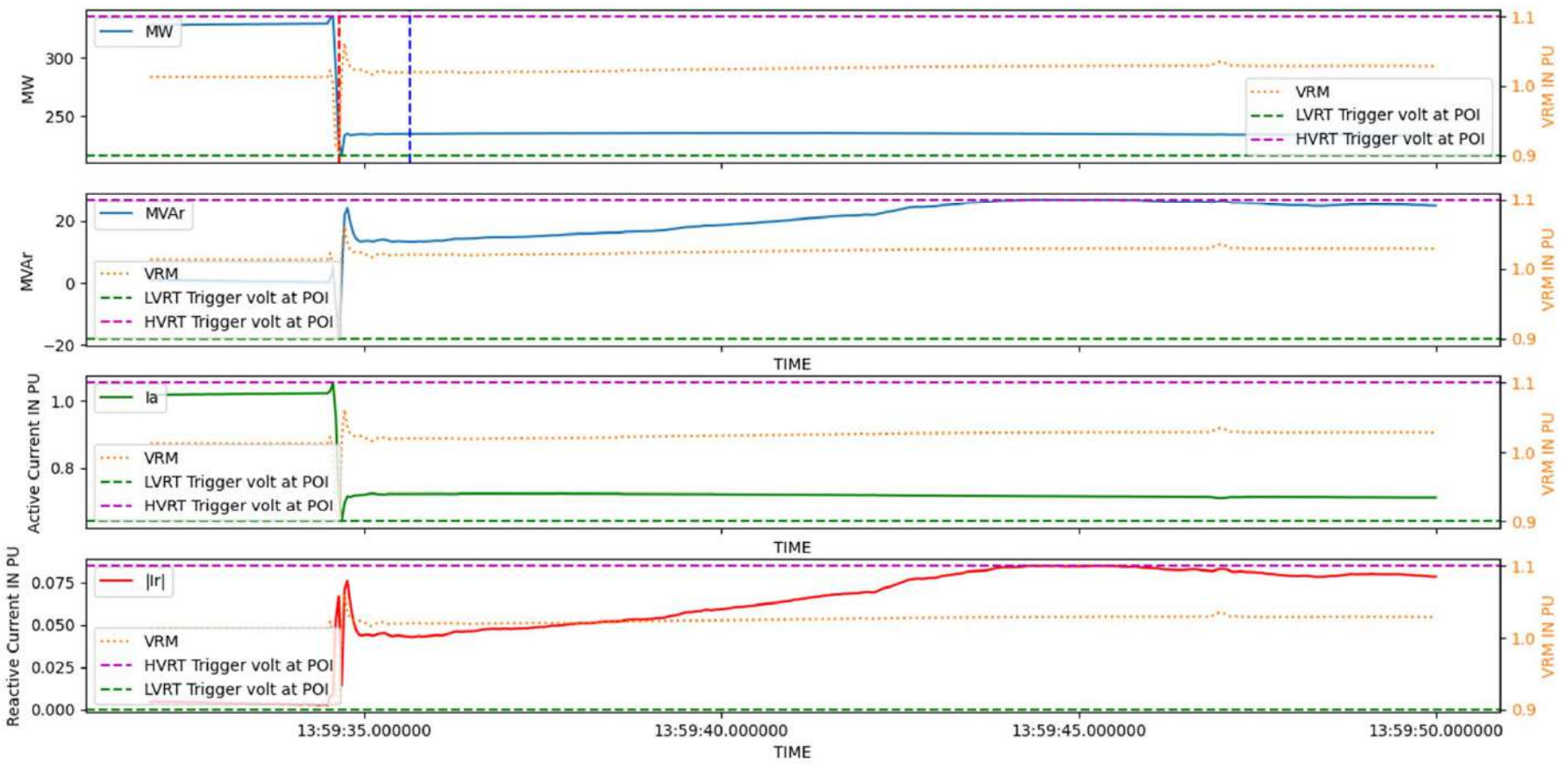
ACME_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at ACME_250MW_BHD End)(sec axis)



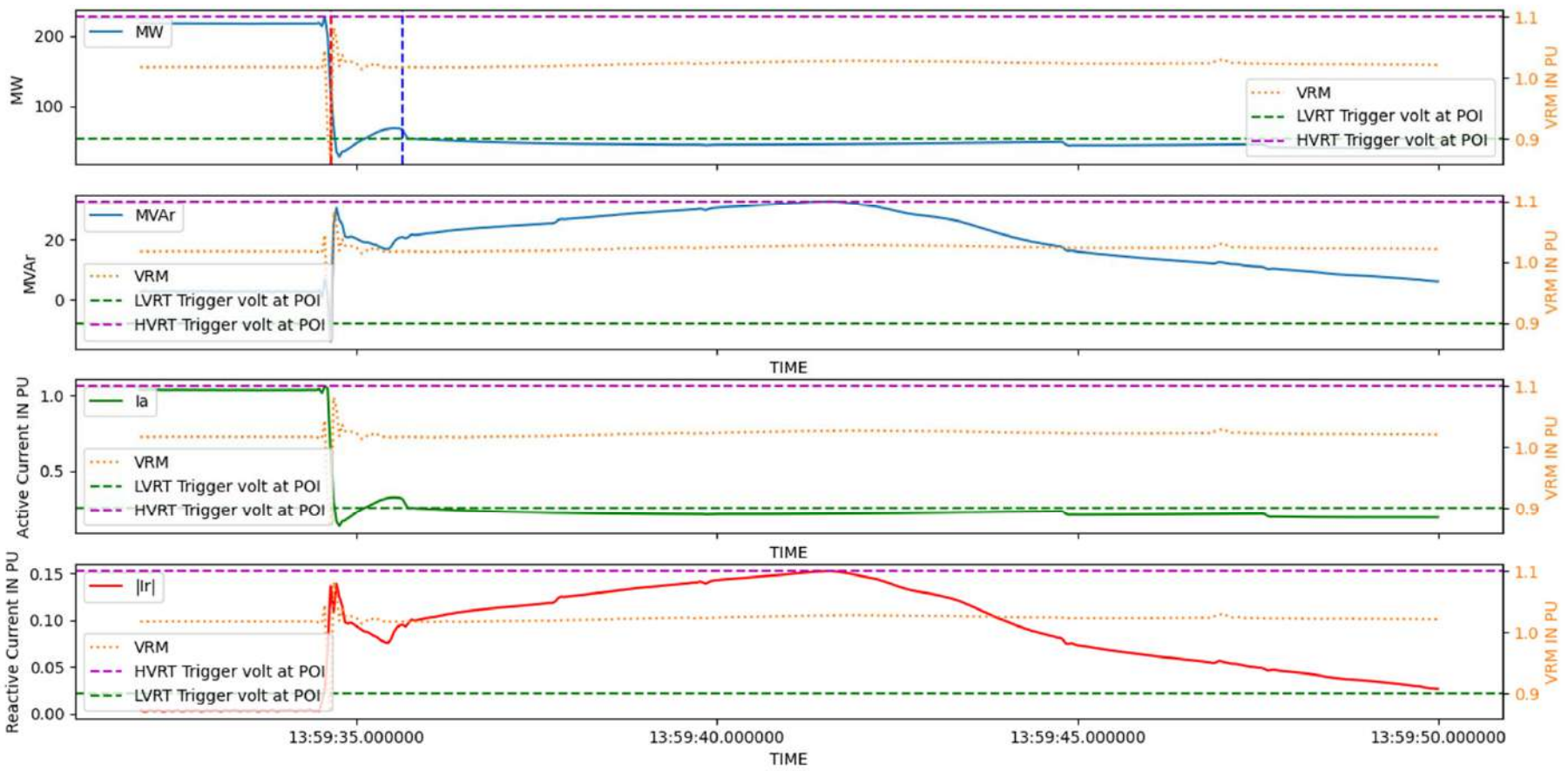
ADNHB (2)_101MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at ADNHB (2)_101MW_FTG2 End)(sec axis)



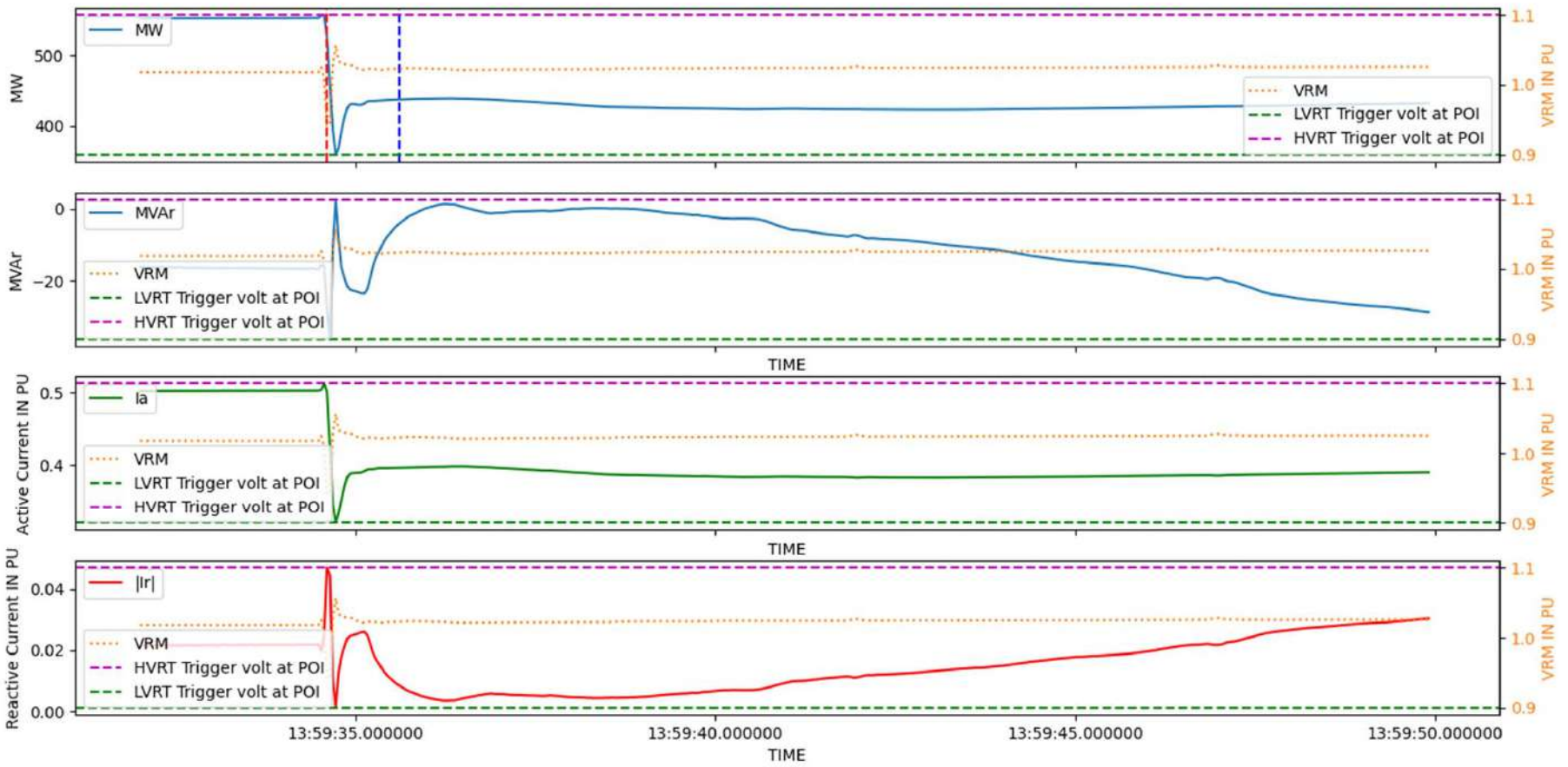
ASEPL_320MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at ASEPL_320MW_BHD2 End)(sec axis)



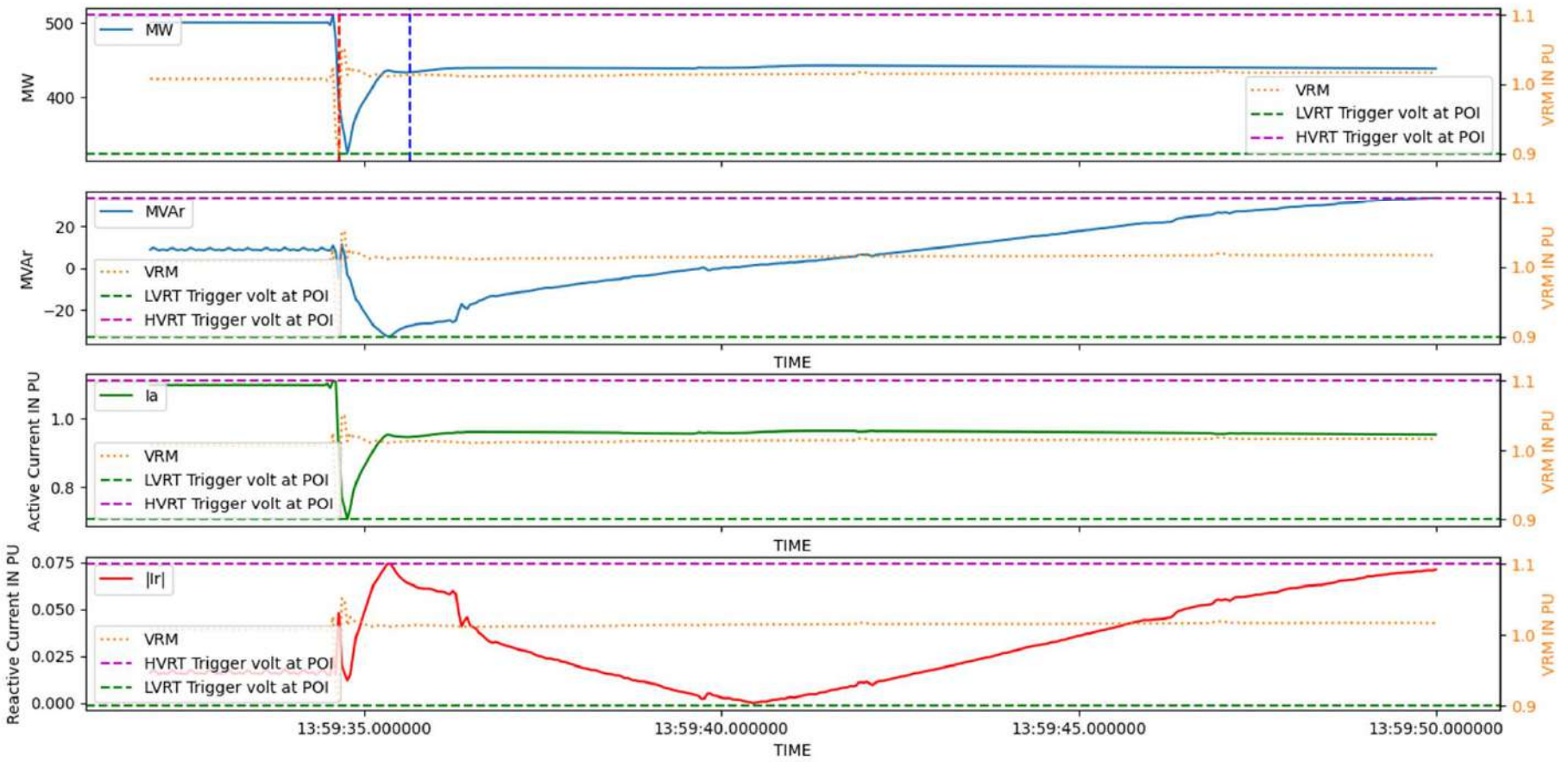
ASJ1S_209MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at ASJ1S_209MW_FTG2 End)(sec axis)



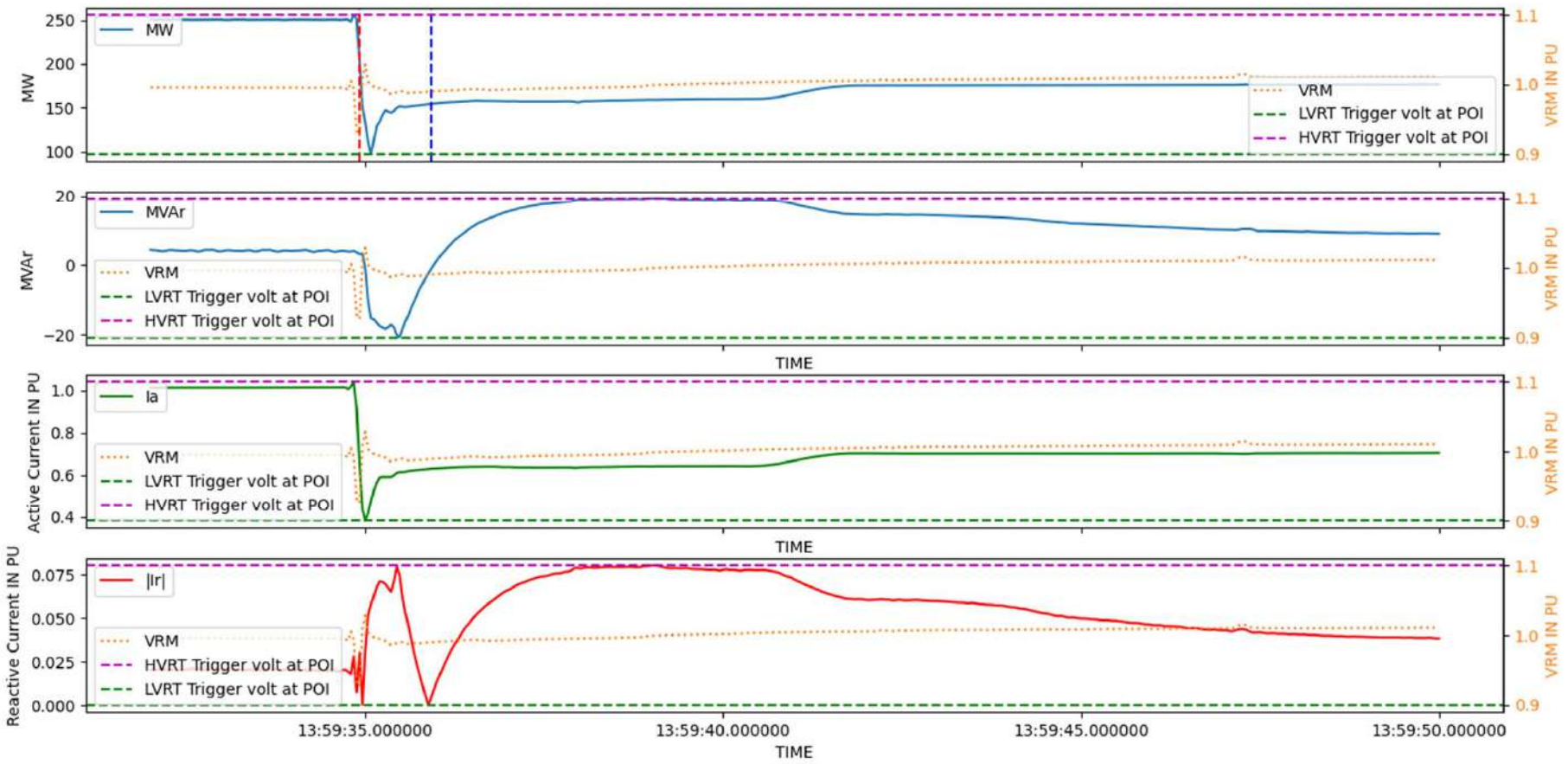
AZURE_600MW_BKN - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at AZURE_600MW_BKN End)(sec axis)



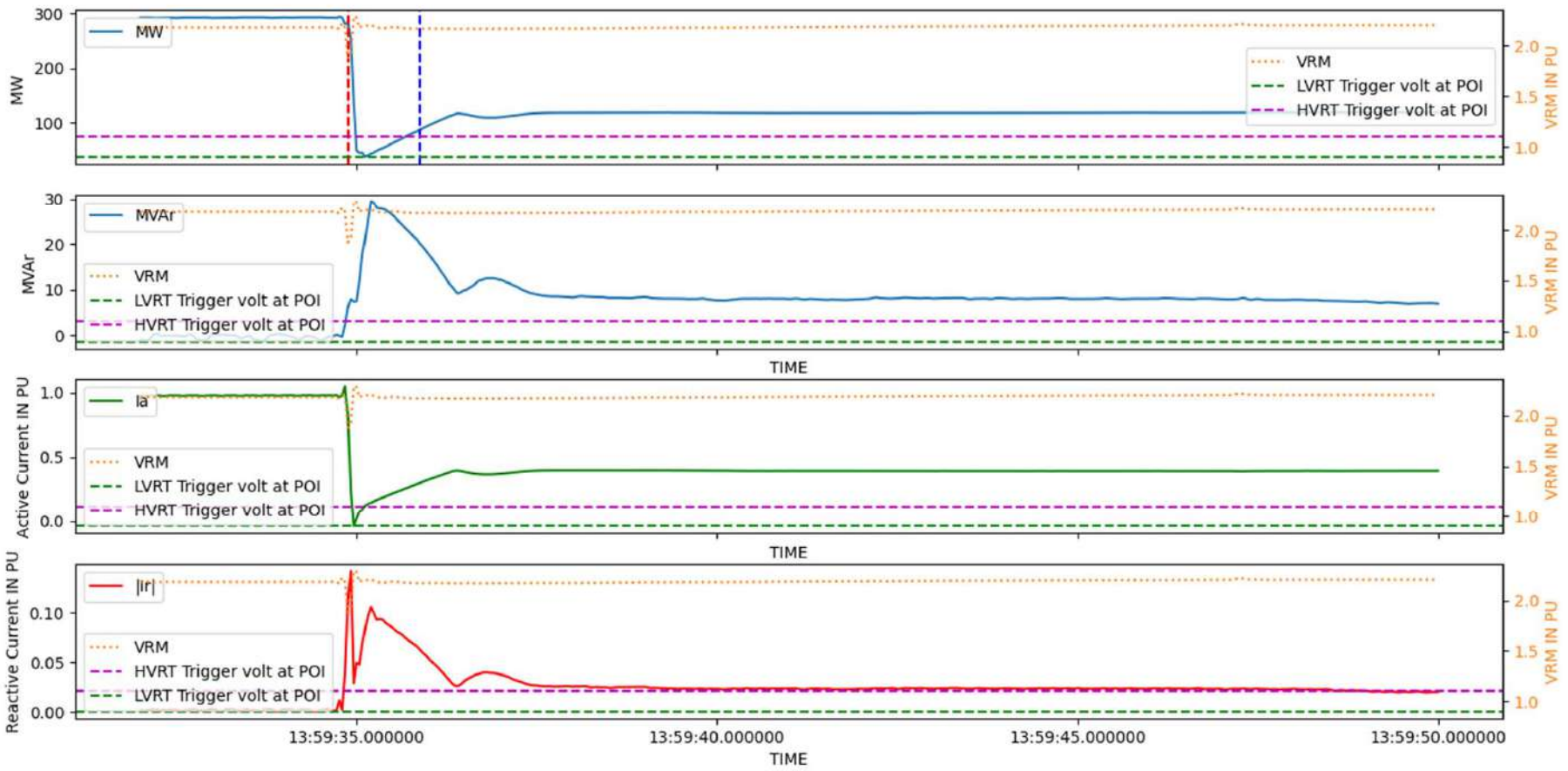
BIKNR_250MW_BKN - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at BIKNR_250MW_BKN End)(sec axis)



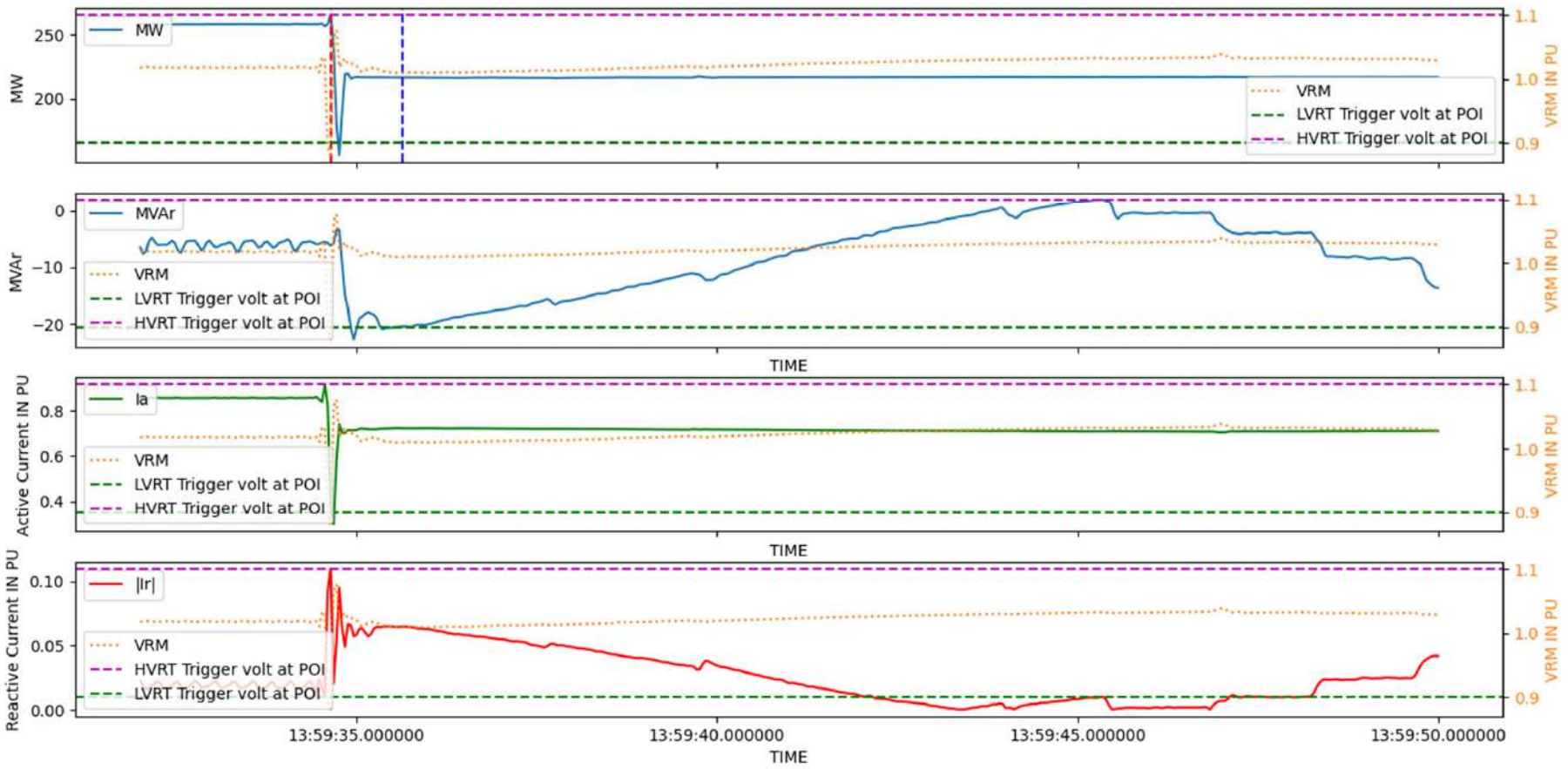
CSPJP_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at CSPJP_250MW_BHD End)(sec axis)



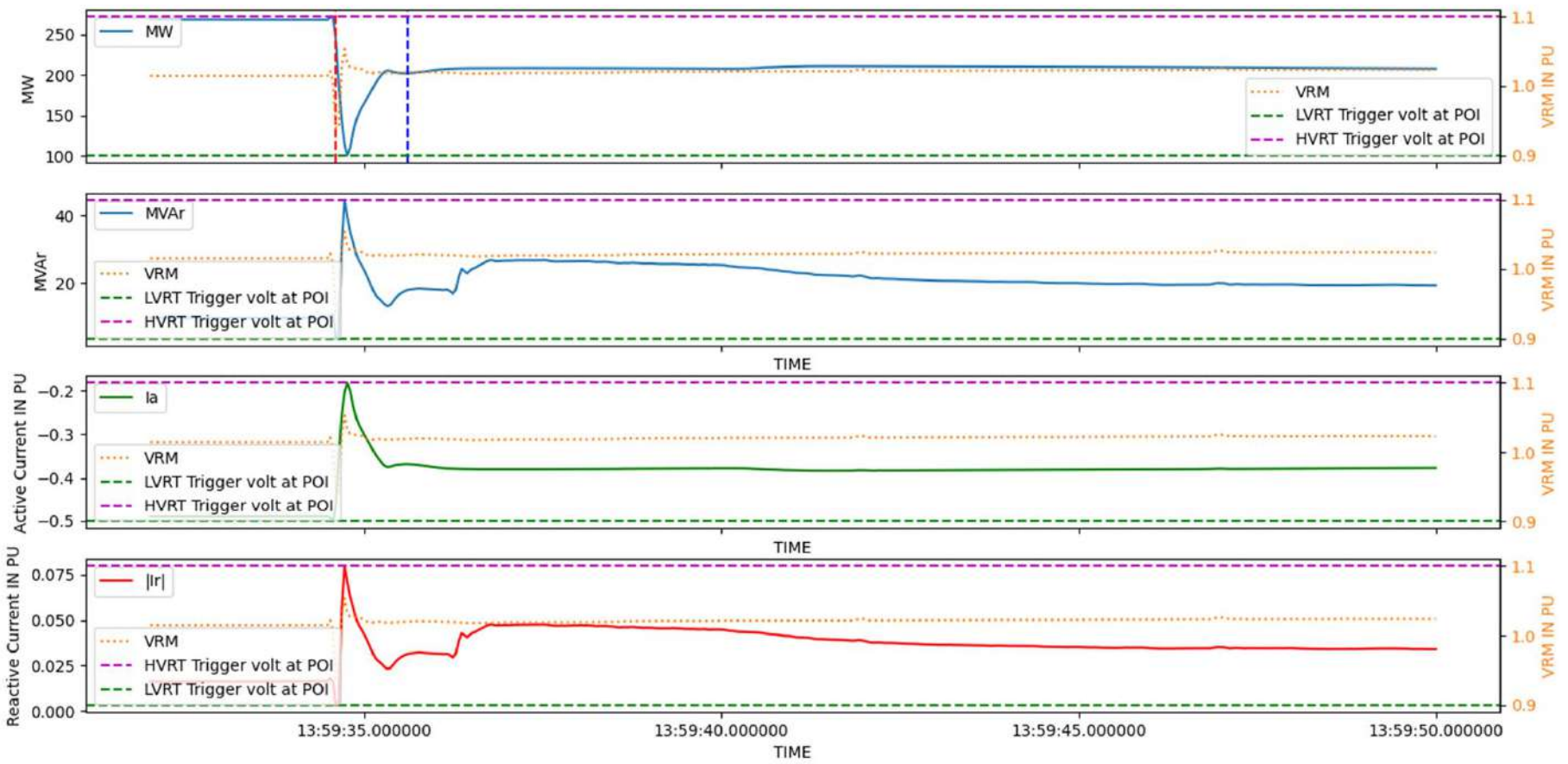
RJ3PL_300MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at RJ3PL_300MW_FTG2 End)(sec axis)



RSBPL_300MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at RSBPL_300MW_FTG2 End)(sec axis)

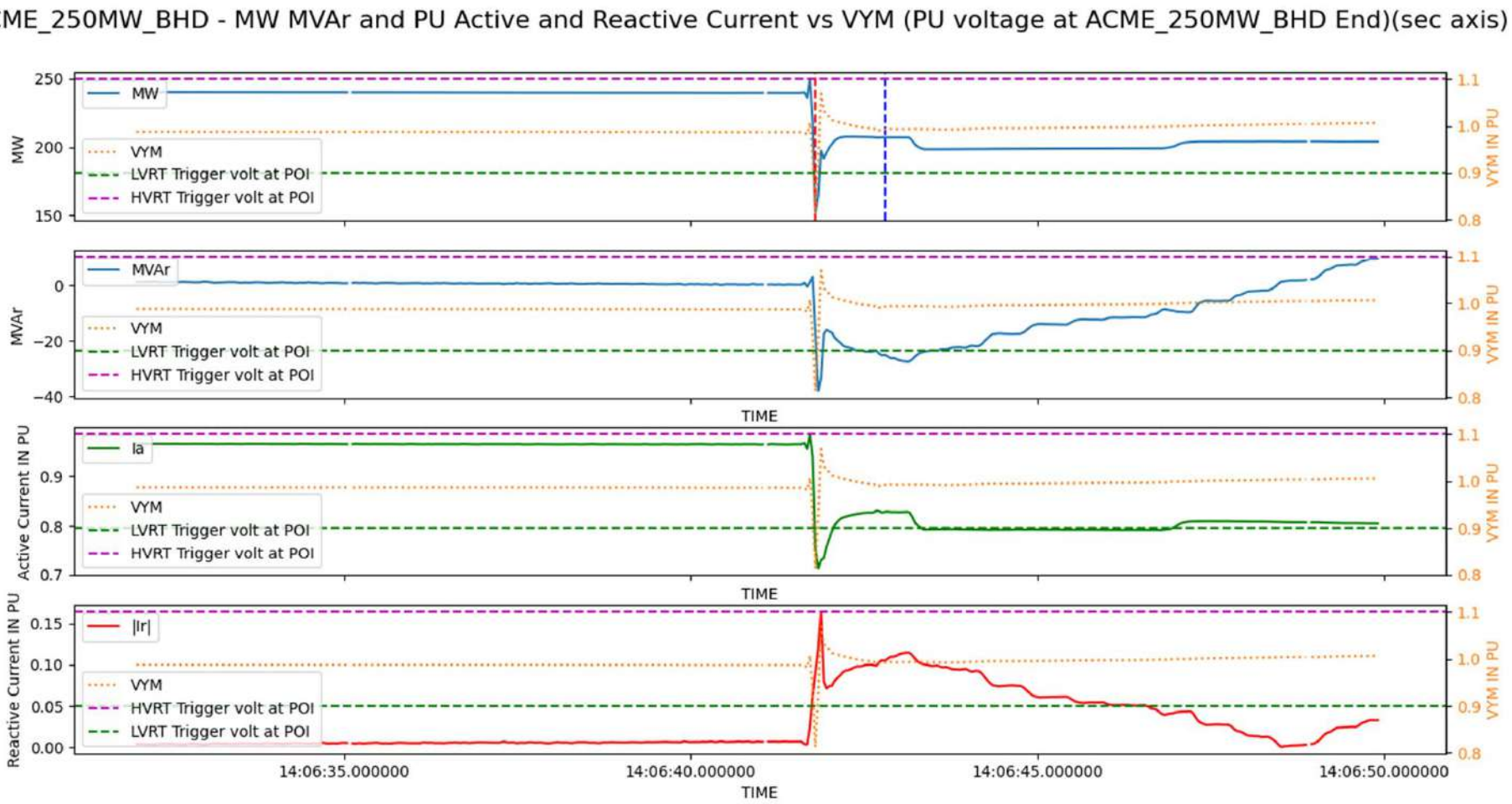


RSRPL_300MW_BKN - MW MVAr and PU Active and Reactive Current vs VRM (PU voltage at RSRPL_300MW_BKN End)(sec axis)

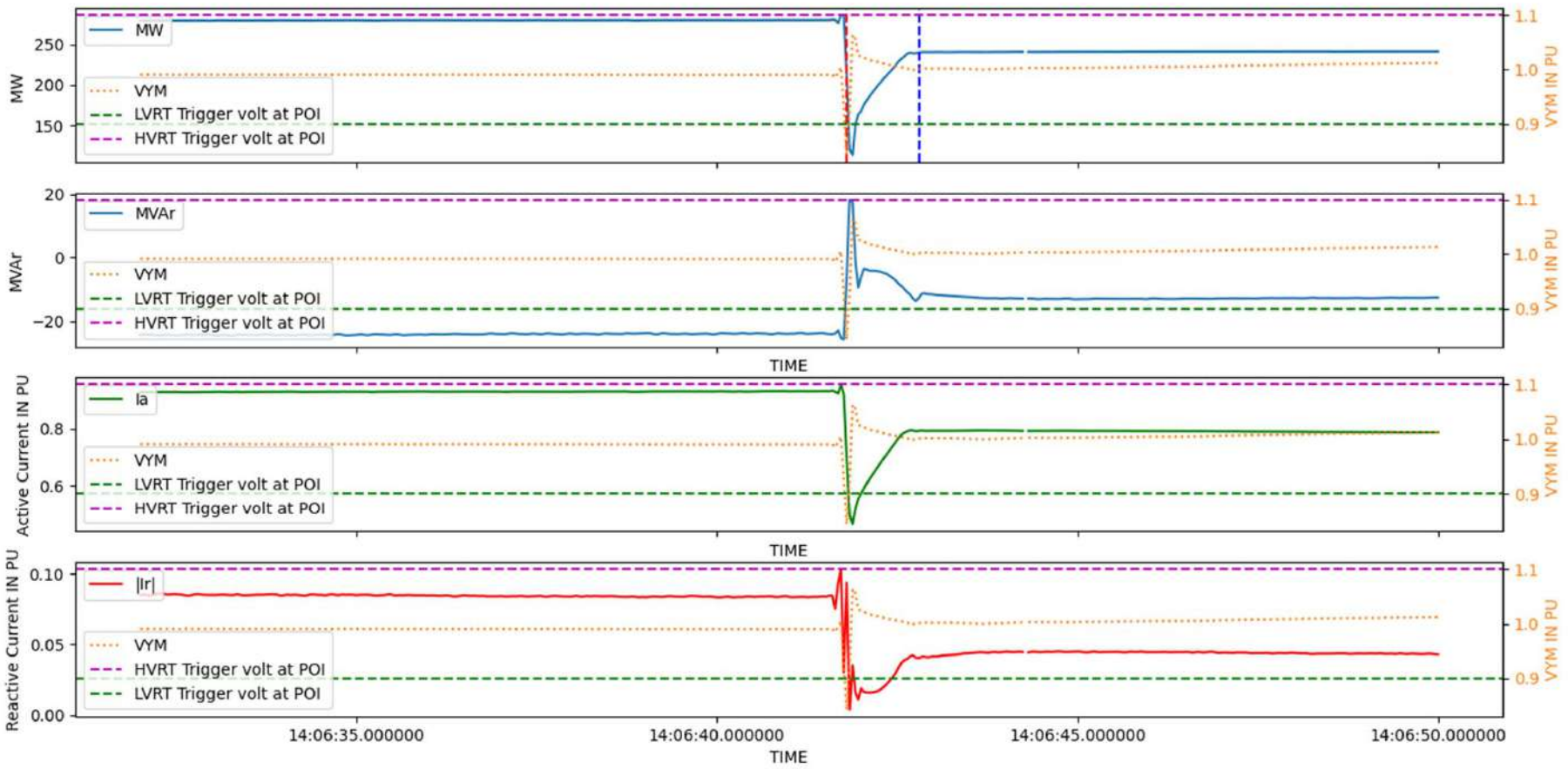


Complaince Status of RE plants vis-à-vis CEA Technical Standards for Connectivity to The Grid (14:06hrs on 15th Jan'24)

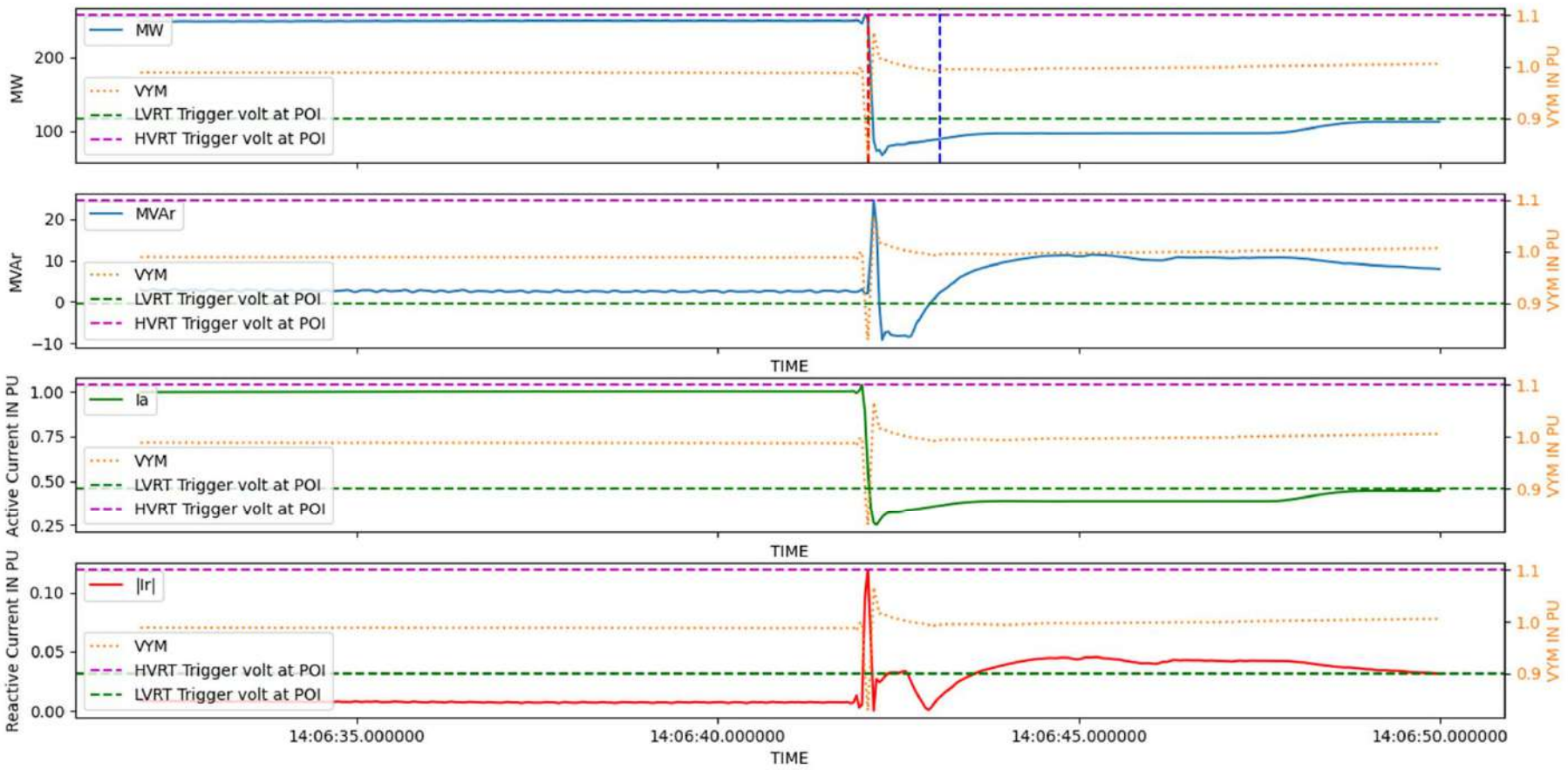
S.No	Connected at	Name of SPPD/Generator	Installed Capacity (MW)	Inverter/ WTG Make	PMU Code	Voltage (during fault at POI (PU) (14:06:42.000)	Highest Voltage recorded at POI (PU)	Active Power (MW)			Reactive power (MVAR			HVRT/LVRT Compliance	Reactive Power Support during fault condition (partially, fully, non-complaint)
								Before at (14:06:41.240)	After One second(14:06:43.000)	Percentage Recovered immediately after fault	Before at (14:06:41.240)	At fault Instant (14:06:42.000)	Immediately after fault clearance ((14:06:42.080))		
1	Bhadla(PG)	ACME Chittorgarh Solar Energy Pvt. Ltd (ACME)	250	TBEA	ACME_IP	0.81	1.07	236	207	88%	3	-17	-38	LVRT-Non compliant	opposite response
2		TPREL (Chhayan)	300	TMEIC/SUN GROW	TPREL_IP	0.84	1.06	276	240	87%	-26	-7	18	LVRT-Non compliant	Partial response
3		Clean Solar Power (Jodhpur) Pvt. Ltd.	250	SUNGROW	CSPJP_IP	0.83	1.07	249	90	36%	2	2	12	LVRT-Non compliant	no response
4	Bhadla2(PG)	ABC Renewable Energy (RJ-01) Private Limited (ABCRL)	300	TBEA	ABCRL_IP	0.85	1.08	314	234	75%	-7	-37	-56	LVRT-Non compliant	opposite response
5		Avaada Sunrays Pvt. Ltd.	320		ASEPL_IP	0.85	1.09	324	122	38%	5	-1	8	LVRT-Non compliant	opposite response
6	Bikaner(PG)	Azure Power	600	SUNGROW	AZR43_IP	0.91	1.06	580	407	70%	-38	-46	-33	LVRT-Non compliant	opposite response
7		SBSR Power Cleantech Eleven Private Limited (SPCEP)	212.5	KEHUA	SPCEP_IP	0.90	1.07	265	232	88%	5	-6	-5	LVRT-Non compliant	opposite response
8		Renew Surya Ravi Private Limited Bikaner (RSRPL)	300	SUNGROW	RSRPL_IP	0.91	1.07	228	141	62%	10	12	29	LVRT-Non compliant	Partial response
9	AREPRL (Fatehgarh1)	Adani Wind Park PSS-3 (AWPS1)	250	Suzlon WTG/Siemens Gamesa WTG	AWPS1_IP	0.91	1.08	1	1	86%	-1	-1	0	LVRT-Non compliant	No response
10		Adani Wind Park PSS-4 (AWPS2)	260		AWPS2_IP	0.98	1.10	1	1	88%	-4	-4	-4	LVRT-Non compliant	No response
11	Fatehgarh2(PG)	Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2)	**300**	SUNGROW	AHEJ2_IP	0.81	1.11	252	217	86%	-9	-24	-41	LVRT-Non compliant	opposite response
12		Adani Hybrid Energy Jaisalmer Two Limited (AHEJ2): Wind	**75**	Suzlon WTG											
13		Adani Hybrid Energy Jaisalmer One Limited (ADNHB)	**360**	HUAWEI	ADNHB_IP	0.81	1.11	115	92	80%	0	-4	5	LVRT-Non compliant	opposite response
14		Adani Hybrid Energy Jaisalmer One Limited (ADNHB): Wind	**101**	Siemens Gamesa WTG											
15		Adani Solar Energy Jaisalmer one Limited: Solar	**209**	SUNGROW	ASJ1S_IP (ckt I)	0.81	1.12	115	92	80%	3	-2	7	LVRT-Non compliant	opposite response
16		ReNew Solar Energy Jharkhand Three Pvt. Ltd (RJ3PL)	**300**	HUAWEI	RJ3PL_IP	0.83	1.10	292	62	21%	-3	-9	-9	LVRT-Non compliant	opposite response


ACME_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at ACME_250MW_BHD End)(sec axis)
MW
MVAr
Active Current IN PU
Reactive Current IN PU
VYM IN PU
TIME
MW
VYM
LVRT Trigger volt at POI
HVRT Trigger volt at POI
MVAr
Ia
|Ir|
14:06:35.000000
14:06:40.000000
14:06:45.000000
14:06:50.000000

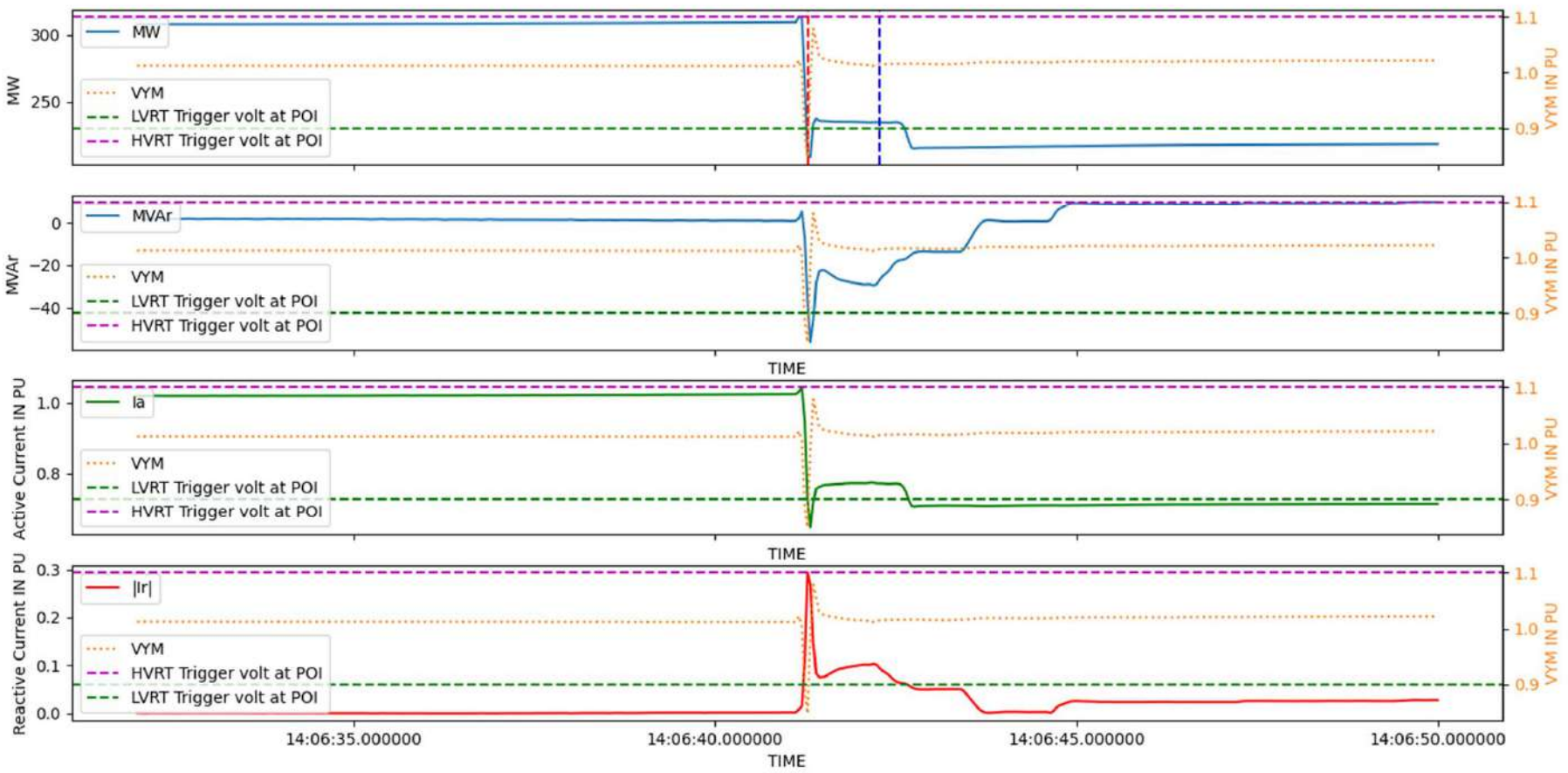
TPREL_300MW_BHD - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at TPREL_300MW_BHD End)(sec axis)



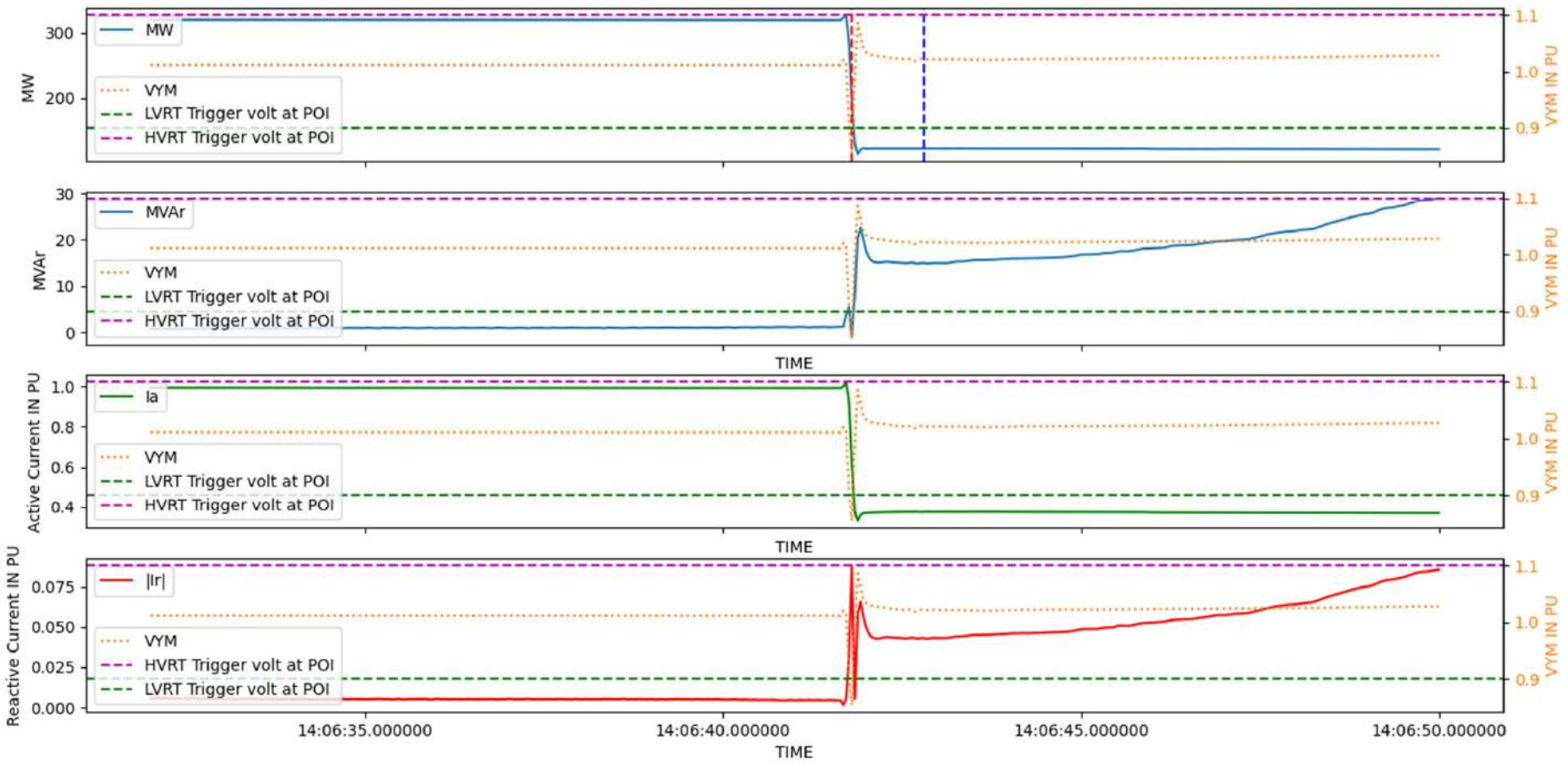
CSPJP_250MW_BHD - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at CSPJP_250MW_BHD End)(sec axis)



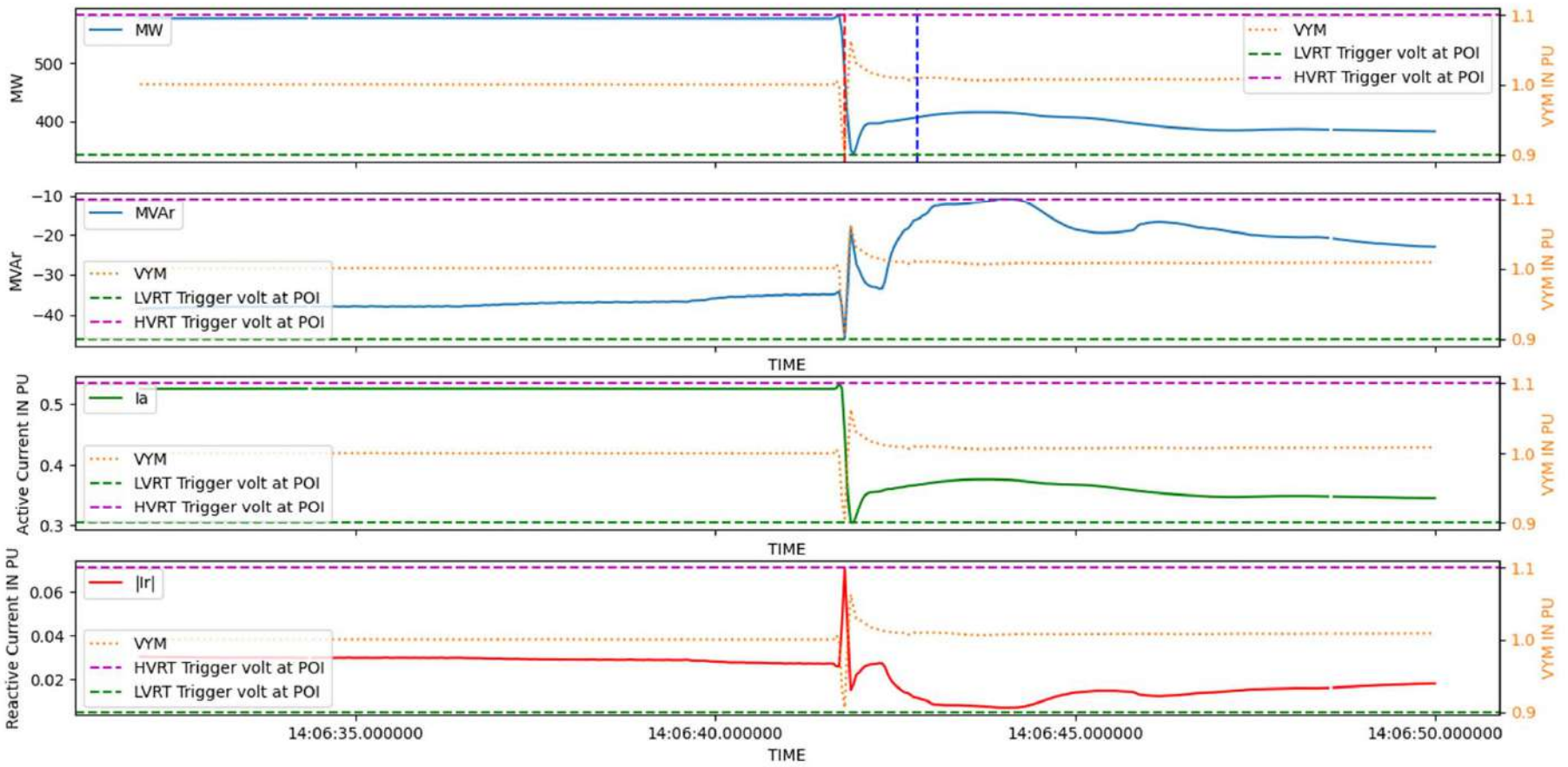
ABCRL_200MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at ABCRL_200MW_BHD2 End)(sec axis)



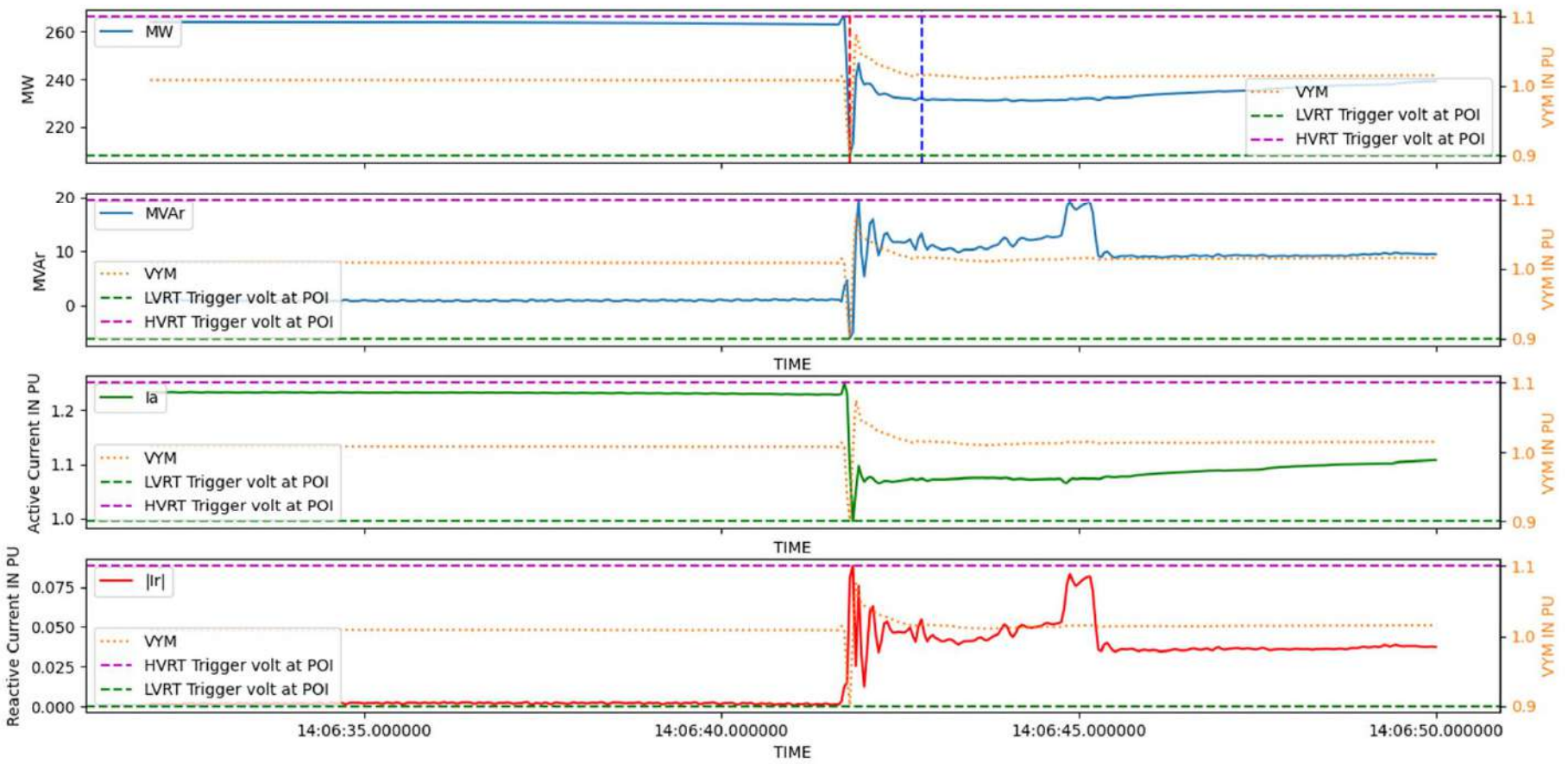
ASEPL_320MW_BHD2 - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at ASEPL_320MW_BHD2 End)(sec axis)



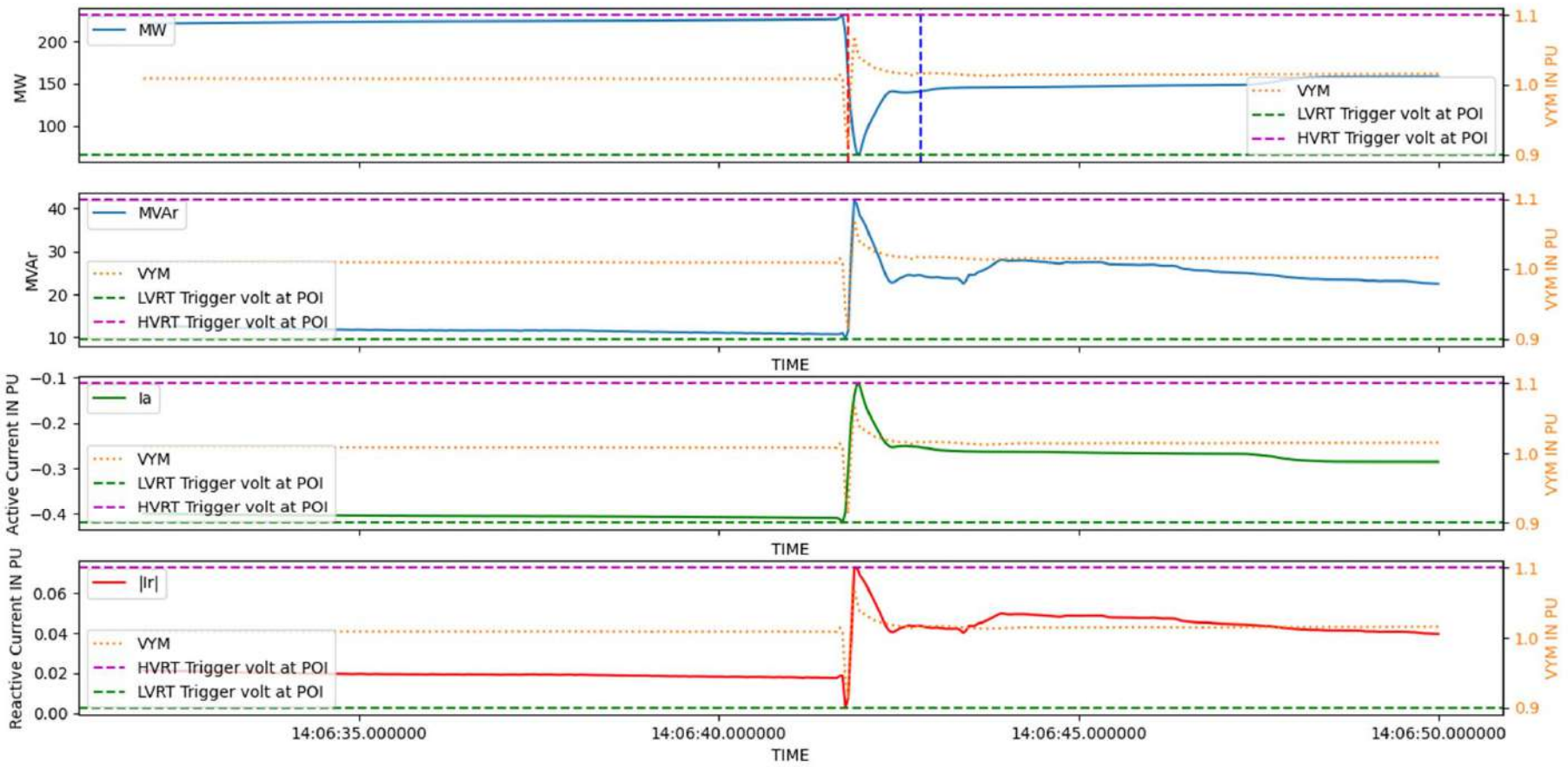
AZURE_600MW_BKN - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at AZURE_600MW_BKN End)(sec axis)



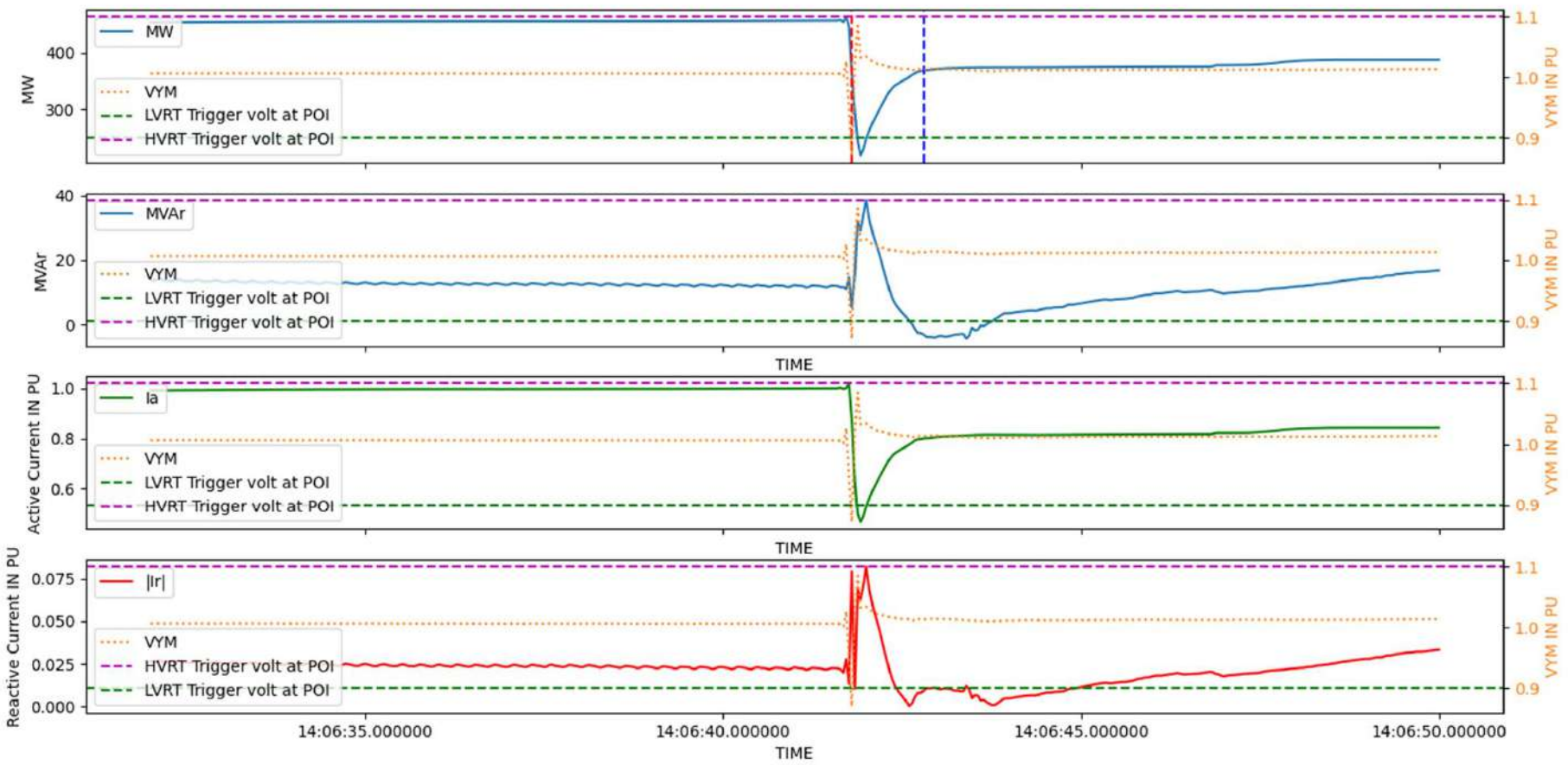
SPCEP_213MW_BKN - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at SPCEP_213MW_BKN End)(sec axis)



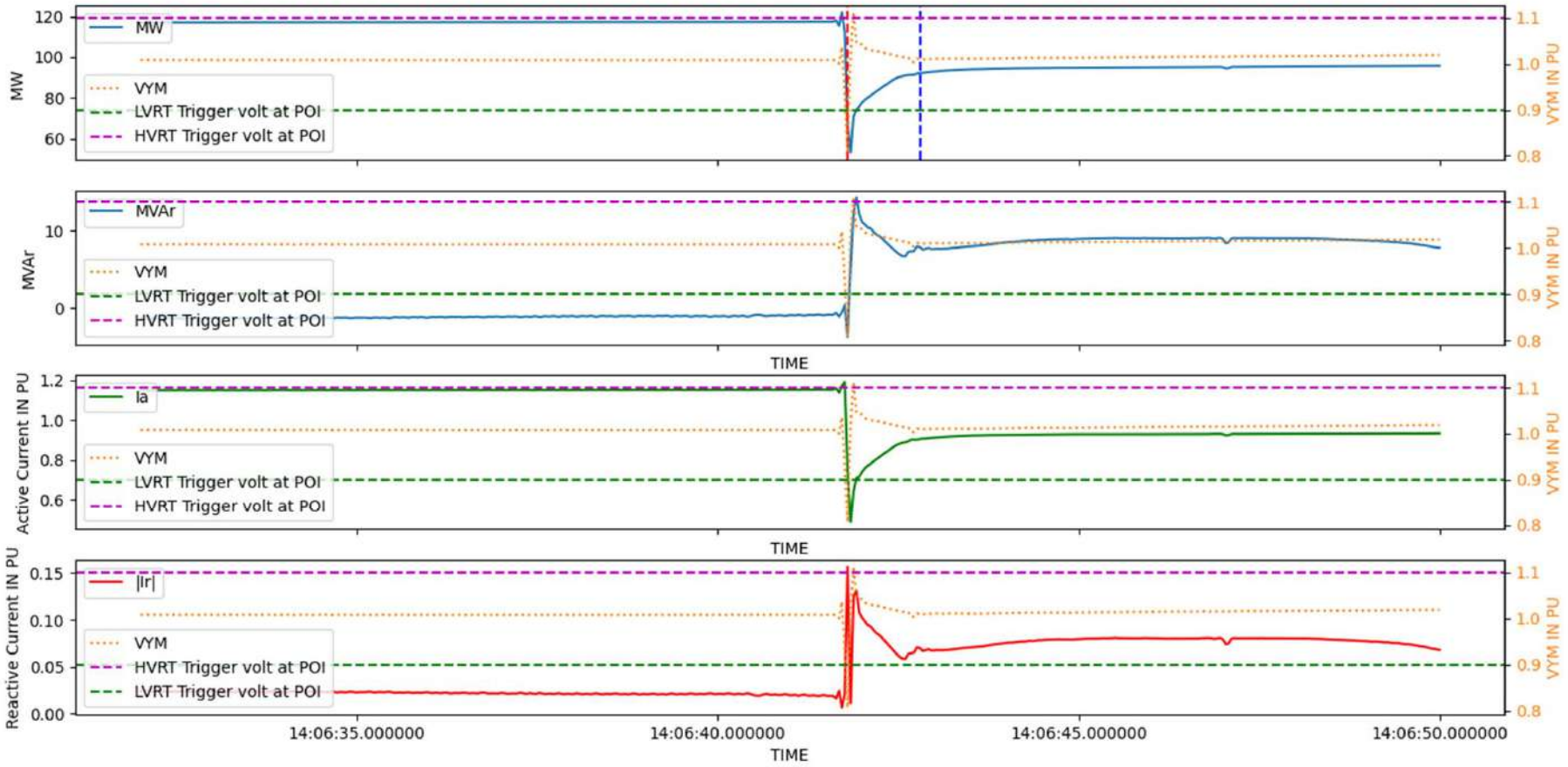
RSRPL_300MW_BKN - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at RSRPL_300MW_BKN End)(sec axis)



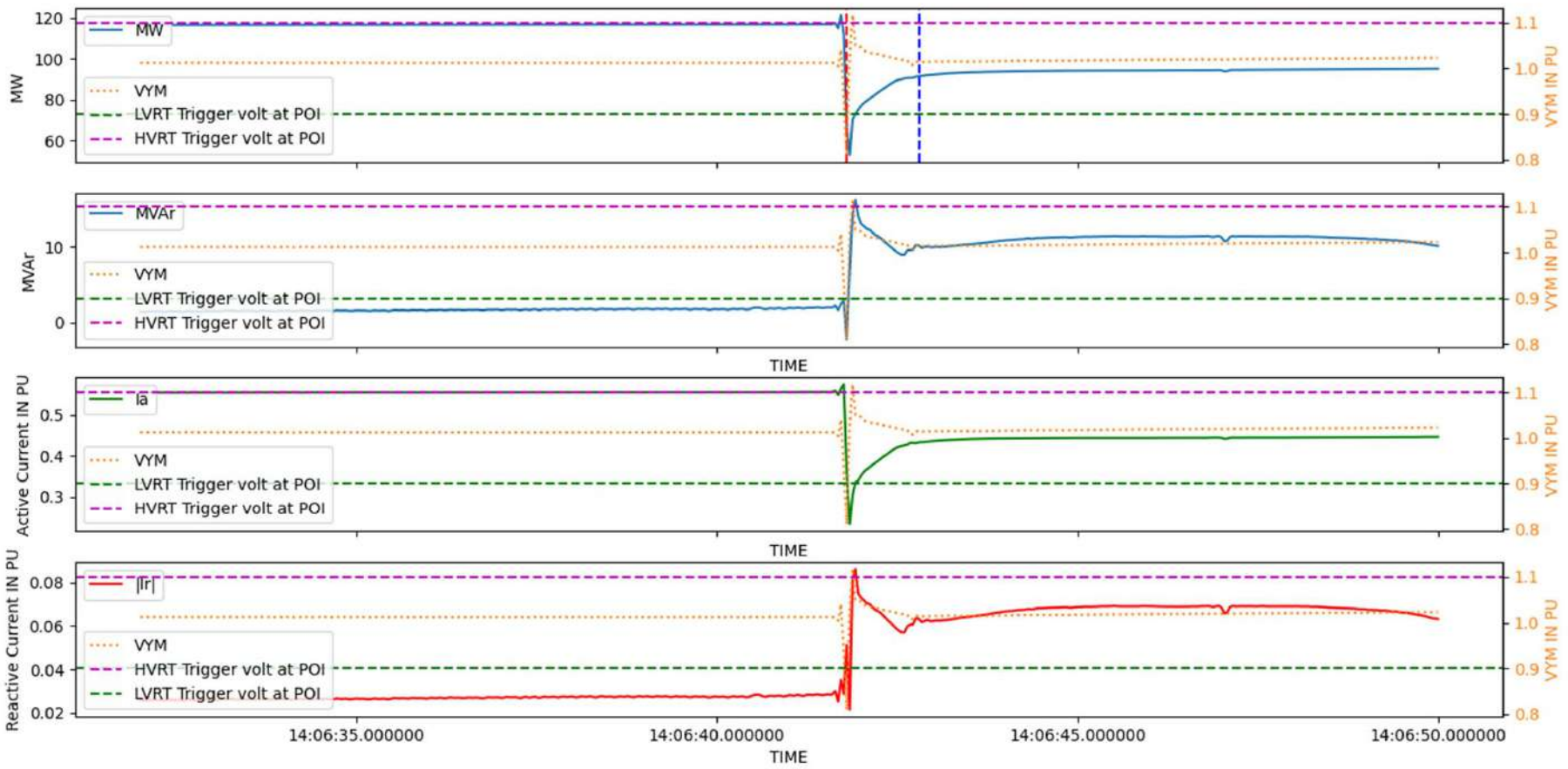
BIKNR_250MW_BKN - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at BIKNR_250MW_BKN End)(sec axis)



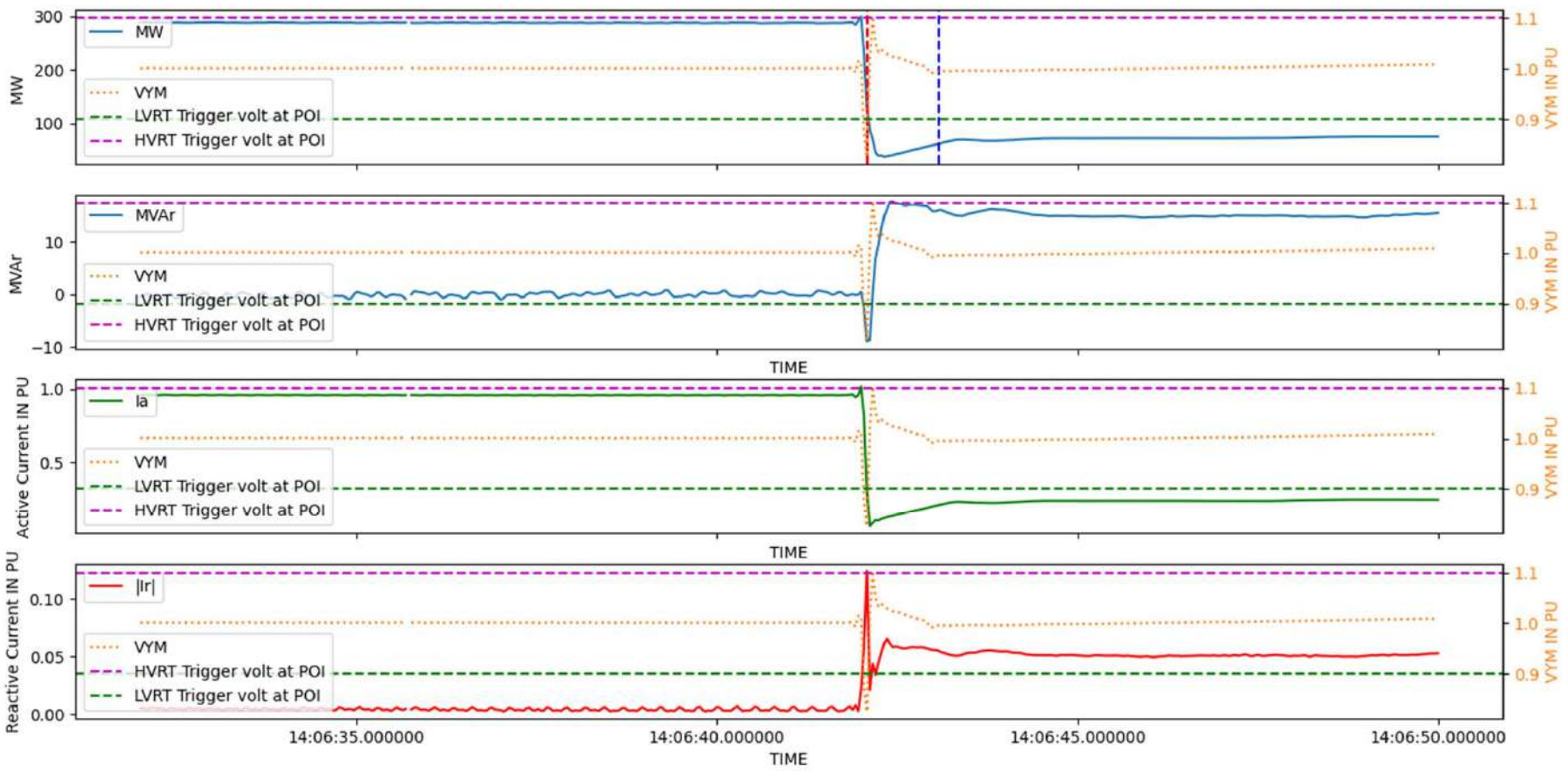
ADNHB (2)_101MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at ADNHB (2)_101MW_FTG2 End)(sec axis)



ASJ1S_209MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at ASJ1S_209MW_FTG2 End)(sec axis)



RJ3PL_300MW_FTG2 - MW MVAr and PU Active and Reactive Current vs VYM (PU voltage at RJ3PL_300MW_FTG2 End)(sec axis)



Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal

Time Period: 1st January 2024 - 31st January 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
1	ABC RENEWABLE_RJ01	2	2	100	2	0	100	2	0	100	2	0	100	DR, EL & Tripping report need to be submitted
2	AHEJ3L	2	2	100	2	0	100	2	0	100	2	0	100	
3	AHEJ4L	1	1	100	1	0	100	1	0	100	1	0	100	
4	ANTA-NT	3	3	100	3	0	100	3	0	100	3	0	100	
5	APMPL	1	1	100	1	0	100	1	0	100	1	0	100	
6	AREPRL	1	0	0	0	0	0	0	0	0	0	0	0	Details received
7	ASEJOL	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report need to be submitted
8	AURAIYA-NT	1	1	100	1	0	100	1	0	100	1	0	100	
9	BAIRASUIL-NH	1	0	0	0	0	0	0	0	0	0	0	0	Details received
10	BBMB	54	18	33	21	16	55	21	19	60	18	4	36	DR, EL & Tripping report need to be submitted
11	CHAMERA-II-NH	1	0	0	0	0	0	0	0	0	0	0	0	Details received
12	CHAMERA-I-NH	1	0	0	0	0	0	0	0	0	0	0	0	
13	CLEANSOLAR_JODHPUR	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report need to be submitted
14	CPCC1	54	6	11	11	9	24	10	8	22	6	5	12	
15	CPCC2	19	0	0	0	3	0	0	3	0	0	0	0	Details received
16	CPCC3	31	29	94	20	1	67	20	1	67	21	0	68	DR, EL & Tripping report need to be submitted
17	DADRI-NT	1	1	100	1	0	100	1	0	100	1	0	100	
18	DHAULIGANGA-NH	1	0	0	0	0	0	0	0	0	0	0	0	Details received
19	FARIDABAD-NT	3	3	100	3	0	100	3	0	100	3	0	100	DR, EL & Tripping report need to be submitted
20	KARCHAM	1	0	0	1	0	100	1	0	100	1	0	100	
21	KOLDAM-NT	5	5	100	5	0	100	5	0	100	5	0	100	
22	NAPP	2	0	0	0	2	0	0	2	0	0	0	0	DR, EL & Tripping report need to be submitted
23	NJPC	1	0	0	0	0	0	0	0	0	0	0	0	
24	NTPC_KOLAYAT SL	1	1	100	1	0	100	1	0	100	1	0	100	DR, EL & Tripping report need to be submitted
25	RAMPUR	1	0	0	0	0	0	0	0	0	0	0	0	Details received
26	RAPPA	19	17	89	18	0	95	19	0	100	19	0	100	DR, EL & Tripping report need to be submitted
27	RAPPB	8	8	100	8	0	100	8	0	100	8	0	100	
28	RAPPC	4	3	75	3	0	75	3	0	75	4	0	100	
29	SAURYA	1	1	100	1	0	100	1	0	100	1	0	100	
30	SHREE CEMENT	3	3	100	3	0	100	3	0	100	3	0	100	
31	SINGRAULI-NT	3	2	67	2	0	67	2	0	67	2	0	67	DR, EL & Tripping report need to be submitted
32	SLDC-DV	17	12	71	7	3	50	8	3	57	8	1	50	
33	SLDC-HP	5	0	0	2	3	100	2	3	100	2	0	40	
34	SLDC-HR	18	1	6	1	2	6	1	2	6	1	2	6	
35	SLDC-JK	1	0	0	1	0	0	1	0	100	1	0	0	Details received

Status of submission of FIR/DR/EL/Tripping Report on NR Tripping Portal

Time Period: 1st January 2024 - 31st January 2024

S. No.	Utility	Total No. of tripping	First Information Report (Not Received)		Disturbance Recorder (Not Received)	Disturbance Recorder (NA) as informed by utility	Disturbance Recorder (Not Received)	Event Logger (Not Received)	Event Logger (NA) as informed by utility	Event Logger (Not Received)	Tripping Report (Not Received)	Tripping Report (NA) as informed by utility	Tripping Report (Not Received)	Remark
			Value	%	Value		%	Value		%	Value		%	
36	SLDC-PS	29	2	**7**	13	6	**57**	13	5	**54**	16	0	**55**	
37	SLDC-RS	130	12	**9**	23	11	**19**	23	9	**19**	39	0	**30**	DR, EL & Tripping report need to be submitted
38	SLDC-UK	6	0	**0**	0	4	**0**	0	4	**0**	1	3	**33**	
39	SLDC-UP	80	10	**13**	11	9	**15**	12	10	**17**	11	1	**14**	
40	STERLITE	1	0	**0**	0	0	**0**	0	0	**0**	0	1	**0**	Details received
41	TANAKPUR-NH	4	1	**25**	1	0	**25**	1	0	**25**	1	0	**25**	DR, EL & Tripping report need to be submitted
42	UNCHAHAR-NT	1	0	**0**	0	0	**0**	0	1	**0**	0	0	**0**	Details received
Total in NR Region		**520**	**147**	**28**	**169**	**69**	**37**	**171**	**70**	**38**	**185**	**17**	**37**	

As per the IEGC provision under clause 37.2 (c), detailed tripping report along with DR & EL has to be furnished within 24 hrs of the occurrence of the event