सत्यमेव जयते

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

सं.: उ.क्षे.वि.स./प्रचालन/106/01/2022/9113-9154 दिनांक: 23.09.2022

विषय: उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप-समिति की 199वी बैठक के खण्ड-अ मे लिए गए निर्णयों का सार।

Subject: Gist of decisions taken in the Part-A of 199th OCC meeting of NRPC.

उत्तर क्षेत्रीय विद्युत समिति की प्रचालन समन्वय उप- समिति की 199वी बैठक दिनांक 16.09.2022 को आयोजित की गयी। उक्त बैठक की खण्ड-अ मे लिए गए निर्णयों का सार **अनुलग्नक – अ** के रूप मे संलग्न है।

199th meeting of the Operation Co-ordination Sub-Committee of NRPC was held on 16.09.2022. The Gist of the decisions taken in Part-A of this meeting is enclosed as **Annexure-A**.

23/09/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

प्रचालन समन्वय उप- समिति के सभी सदस्य।

अनुलग्नक – अ/
Annexure-A

Gist of decisions taken in the Part-A of 199th OCC Meeting

Agenda No. 1: Confirmation of Minutes

Minutes of 198th OCC meeting was issued on 09.09.2022.OCC confirmed the minutes.

Agenda No. 2.1: Supply Position (Provisional) for August 2022

Reasons submitted by states for significant deviation of actual demand from anticipated figures during the month of August 2022 are as under:

- **Delhi**

  Peak demand did not pick up due to rain and drop in temperature in the month of Aug-22.

- **Himachal Pradesh**

  The actual energy requirement in respect of Himachal Pradesh came on lower side than anticipated due to heavy rains in the state.

- **Haryana**

  Variation between actual and anticipated demand (in MW) is within 3% and the variation between actual and anticipated energy consumption (MUs) during the month is near about 7% due to heavy rainfall which has resulted in to the less Agricultural load.

- **Rajasthan**

  The Energy consumption & Peak Demand decreased by 6.8% & 4.8% respectively w.r.t. Anticipated Energy requirement & Anticipated Peak Demand for August'2022 due to sufficient rains in the state during the month of August' 2022.

- **Uttarakhand**

  The reason for negative variation (-1.8%) in energy requirement was due to increase in energy requirement/demand growth approximately 8%, however the energy requirement for the month was anticipated @10% based on the available data/trend for the month of May & June 2022 viz-a-viz 2021 which has significant rise of approximately 26%.

Agenda No. 2.2: Power Supply Position of NCR

The Sub-Committee was informed that the NCR Planning Board (NCRPB) is closely monitoring the power supply position of National Capital Region. Monthly power supply position for NCR till the month of August 2022 was enclosed in the agenda and same was discussed in the meeting.

Agenda No. 3.1: Maintenance Programme of Generating units and Transmission Lines

- The maintenance programme of generating units and transmission lines for the month of October 2022 was deliberated in the meeting on 15.09.2022.
- Following shutdown request was also approved/denied in the OCC meeting:

Element Name	Owner	Reason	Requested From	Requested To	Daily/ Continuous	Decision of OCC
Dadri St-2 U#2 (490 MW)	NTPC	Overhauling	10-Oct-22	23-Nov-22	Continuous	OCC approved the shutdown from 1st November as beneficiary BRPL denied consent for the month of October due to high demand.
220kV Narela - Rohtak Road D/C transmission line of BBMB (shutdown of both the circuits)	BBMB	(i) Dismantling of existing conductors (3days). (ii) Erection of 6 monopoles (6days). (iii) Dismantling of existing lattice towers (3days). (iv) Stringing of conductors on the newly erected monopoles and making termination (3days). (v) Testing & all other related activities (1day). (vi) EIG approval of the new installations (2days). (vii) Commissioning of the line (1day).	12-Oct-22	30-Oct-22	Continuous	Shutdown was rejected as Delhi SLDC denied consent.

Agenda No. 3.2: Revival Plan of Generating Units in NR under Long Outage

- Following generating units in northern region have been under long outages. In the meeting, respective SLDC were requested to confirm their expected revival dates.

Station	Location	Unit No.	Capacity	Reason(s)	Outage (Date & Time)	Revival Date intimated in OCC meeting
Chhabra TPS	Rajasthan	4	250 MW	Due to Electrostatic precipitators (ESP) structural damage	09-09-21 (00:47)	15-Oct-22
Suratgarh SCTPS	Rajasthan	7	660 MW	Failure of R-phase Bushing of GT-7A	15-03-22 (01:32)	30-Sept-22
Suratgarh TPS	Rajasthan	1	250 MW	Stator Earth Fault	30-06-22 (18:24)	30-Sept-22
Guru Hargobind Singh TPS (Lehra Mohabbat)	Punjab	2	210 MW	ESP Breakdown	13-05-22 (21:36)	12-14 months from the outage date as reported by Punjab SDLC

Agenda No. 4.: Anticipated Power Supply Position in Northern Region for October 2022

- The updated anticipated Power Supply Position for October 2022 is as below:

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
CHANDIGARH	Availability	140	400	No Revision submitted
	Requirement	110	220	
	Surplus / Shortfall	30	180	
	% Surplus / Shortfall	27.3%	81.8%	

State / UT	Availability / Requirement	Revised Energy (MU)	Revised Peak (MW)	Date of revision
DELHI	Availability	3273	5400	15-Sep-22
	Requirement	2750	5400	
	Surplus / Shortfall	523	0	
	% Surplus / Shortfall	19.0%	0.0%	
HARYANA	Availability	4660	11220	07-Sep-22
	Requirement	5750	9356	
	Surplus / Shortfall	-1090	1864	
	% Surplus / Shortfall	-19.0%	19.9%	
HIMACHAL PRADESH	Availability	981	1714	07-Sep-22
	Requirement	961	1740	
	Surplus / Shortfall	20	-26	
	% Surplus / Shortfall	2.1%	-1.5%	
J&K and LADAKH	Availability	1200	3040	No Revision submitted
	Requirement	1510	2470	
	Surplus / Shortfall	-310	570	
	% Surplus / Shortfall	-20.5%	23.1%	
PUNJAB	Availability	5420	11410	15-Sep-22
	Requirement	5745	12500	
	Surplus / Shortfall	-325	-1090	
	% Surplus / Shortfall	-5.7%	-8.7%	
RAJASTHAN	Availability	7930	17920	19-Sep-22
	Requirement	8500	14360	
	Surplus / Shortfall	-570	3560	
	% Surplus / Shortfall	-6.7%	24.8%	
UTTAR PRADESH	Availability	12400	23500	12-Sep-22
	Requirement	12090	23500	
	Surplus / Shortfall	310	0	
	% Surplus / Shortfall	2.6%	0.0%	
UTTARAKHAND	Availability	1215	2129	05-Sep-22
	Requirement	1225	2200	
	Surplus / Shortfall	-9	-71	
	% Surplus / Shortfall	-0.8%	-3.2%	
NORTHERN REGION	Availability	37220	72000	
	Requirement	38640	67400	
	Surplus / Shortfall	-1421	4600	
	% Surplus / Shortfall	-3.7%	6.8%	

Agenda No. 5: Submission of breakup of Energy Consumption by the states

- The updated status on the submission of energy consumption breakup is presented below:

State / UT	From	To
Delhi	Apr-2018	Jul-2022
Haryana	Apr-2018	Jun-2022
Himachal Pradesh	Apr-2018	Jun-2022
Punjab	Apr-2018	Jun-2022
Rajasthan	Apr-2018	Jul-2022
Uttar Pradesh	Apr-2018	Jul-2022
Uttarakhand	Apr-2018	Mar-2022

Agenda No. 6: Follow-up of issues from various OCC Meetings - Status update

- Updated status is enclosed as ***Annexure-A.I***.
- In 195th OCC, SLDCs were requested to again to coordinate with respective Transmission utilities of states/UT's and submit details about the updated status of downstream network by State utilities from ISTS Station (***Annexure-A-I.I)*** before every OCC meeting.

Agenda No. 7. NR Islanding scheme

- Based on the decisions taken in the meeting taken by Hon'ble Minister of State (IC) for Power and New & Renewable Energy on 28.12.2020, Islanding Schemes for NR have been continuously reviewed/discussed in various forums.
- In 187th OCC, it was decided that states shall submit MIS report before every OCC meeting so that same may be discussed. Format was circulated vide agenda of 187th OCC.
- It was also highlighted that MoP has agreed for PSDF funding for implementation of islanding schemes and states were requested to prepare and submit DPR for the same. Further, a sample DPR on implementation of Islanding scheme for PSDF funding has been already circulated vide email dated 07.10.2021 and requested to expedite the preparation of DPR.
- Utilities were requested to refer and submit SOP for every Islanding scheme in their control area.
- A meeting was also held by Honorable Cabinet Minister (Power, New & Renewable Energy) on 07.10.2021 wherein emphasis was given on PSDF funding for Islanding schemes and DPR submission for the same. MoM has been issued and copy of the same is enclosed as Annexure-A.II of 189th OCC agenda.
- In the 189th OCC, MS, NRPC expressed concern regarding apathy of states in implementation of Islanding Schemes. He stated that all SLDCs shall intimate the names of Islands for which system study from CPRI is required along with justification for the same by 30th Nov, 2021. He also set timeline of 30th Nov, 2021 for Delhi to submit SOP data. He stated that communication may be sent to RAPS for submission of SOP data at the earliest.
- In the 190th OCC, NRPC Sectt representative informed that SOP data in respect of Delhi and RAPS have been received.
- UPSLDC vide letter dated 01.12.2021 has submitted the names of islands for which system study from CPRI is required. UPSLDC has highlighted, inter-alia, that involvement

of long length 765kV line and high number of buses necessitates them to go for system study by CPRI. It has mentioned that SLDC/STU has no expertise in such studies and before doing any investment on the project, proper study is must for successful implementation and operation of Islands.

- HPSLDC vide letter dtd. 18.12.2021 has intimated that a meeting was held on 26.11.2021 between HPSLDC and HPSEBL wherein a team of officers from HPSLDC and HPSEBL has been formed to carry out transient study of all islands within a month.
- UPSLDC representative informed that CPRI has asked for some additional details and technical commercial offer would be provided to them by CPRI by 15th Jan 22.
- NRLDC representative informed that report received from Rajasthan regarding the Jodhpur-Barmer-Rajwest islanding scheme is in order and Rajasthan SLDC can proceed ahead. Further, NRLDC submitted that they use PSSE software for system study but Rajasthan has submitted details of Islands in MI Power Software, therefore, they are not able to access the file.
- Rajasthan SLDC representative informed that they have given the details in the hard copy of the load and generation to be considered for islanding scheme, and based on that have requested NRLDC to simulate it in PSSE software for validation. NRLDC representative agreed to the request of the Rajasthan SLDC.
- Uttarakhand SLDC representative informed that hydro stations near Dehradun are peaking stations and the proposed Dehradun islanding scheme appears to be infeasible. NRPC representative informed that some schemes in NR have been proposed by considering Hydro stations and Dehradun islanding scheme was proposed by the state SLDC itself in view of all factors. Thus, Uttarakhand SLDC shall immediately conduct study on the proposed Islanding Scheme having Khodri & Chibro units and provide status on the feasibility of scheme with supporting data so that same may be communicated to the Ministry.
- In 191st OCC, HPSLDC representative informed that they need further two weeks to submit the outcome of transient study of all islands.
- Uttarakhand representative informed that major hydro stations e.g. Chibro, Khodri etc at Dehradun Region in Yamuna valley are non-must run and peaking stations. Therefore, it is technically not feasible to implement Dehradun as an islanding scheme. However, nominations of nodal officers from various utilities (PTCUL, UJVN Ltd & UPCL) are being sought for the formation of internal committee for accessing the possibility of Dehradun as Islanding scheme and the report shall be submitted to NRPC Secretariat subsequently.
- NRPC Sectt representative asked Uttarakhand to expedite the submission regarding the status on feasibility of the proposed Islanding scheme.
- MS, NRPC stated that all constituents that have given their information about the planning of islanding scheme shall take up the work on top priority and submit the progress in time bound manner by submitting the updated MIS format every month.
- NRLDC representative informed that Rajasthan SLDC is modelling data on PSSE software and it is expected to be completed within one week. Thereafter, NRLDC will submit its comments on the same. Rajasthan representative consented for the same.

- UP and Punjab were asked to update the status of their study being done by CPRI. Both informed that there is no progress since last OCC and they are waiting for response from CPRI.
- In the 192nd OCC, UPSLDC informed that they have received techno-commercial offer from CPRI for both the islanding schemes of UP and accessing the inputs from CPRI they will be conveying a meeting in last week of February 2022.
- NRLDC representative informed modeling data on PSSE software received from Rajasthan has not been modeled for islanding scheme. Further, NRLDC representative asked Rajasthan SLDC to send their team next week for modeling the data on PSSE software.
- MS, NRPC asked Uttarakhand SLDC to expedite the study they are conducting to access the feasibility of Dehradun islanding scheme.
- NRPC Sectt representative informed that a meeting was convened by HPSLDC with officials of NRPC Sectt., NRLDC, HPSEBL, & HPPTCL on 11.02.2022. It was observed that system study work has been pending due to pre-occupation of the concerned resource. Therefore, it was decided that HPSLDC shall write letters to MDs of HPSEBL & HPPTCL. It was decided to review the status in another meeting in the first week of March 22. HPSLDC has written letter dt. 14.02.2022.
- Punjab SLDC also informed that they will be conveying a meeting with STU within a week to track the progress.
- In the 193rd OCC, NRPC representative informed forum that HPSLDC convened a meeting on 4th March 2022 wherein they presented the results of static and dynamic study conducted by them. NRLDC suggested that dynamic data used by HPSLDC is common data and it was decided that they will use data of particular generators and then apprise about the same.
- UPSLDC also convened a meeting on 7th March 2022 wherein they informed that CPRI has submitted the offer with a completion target of 5 months. It was also discussed that as there are two islanding schemes in UP control area hence it was suggested that CPRI may be asked to do it in 2 parts preferably 2.5 months each for both the islanding scheme.
- UPSLDC representative informed that CPRI would not be able to bifurcate the time separately for both the islanding scheme and acceptance is under consideration by the management.
- HPSLDC representative informed that they have communicated to all generators for providing dynamic data, and only reply from Karcham Wangtoo has been received from till date.
- Rajasthan representative informed that next week they will send their team to NRLDC for modelling the data on PSSE software.
- J&K representative informed that load has been identified and no further update. MS, NRPC asked J&K representative expedite the study work.
- Further, MS NRPC suggested that states shall coordinate with NRPC and NRLDC officials for carrying out the study.

- In the 194th OCC, Punjab representative informed that CPRI has asked for PSSE file for dynamic study which is being coordinated with NRLDC. STU has given timeline of 6 months for implementation after CPRI study.
- MS, NRPC along with NRLDC have desired that all states of northern region where islanding scheme is to be implemented shall convene meeting with the officials of NRPC and NRLDC wherein the study requirements can be discussed.
- OCC forum was of opinion that all generating units (especially 660MW units) shall make an effort to ensure successful household operations. UP representative was requested to expedite the implementation work of Unchahar-Lucknow Islanding scheme after analyzing load-generation balance and conducting steady state study.
- Further, OCC forum was of view that states shall go for implementation of islanding scheme after steady state study along with load generation balancing and dynamic study, if desired, may be carried out in later stage.
- In the 195th OCC, NRLDC representative intimated that steady state study for Rajasthan islanding scheme has been completed. It was decided that Rajasthan may go ahead for implementing the scheme.
- NRPC Sectt representative informed that a sub-group will be formulated shortly that would review all proposed islanding schemes of NR and assess the reason for delay.
- In the 196th OCC, MS NRPC desired UP representative to take up the matter with CPRI for Agra islanding scheme and ask them to complete the work in one month time from the date of acceptance of offer by CPRI.
- UP representative informed that steady state study along with load generation balancing is complete for Unchahar-Lucknow Islanding scheme and the same would be submitted to NRLDC in one week time.
- Rajasthan representative informed that for Jodhpur-Barmer-Rajwest and Suratgarh islanding scheme work of DPR preparation is under progress and same would be submitted to NLDC to avail PSDF funding before next OCC meeting.
- MS, NRPC asked Uttarakhand representative to expedite the submission regarding the status on feasibility of the proposed Islanding scheme.
- MS, NRPC asked Himachal Pradesh representative to coordinate with NRLDC officials to converge the study carried out by them.
- Further, MS NRPC also asked Punjab representative to coordinate with NRLDC officials to converge the steady state study carried out by them.
- In 197th OCC, NRPC Sectt representative informed that UPSLDC has submitted the updated status of Unchahar Islanding scheme as per the deliberation held in the review meeting held on 07.07.2020. Moreover, order for system study of Agra-Lalitpur IS has been placed on CPRI.
- In regard to Delhi Islanding scheme, NRPC Sectt representative informed that as per the deliberation held in the review meeting held on 13.07.2020, response from Delhi Discoms is awaited regarding whether trippings through ADMS system can be facilitated for Delhi Islanding scheme.

- MS, NRPC expressed apathy over no significant progress in implementation of Delhi Islanding Scheme since last 18 months. He suggested that in view of allocation of Dadri-II to Haryana and non-scheduling of Jhajjar and Dadri-II due to high cost, the proposed islanding may not survive. Therefore, it would be better to have two small islands - one with GTs and the other with Bawana. Mostly, these plants operate and therefore survival chances for islands would be more. Moreover, these islands could be controlled through UFRs at 220kV level by STU and not at 33kV by Discoms as envisaged in proposed scheme. It was suggested that DTL may bring out proposal for further discussion at NRPC Sectt and NRLDC level.
- NRPC Sectt representative informed that HPSLDC has been requested to provide load wise details for the islanding scheme finalized by them.
- In the 198th OCC, NRPC Sectt representative informed forum that Delhi SLDC has been asked to submit generation data for last 2 years (96 blocks) of power stations in Delhi control area and they need to expedite the submission of requisite data. Further, forum was of view that after submission of data, a meeting may be conducted between NRPC Sectt., NRLDC and Delhi SLDC to review the same.
- In regard to Unchahar Islanding scheme, NRPC Sectt representative informed that complete proposal has been received. On analysis of same, it is felt that logic needs to be discussed and NTPC Unchahar needs to confirm whether machines can be operated in FGMO mode in islanding operation. Further, NRPC Sectt representative informed that they would be their sharing their observations with UPSLDC/NTPC and thereafter, comments/confirmation of NTPC on the same may kindly be communicated to NRPC Sectt.
- NRPC Sectt representative intimated that based on the discussion in the 56th NRPC meeting for Rajwest and Suratgarh islanding schemes, RVPN was asked to review the Load in Suratgarh and Rajwest islands and reduce it so that there may be some adequate gap between island load and generation.
- NRPC Sectt representative apprised that Punjab has submitted the details and same has been scrutinized. Observations of NRPC Sectt have been shared with Punjab and they may kindly submit their response on the same. Punjab representative mentioned that reply on the observations would be submitted within two-three days.
- As regards to Dehradun Islanding Scheme, NRPC Sectt representative reiterated that a report may kindly be submitted to OCC forum after analyzing the past generation and demand data pertaining to the proposed scheme. Based on the report, further decision would be taken.
- NRPC Sectt representative intimated that data from Himachal Pradesh has been received and same is under examination.
- In the meeting (199th OCC), NRPC Sectt representative informed forum that a meeting was conducted with the officials of HP and NRLDC to review the implementation of HP islanding scheme. In the meeting, average generation and load pattern of last two years were observed for both the islanding schemes. MoM of the meeting is attached at **Annexure-A.II**.

- Further, NRPC representative informed forum that a review meeting was conducted with the officials of UP and NRLDC to discuss the implementation of Unchahar-Lucknow Islanding scheme. MoM of the meeting is attached at **Annexure-A.III**.
- Rajasthan representative intimated forum that they have conducted a mock trial in which it took 79 ms for UFR command to reach RTU from data centre which is quite high and same is being reassessed with STLMS. Further, NRPC representative mentioned that as discussed in 56th NRPC meeting, Load of Suratgarh & Rajwest island may also be reduced to have appropriate gap in load generation. In this regard, Rajasthan representative informed that revised load setting will be shortly submitted to NRPC Sectt.
- MS, NRPC expressed apathy over no significant progress in implementation of Islanding Scheme for NR states and was of view that nodal officer for each islanding scheme shall be nominated by each State/UT and concerned representative of NRPC and NRLDC shall visit respective NR State/UT where the islanding scheme is being proposed and discuss the issues being faced in the implementation of cited scheme with the concerned higher officials.

Agenda No. 8. Coal Supply Position of Thermal Plants in Northern Region

- In the meeting, NRPC representative apprised the forum about the coal stock position of generating stations in northern region during current month (till 10th September 2022).
- Average coal stock position of generating stations in northern region, having critical stock, during first ten days of September 2022 is as follows:

Station	Capacity (MW)	PLF % (prev. months)	Normative Stock Reqd. (Days)	Actual Stock (Days)
ANPARA C TPS	1200	78.51	13	1.2
BARKHERA TPS	90	64.55	21	1.5
GOINDWAL SAHIB TPP	540	47.60	21	2.0
HARDUAGANJ TPS	1265	58.00	21	3.8
KHAMBARKHERA TPS	90	59.81	21	1.7
KUNDARKI TPS	90	59.53	21	0.1
LALITPUR TPS	1980	77.28	21	2.0
MAQSOODPUR TPS	90	58.66	21	1.7
OBRA TPS	1094	50.78	21	3.0
PARICHHA TPS	1140	57.15	21	2.6
ROSA TPP Ph-I	1200	72.88	21	1.5
UTRAULA TPS	90	65.87	21	1.9
KALISINDH TPS	1200	74.54	21	2.2

- In the meeting, above mentioned generating stations were requested to take adequate measures.

Agenda No. 9. Deemed Availability of relocation/height raising of 400kV Jharli-Mundka Transmission line at Silani Chowk in Jhajjar Distt. (Agenda by NHAI)

- In the meeting, NRPC representative presented the matter to the forum.
- Haryana representative informed forum that they have also planned the shutdown of 400 kV Jhajjar (APCL) - Daulatabad (HV) of both circuit one at a time for replacement of Porcelain insulator work. OCC forum advised Haryana STU to complete the work between 22nd Sep'22 to 14th Oct. Moreover, one circuit shutdown from Jhajjar end could be given at a time.
- MS, NRPC was of view that shutdown of both the circuits of 400 kV Jhajjar (APCL) - Daulatabad (HV) must be availed first so that the system at Daulatabad end is strengthened before availing shutdown of 400kV Jharli-Mundka Transmission line for cited NHAI work.
- OCC provisionally approved the shutdown of 400kV Jharli-Mundka Transmission line from 15th Oct to 25th Oct, subject to completion of porcelain insulator work by Haryana on Jhajjar-Daulatabad circuit before 15th Oct'22.

Agenda No. 10. Third party protection audit at PTCUL sub-stations (Agenda by PTCUL)

- NRPC representative presented the matter to the forum and informed that the aforesaid agenda was also deliberated in 196th OCC meeting, wherein PTCUL/UJVNL was requested to submit the name and details of the coordinator for this activity and also the details (name, location, distance from Dehradun) of all sub-stations (to be audited). The OCC forum is intimated that cited information has been received from PTCUL.
- NRPC representative also intimated that as per MoM of 196th OCC meeting NRLDC, POWERGRID, UPPTCL/UPSLDC, THDC and PTCUL were asked to submit two/three nominations each for the said protection audit to NRPC Sectt. However, till date two nominations each from NRLDC and THDC and one nomination from NR-3 POWERGRID has been received for this activity. Further, UP has shown its reservation by citing manpower shortage.
- In the meeting, PTCUL gave nominations of two officers for this work.
- MS, NRPC asked NR-1 and NR-3, POWERGRID to nominate 2 officials each for this activity within 2 working days.
- SE(O), NRPC proposed two officers from NRPC Sectt. for this activity and mentioned that at least 5 teams comprising of 2 officials each can be formed to carry out the third-party audit work at 20 substations (10 PTCUL and 10 UJVN).
- Further, OCC forum was of the view that boarding/lodging and logistics support to the teams carrying out the aforesaid audits would be taken care of by the concerned organization, i.e., PTCUL/UJVNL in the present case.

Agenda No.11. Utilization of 01 no. 500MVA 400/200/33kV Transformer at Maharani Bagh or 01 no. 315MVA 400/200/33kV Transformer available at Ballabhgarh. (Agenda by DTL)

- In the meeting, DTL representative presented the matter to the forum.

- NR-1 POWERGRID representative intimated forum that presently there are no regional spares available with them as the transformer mentioned by DTL in their letter have been decapitalized. Further, he intimated that the 500MVA 400/200/33kV Transformer at Maharani Bagh would not meet the requirement of DTL; however, with regard to 315MVA 400/200/33kV Transformer at Ballabhgarh the matter is being discussed internally with POWERGRID management.
- MS, NRPC was of view that NRPC Sectt. would write a letter to Director (Operations), POWERGRID for exploring possibility of providing the decapitalized 315MVA 400/200/33kV Transformer at Ballabhgarh to DTL for ensuring power supply reliability for Delhi transmission system.

Agenda No.12. Request for shutdown approval of 800kV HVDC Champa-Kurukshetra & 500kV HVDC Rihand-Dadri Transmission Line infringing the Rail network of Jawaharpur thermal Power project being constructed by JVUNL, diversion work being executed by Powergrid (Agenda by NR-3 Powergrid)

- In the meeting, NRPC representative informed forum that the aforesaid matter has already been discussed in the outage meeting of NRPC held on 15.09.2022.
- OCC forum noted.

Additional Agenda No.1: Preliminary Report on Grid event in Rajasthan Region on 11.09.2022 at 12:22:02 hrs (Agenda by NR-I POWERGRID)

- NR-1, POWERGRID vide letter dated 14.09.2022 (copy enclosed as **Annexure-A.V**) shared with NRPC Sectt., the preliminary report on grid event occurred in Rajasthan Region at 12:22 Hrs. on 11.09.2022 for further deliberation in 199th OCC meeting of NRPC.
- In the meeting, NRPC representative presented the matter to the forum.
- NRLDC representative presented his observations on these tripping and the cause of fault on the 220 kV Bhadla Solar energy line which led to cascaded tripping of other 765 kV transmission elements. Further, it was submitted that NRLDC has discussed the matter in detail in series of meetings with all the stakeholders viz., RE developers and OEMs of Inverters and have proposed suggestions for avoiding such trippings.
- The OCC forum noted the observations of NRLDC.

Additional Agenda No.2: Special Protection Scheme (SPS) at 400/220kV Fatehgarh Park (Agenda by Adani Green Energy Limited)

- Adani Green Energy Limited vide its mail dated 13.09.2022 has shared Special Protection Scheme (SPS) (copy enclosed as **Annexure A.VI**) for implementation at 400/220kV 1000 MW Fatehgarh solar Park (Adani Renewable Energy Park Rajasthan Limited) for avoiding black out at time of tripping of any one ICT.
- In the meeting, Adani Green Energy Limited representative presented the matter to the forum.
- NRLDC representative requested Adani Green Energy Limited for sending the detailed study for further analysis.

- MS, NRPC desired that detailed plan may be taken up in the NRPC meeting for the present proposed SPS by Adani Green Energy Limited as well as for the other critical SPS schemes.

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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 — Aug-2022
◎ HARYANA — May-2022
◎ HP — Jan-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jul-2022
◎ RAJASTHAN — Aug-2022
◎ UP — Sep-2022
◎ UTTARAKHAND — Aug-2022
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 — Jun-2022
◎ HARYANA — Jun-2022
◎ HP — Aug-2022
◎ J&K and LADAKH — Not Available
◎ PUNJAB — Jun-2022
◎ RAJASTHAN — Jun-2022
◎ UP — Jun-2022
◎ UTTARAKHAND — Jun-2022
◎ BBMB — Jun-2022
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 — Not increased
◎ PUNJAB — Increased
◎ RAJASTHAN — Increased
◎ UP — Increased
◎ UTTARAKHAND — Increased
◎ BBMB — Increased</td></tr>
</table>

<table>
<tr><td></td><td></td><td></td><td colspan="3">BBMB was requested to submit the updated self certification report indicating increase of 0.2 Hz in AUFR settings, within one week. J&K and LADAKH were requested to update status for increasing settings of UFRs.</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 colspan="3">Status of the information submission (month) from states / utilities is as under:
◎ HARYANA — Sep-2022
◎ PUNJAB — Sep-2022
◎ RAJASTHAN — Sep-2022
◎ UP — Sep-2022
◎ NTPC — Feb-2022
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>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 colspan="3">All states/UTs are requested to submit daily data on MERIT Order Portal timely.</td></tr>
<tr><td>6</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 colspan="3">Status:
◎ DELHI — Fully implemented
◎ HARYANA — Scheme not implemented
◎ HP — Scheme not implemented
◎ PUNJAB — Scheme not implemented
◎ RAJASTHAN — Under implementation. Likely completion schedule is 31.12.2022.
◎ UP — Scheme implemented by NPCIL only</td></tr>
</table>

7	Reactive compensation at 220 kV/ 400 kV level at 15 substations			
	State / Utility	Substation	Reactor	Status
i	POWERGRID	Kurukshetra	500 MVAr TCR	Anticipated commissioning: Nov'22 2022
ii	DTL	Peeragarhi	1x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iii	DTL	Harsh Vihar	2x50 MVAr at 220 kV	PO awarded to M/s Kanohar Electricals Ltd. Drawings approved and under final stage inspection. GIS Bay is already available.
iv	DTL	Mundka	1x125 MVAr at 400 kV & 1x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
v	DTL	Bamnauli	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. Reactor part tender is dropped and at present same is under revision.
vi	DTL	Indraprastha	2x25 MVAr at 220 kV	Bay work awarded to M/s. Ethos. Bay work is expected to be completed by Dec.21. 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 - LOA issued on dated. 17.08.2021 and date of completion of project is 18 months from the date of LOA. 220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
ix	PUNJAB	Nakodar	1x25 MVAr at 220 kV	220kV Reactors - LOA issued on dated 19.07.2021 and date of completion of project is 18 months from the date of LOA.
x	PTCUL	Kashipur	1x125 MVAR at 400 kV	Price bid has been opened and is under evaluation
xi	RAJASTHAN	Akal	1x25 MVAr	1x25 MVAR Reactor at Akal has been commissioned on dated 25th July' 2022.

xii	RAJASTHAN	Bikaner	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 2022.
xiii	RAJASTHAN	Suratgarh	1x25 MVAr	Erection work of 1x25 MVAR Reactors at Bikaner and Suratgarh completed and testing work is pending. The same are likely to be commissioned in Aug / Sept 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.
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.

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.	-	PDD, J&K to update the status.
2	400/220kV, 2x315 MVA New Wanpoh	Commissioned: 6 Total: 6	Utilized: 2 Unutilized: 4	• 220 kV New Wanpoh - Alusteng D/c Line	-	PDD, J&K to update the status.
				• 220 kV New Wanpoh - Mattan D/c Line	-	PDD, J&K to update the status.
3	400/220kV, 2x315 MVA Amargarh	Commissioned: 6 Total: 6	Utilized: 6 Unutilized: 2	• 220kV D/C line from 400/220kV Kunzar - 220/33kV Sheeri	-	PDD, J&K to update the status.
4	400/220kV, 2x500 MVA Kurukshetra (GIS)	Commissioned: 8 Total: 8	Utilized: 6 Unutilized: 2	• 220kV Bhadson (Kurukshetra) – Ramana Ramani D/c line	-	HVPNL to update the status.
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: 5 Unutilized: 1 (1 bays to be utilized shortly) Approved/Under Implementation:1	• 220 kV D/C Shahajahanpur (PG) - Gola line	Oct'22	Updated in 196th OCC by UPPTCL
				• 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 (2 bays to be utilized shortly)	• 220 kV Hamirpur-Dehan D/c line	Commissioned	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
9	Bhiwani 400/220kV S/s	Commissioned: 6 Total: 6	Utilized: 0 Unutilized: 6	• 220 kV D/C line Bhiwani (PG) – Bhiwani (HVPNL) line	Dec'22	Updated in 197th OCC by HVPNL
				• 220 kV Bhiwani (PG) - Isherwal (HVPNL) D/c line.	Dec'22	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
				• 220 kV Bhiwani (PG) - Dadhibana (HVPNL) D/c line.	Apr'24	Issue related to ROW as intimated in 192nd OCC.HVPNL to update the status.
10	Jind 400/220kV S/s	Commissioned: 4 Approved:4 Total: 8	Utilized: 4 Unutilized: 0 Approved:4	• 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	Updated in 197th 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: 0 Unutilized: 6	• HPPTCL has planned one no. of 220kV D/c line from Kala Amb 400/220kV S/s to 220/132kV Kala Amb S/s	Mar'23	Updated in 198th OCC by HPPTCL
				• Network to be planned for 4 bays	-	HPPTCL to update the status.
13	400/220kV Kadarpur	Commissioned: 8	Utilized: 0	• 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'23	Updated in 197th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
13	Sub-station	Total: 8	Unutilized: 8	• 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	May'23	Updated in 197th OCC by HVPNL
14	400/220kV Sohna Road Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4	• LILO of both circuits of 220kV D/c Sector-69 - Roj Ka Meo line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
				• LILO of both circuits of 220kV D/c Badshahpur-Sec77 line at 400kV Sohna Road	Jun'23	Updated in 197th OCC by HVPNL
15	400/220kV Prithla Sub-station	Commissioned: 8 Total: 8	Utilized: 2 Unutilized: 4 Under Implementation:2	• Prithla - Harfali 220kV D/c line with LILO of one ckt at Meerpur Kurali	Commissioned	Commisioned date: 31.12.2021. Updated in 198th OCC by HVPNL
				• LILO of both ckt of 220kV D/c Ranga Rajpur – Palwal line	-	HVPNL to update the status
				• 220kV D/C for Sector78, Faridabad	02.03.2023	Updated in 198th OCC by HVPNL
				• Prithla - Sector 89 Faridabad 220kV D/c line	31.03.2024	Under Implementation (Mar'24). Updated in 198th OCC by HVPNL
16	400/220kV Sonepat Sub-station	Commissioned: 6 Under Implementation:2 Total: 8	Utilized: 2 Unutilized: 2 Under Implementation:2	• LILO of both circuits of 220kV Samalkha - Mohana line at Sonepat	-	HVPNL to update the status.
				• Sonepat - HSIISC Rai 220kV D/c line	Nov'22	Updated in 196th OCC by HVPNL
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)	Oct'22	In Tendering stage as updated in 192nd OCC by RVPNL.
18	400/220kV Kotputli Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Kotputli - Pathreda 220kV D/c line	-	Bid documents under approval as updated in 195th 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 comiisioned 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 4 bays	Oct'22	• Lucknow -Kaurasa (Sitapur), 220 kV D/C line expected energization date Oct'22 updated by UPPTCL in 196th OCC _____ • No planning for 2 no. of bays upated by UPPTCL in 196th OCC
22	400/220kV Gorakhpur Sub-station	Commissioned: 6 Total: 6	Utilized: 4 Unutilized: 2	• Network to be planned for 2 bays	Dec'22	• Gorakhpur(PG)- Maharajganj, 220 kV D/C line expected energization date Dec'22 updated by UPPCL in 196th OCC
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 4 bays	-	• UPPTCL intimated that 02 no. of bays under finalization stage _____ • No planning for 2 no. of bays updated by UPPTCL in 196th OCC
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	Oct'22	Updated in 198th OCC by HVPNL
		Commissioned: 8 Under tender:2	Utilized: 2	• Panchkula – Pinjore 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Sector-32 220kV D/c line	31.12.2022	Updated in 194th OCC by HVPNL
				• Panchkula – Raiwali 220kV D/c line	Commissioned	Updated in 194th OCC by HVPNL

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
25	400/220kV Pachkula Sub-station	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	Unutilized: 4 Under Implementation:2	• Panchkula – Sadhaura 220kV D/c line: Sep'23	Sept'23	Updated in 194th OCC by HVPNL
26	400/220kV Amritsar S/s	Commissioned:7 Approved in 50th NRPC- 1 no. Total: 8	Utilized: 6 Unutilized: 1 Approved in 50th NRPC- 1 no.	• Amritsar – Patti 220kV S/c line	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th 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)	May'23	Route survey/tender under process. Work expected to be completed by May 2023. Updated in 198th OCC by PSTCL.
27	400/220kV Bagpat S/s	Commissioned: 8 Total: 8	Utilized:6 Unutilized: 2	• Bagpat - Modipuram 220kV D/c line	Aug'22	Updated in 196th OCC by UPPTCL, within 10 day tentative charging updated in 198th OCC by UPPTCL.
28	400/220kV Bahardurgarh S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	Mar'24 and July'24	Updated in 198th OCC by HVPNL
29	400/220kV Jaipur (South) S/s	Commissioned: 4 Total: 4	Utilized:2 Unutilized: 2	• Network to be planned for 2 bays.	-	LILO case of 220 kV Dausa – Sawai Madhopur line at 400 kV GSS Jaipur South (PG) is under WTD approval as updated by RVPNL in 195th OCC
30	400/220kV Sohawal S/s	Commissioned: 8 Total: 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
				• 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	• Network to be planned for 2 bays	-	RVPNL to update the status
32	400/220kV, Manesar	Commissioned: 8 Total: 8	Utilized: 4 Unutilized: 4	• Network to be planned for 4 bays	-	One bay 220 kV Manesar (PG)-Panchgaon ckt commissioned on 05.09.2022
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	Oct'22	Saharanpur(PG)-Devband D/c line expected energization date Oct'22 updated by UPPTCL in 199th 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	Mar'23	Direct circuit from 220 kV Lalton Kalan to Dhandari Kalan to be diverted to 400 kV PGCIL Ludhiana. Work expected to be completed by March 2023.Updated in 198th OCC by PSTCL.

Sl. No.	Substation	Downstream network bays	Status of bays	Planned 220 kV system and Implementation status	Revised Target	Remarks
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 not ready.Updated in 198th 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
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.

2. Establishment of new 400/220kV substations in Northern Region:

Sl. No.	Name of Substation	MVA Capacity	Expected Schedule		Downstream connectivity by States
1	400/220kV Dwarka-I GIS (8 nos. of 220kV bays)	4x 500	Mar'22		DTL to update the status
2	220/66kV Chandigarh GIS (8 nos. of 66kV bays)	2x 160	Apr'22		Chandigarh to update the status.
3	400/220kV Jauljivi GIS Out of these 8 nos. 220kV Line Bays, 4 nos. (Pithoragath-2, & Dhauliganga-2) would be used by the lines being constructed by POWERGRID and balance 4 nos. bays would be used by the lines being constructed by PTCUL.	2x315	Feb'22		• 220kV Almora-Jauljibi line • 220kV Brammah-Jauljibi line PTCUL to update the status of lines.

FGD Status

Updated status of FGD related data submission

NTPC (25.02.2022)
MEJA Stage-I (Updated by UP on 18.06.2022)
RIHAND STPS
SINGRAULI STPS
TANDA Stage-I
TANDA Stage-II
UNCHAHAR TPS
UPRVUNL (18.06.2022)
ANPARA TPS
HARDUAGANJ TPS
OBRA TPS
PARICHHA TPS

PSPCL (16.08.2022)
GGSSTP, Ropar
GH TPS (LEH.MOH.)
RRVUNL (08.08.2022)
CHHABRA SCPP
CHHABRA TPP
KALISINDH TPS
KOTA TPS
SURATGARH SCTPS
SURATGARH TPS

Updated status of FGD related data submission

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

HGPCL (21.03.2022)
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. (18.06.2022)
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: 30-09-2022), INDIRA GANDHI STPP U#2 (Target: 30-09-2022), INDIRA GANDHI STPP U#3 (Target: 30-09-2022)
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: 30-04-2021), PANIPAT TPS U#7 (Target: 28-02-2021), PANIPAT TPS U#8 (Target: 31-12-2020), RAJIV GANDHI TPS U#1 (Target: 30-04-2022), RAJIV GANDHI TPS U#2 (Target: 28-02-2022), YAMUNA NAGAR TPS U#1 (Target: 31-12-2021), YAMUNA NAGAR TPS U#2 (Target: 31-10-2021)

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: 30-06-2022), RIHAND STPS U#1 (Target: 30-06-2024), RIHAND STPS U#2 (Target: 30-06-2024), RIHAND STPS U#3 (Target: 31-12-2023), RIHAND STPS U#4 (Target: 31-12-2023), RIHAND STPS U#5 (Target: 30-06-2023), RIHAND STPS U#6 (Target: 30-06-2023), SINGRAULI STPS U#1 (Target: 30-06-2024), SINGRAULI STPS U#2 (Target: 30-06-2024), SINGRAULI STPS U#3 (Target: 30-06-2024), SINGRAULI STPS U#4 (Target: 30-06-2024), SINGRAULI STPS U#5 (Target: 30-06-2024), SINGRAULI STPS U#6 (Target: 31-03-2023), SINGRAULI STPS U#7 (Target: 31-03-2023), UNCHAHAR TPS U#1 (Target: 31-12-2023), UNCHAHAR TPS U#2 (Target: 31-12-2023), UNCHAHAR TPS U#3 (Target: 30-06-2024), UNCHAHAR TPS U#4 (Target: 30-06-2024), UNCHAHAR TPS U#5 (Target: 30-06-2024), UNCHAHAR TPS U#6 (Target: 30-06-2022), MEJA Stage-I U#1 (Target: 31-12-2022), MEJA Stage-I U#2 (Target: 31-03-2023), TANDA Stage-I U#3 (Target:), TANDA Stage-I U#4 (Target:), TANDA Stage-II U#3 (Target: 31-12-2022), TANDA Stage-II U#4 (Target: 31-12-2022)

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: 31-12-2024), LALITPUR TPS U#2 (Target: 30-09-2024), LALITPUR TPS U#3 (Target: 30-06-2024)
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: 31-12-2024), GH TPS (LEH.MOH.) U#2 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#3 (Target: 31-12-2024), GH TPS (LEH.MOH.) U#4 (Target: 31-12-2024), GGSSTP, Ropar U#3 (Target: 31-03-2022), GGSSTP, Ropar U#4 (Target: 31-05-2022), GGSSTP, Ropar U#5 (Target: 31-07-2022), GGSSTP, Ropar U#6 (Target: 30-09-2022)

Rosa Power Supply Company	ROSA TPP Ph-I U#1 (Target: 31-12-2024), ROSA TPP Ph-I U#2 (Target: 31-12-2024), ROSA TPP Ph-I U#3 (Target: 31-12-2024), ROSA TPP Ph-I U#4 (Target: 31-12-2024)
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: 31-12-2024), SURATGARH TPS U#2 (Target: 31-12-2024), SURATGARH TPS U#3 (Target: 31-12-2024), SURATGARH TPS U#4 (Target: 31-12-2024), SURATGARH TPS U#5 (Target: 31-12-2024), SURATGARH TPS U#6 (Target: 31-12-2024), SURATGARH SCTPS U#7 (Target: 31-12-2024), SURATGARH SCTPS U#8 (Target: 31-12-2024), CHHABRA TPP U#1 (Target: 31-12-2024), CHHABRA TPP U#2 (Target: 31-12-2024), CHHABRA TPP U#3 (Target: 31-12-2024), CHHABRA TPP U#4 (Target: 31-12-2024), CHHABRA SCPP U#5 (Target: 31-12-2024), CHHABRA SCPP U#6 (Target: 31-12-2024), KALISINDH TPS U#1 (Target: 31-12-2024), KALISINDH TPS U#2 (Target: 31-12-2024)
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)

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

सं.:उ.क्षे.वि.स./प्रचालन/106/02/2022/ 8951-8952 दिनांक: 19.09.2022

विषय: Minutes of the meeting held on 14.09.2022 for discussing Implementation of Islanding Schemes in Himachal Pradesh - reg

Please find attached minutes of the meeting held on 14.09.2022 at 11:00 AM (through VC) for discussing Implementation of Islanding Schemes in Himachal Pradesh.

संलग्नक:यथोपरि

19/09/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

1. मुख्य अभियंता, हिमाचल प्रदेश राज्य भार प्रेषण केंद्र, शिमला (cehpsldc@gmail.com)
2. सी.जी.एम इन-चार्ज, उत्तर क्षेत्रीय भार प्रेषण केंद्र, नई दिल्ली (rk.porwal@posoco.in)

Minutes of the meeting held on 14.09.2022 for discussing Implementation of Islanding Schemes in Himachal Pradesh

After welcoming the participants from HP SLDC, HPPTCL, HPSEBL and NRLDC, EE(O), NRPC apprised that HP has submitted some data as discussed in meeting held on 15.07.2022 and the same needs to be analysed in this meeting.

A. Shimla - Solan Islanding scheme

1. EE(O), NRPC presented the graphical details of average generation and load considered by HP in the proposed island. It was observed that during May-October (high hydro season), load-generation scenario in last two years was as below:

FY	Average generation (Bhabha HEP and other IPPs) (MW)	Average Load (With Barotiwala)	Average Load (Without Barotiwala)
2020-21	150*	-	-
2021-22	200	130	80

* *Due to Outage of 1 unit of Bhabha*

2. EE(O), NRPC highlighted that as per details submitted by HP, there are UFRs at 132 kV Barotiwala (Ckt-I & II) and 132 kV Solan (33 kV Lower/Upper Yard) that give load relief of 100 MW. Therefore, there is need to remove UFRs from these locations so that sufficient load may be ensured in the proposed island.
3. HP was requested to remove UFRs from above locations and provide equivalent load relief quantum at suitable locations out of the Shimla-Solan Island.
4. NRLDC suggested that PFR testing may be carried out for generators. It was also suggested that use of pondage at Bhabha may be explored.
5. HPSLDC informed that Bhabha HEP has designed 3 hrs pondage; however, practical condition may be different. HP SLDC stated that issue will be taken up with HPSEB.

B. Kullu - Manali Islanding Scheme

1. EE(O), NRPC presented the graphical details of average generation and load under island. It was observed that during May-October (high hydro season), load-generation scenario in last two years was as below:

FY	Average generation (Larji and Malana HEP) (MW)	Average Load
2020-21	150	-
2021-22	130	60

2. It was observed that load is very less compared to generation. Accordingly, HP SLDC was suggested that only Malana-I HEP (84.6 MW) may be considered in Islanding scheme.
3. HP apprised that there are no UFRs within the proposed Kullu-Manali Islanding Scheme.
4. HP was suggested that PFR testing may also be carried out for Malana-I.
5. HP SLDC was requested to submit governor data (pertaining to generators of both islands) as per format/requirement to be intimated by NRLDC.
6. HP SLDC was requested to submit above mentioned data / information along with updated schemes within a weeks' time.

Meeting ended with vote of thanks.

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सत्यमेव जयते

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

सं.: उ.क्षे.वि.स./प्रचालन/106/02/2022/8953-8956 दिनांक: 20.09.2022

विषय: Minutes of the meeting held on 14.09.2022 for discussing implementation of Islanding Schemes in UP – reg.

Please find attached minutes of the meeting held on 14.09.2022 at 03:00 PM (through VC) for discussing Implementation of Islanding Schemes in UP.

संलग्नक:यथोपरि

सौमित्र 20/09/2022.

(सौमित्र मजूमदार)
अधीक्षण अभियंता (प्रचालन)

सेवा में,

1. मुख्य अभियंता, उत्तर प्रदेश राज्य भार प्रेषण केंद्र, गोमती नगर, लखनऊ, उत्तर प्रदेश (cecs@upsldc.org)
2. AGM,(.डी.एम.ई) .एनपीटीसी ऊंचाहार (vishnumurthy@ntpc.co.in)
3. सी.जी.एम इन-चार्ज, उत्तर क्षेत्रीय भार प्रेषण केंद्र, नई दिल्ली (rk.porwal@posoco.in)
4. जी.एम, राष्ट्रीय भार प्रेषण केंद्र, नई दिल्ली (ashokkr@posoco.in)

Minutes of the meeting held on 14.09.2022 for discussing Implementation of Islanding Schemes in UP

MS, NRPC welcomed the participants from UP SLDC, UPPTCL, NTPC, NLDC and NRLDC.

2. EE (O), NRPC apprised that UP SLDC has submitted revised proposed Unchahar Islanding scheme and comments have been received thereon from NRLDC and NTPC.

3. It was mentioned that NTPC has stated that average generation at Unchahar considered for stage-1 islanding is 800 MW; however, average load estimated is around 640MW. Hence, it was highlighted by NTPC that there is an excess generation of 160MW, which is significant.

4. UP SLDC stated that generation has been kept 20% excess as per general practice and as discussed in NRPC meeting. It was highlighted that low voltages of large number of buses and overloading of lines were observed when higher load was considered.

5. MS, NRPC enquired about logic of considering 20% excess generation as it can lead to tripping of unit(s) in the eventuality of on over-frequency of the island.

6. NRLDC highlighted that as per current practice generation is being kept 10 – 20% excess compared to load. It was further stated that technical literature in this regard may be explored. Further, philosophy being followed in other regions may also be explored.

7. NTPC confirmed that units are capable of operating in RGMO/FGMO as per requirement; however, response is very much slow for the case of islanding.

8. He further requested for exploring possibility of AGC in islanding scheme.

9. NLDC stated that Area Control Error (ACE) in AGC is calculated considering whole NR as region and commands are issued to generators in region on the basis of grid condition. Therefore, AGC is not expected to operate for a single machine. Moreover, it takes around 4 seconds to get data from machine. Hence, AGC can't be used in islanding schemes.

10. It was deliberated that automatic backdown of such large MW quantum may not be possible in such a short duration. Hence, it was decided that Generation-load difference may be decreased.

11. UP SLDC stated that generation back down may be slow compared to tripping of unit, hence quickest way to achieve stability in island is tripping of the unit.

12. NTPC stated that there may be delay in getting inputs for the comparator/controller logic proposed by UP. Hence, it may not be practical in island scenario.

13. Accordingly, it was decided that comparator/controller may not be useful in islanding schemes and it may be avoided. Islanding scheme shall be planned on basis of frequency setting.

14. Further, UP SLDC also raised issue of delay in two stages of islanding schemes which is currently kept as 3.5 sec. It was advised that currently setting may not be changed. The same may be reviewed later, if required.

15. MS, NRPC suggested UP SLDC to plot graphs of average generation of Unchahar and corresponding load for 2 years. Using these graphs, average generation and load may be obtained.

16. It was suggested that generation may be kept approx. 10% excess to load. Accordingly, no. of units to be considered in the islanding may be considered.

17. UP SLDC was requested to submit the data in the OCC meeting on 16.09.2022 if possible but not later than 20.09.2022.

Meeting ended with vote of thanks.

*****

पावरग्रिड
POWERGRID

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

Annexure-A.V

Ref: - N1/AM/

Date:- 14th September'2022

To,

The Member Secretary,
Northern Regional Power Committee,
18-A, Qutab Institutional Area,
Katwaria Sarai, New Delhi-110 016

Subject: **Proposed agenda point for 199th OCC meeting of Northern Region.**

Dear Sir,

Enclosed herewith please find the preliminary report on grid event occurred in Rajasthan Region at 12:22HRS on 11/09/2022 for kind information and further deliberation in 199th OCC meeting of Northern Region in order to avoid reoccurrence of such incidents.

Thanking you with regards.

Yours sincerely,

14/09/22

(A. K. Behera)
Chief GM (AM), NR-1

Copy :-

i) Chief GM(I/C), NRLDC, POSOCO
18-A, Qutab Institutional Area,
Katwaria Sarai, New Delhi-110 016

ii) ED, NR1 for kind information please.
iii) ED(AM), CC --- do--

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

Preliminary Report on Grid event in Rajasthan Region on 11.09.2022 at 12:22:02 hrs

Date & Time of Tripping/Event: **11.09.2022 12:22:02 hrs**

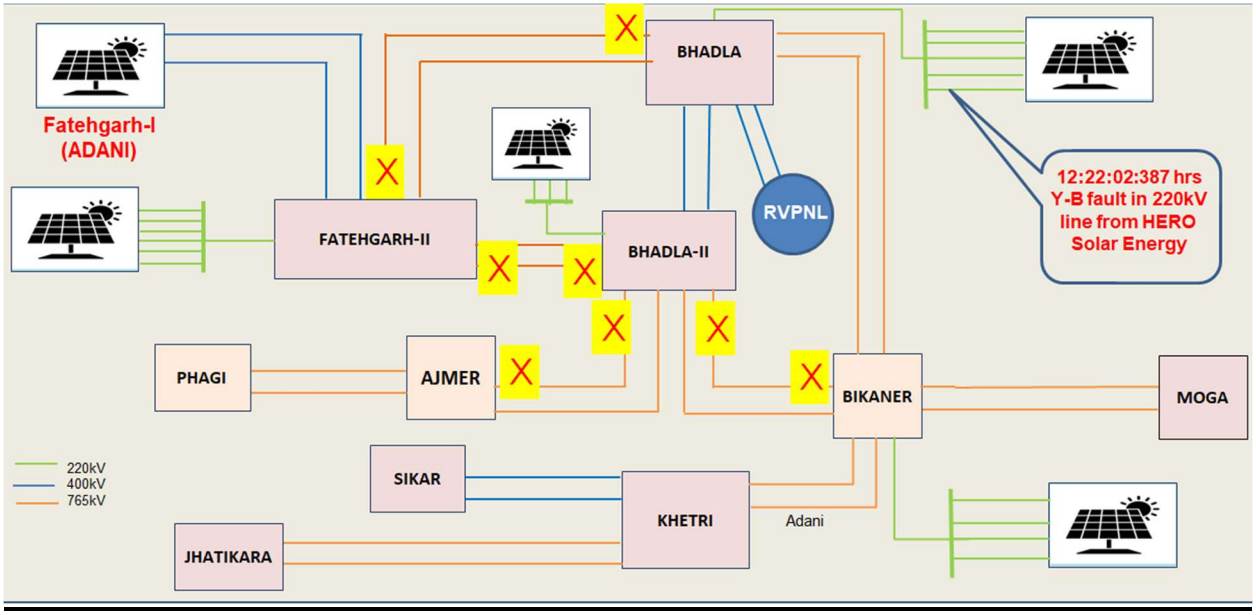
Description of Tripping/Event:

At 12:22:02 hrs on 11.09.2022, the 220kV Bhadla-Hero Solar energy line (length 10.5km, owned by M/s Hero Solar energy with Installed capacity: 250MW) tripped on Y-B fault (15 kA, fault location- 5.8km). The line was evacuating generation of approx. 240 MW at the time of tripping. As evident from disturbance records, the above event caused generation backdown from several solar/wind generators in the region, which in turn led to high temporary overvoltages (~820+ kV) in the nearby substations. This load-generation imbalance led to overvoltage condition and cascaded tripping of following elements at Fatehgarh-1, Bhadla-2 and Bhadla substations after certain intervals on overvoltage protection(Stage-I):

Sl.	Transmission element	Date/time	Events	Remarks
	12:22:02:287 hrs : Trigger Event		**Tripping of 220kV Bhadla-Hero Solar energy line**	**00:00:00**
1	**12:22:17:940**	765kV Bhadla Fatehgarh-2 Ckt-I	Tripped on Stage-I overvoltage protection (108%, 5 sec time delay)	Tripped after **15 seconds** of Tripping of Hero line (Trigger event
2	**12:22:19:081**	765kV Bhadla-2 Bikaner Ckt-I	Tripped on Stage-I overvoltage protection (108%, 6 sec time delay)	Tripped on OV after 16 seconds
3	**12:22:18:253**	765kV Bhadla-2 Ajmer Ckt-I	Tripped on Stage-I overvoltage protection (108%, 5 sec time delay)	Tripped on OV after 16 seconds
4	**12:22:24:995**	765kV Bhadla-2 Fatehgarh-2 Ckt-I	Tripped on Stage-I overvoltage protection (109%, 7 sec time delay)	Tripped on OV after 22 seconds

No other 220kV line connected to Renewable generators was reported to be tripped at the time of fault (except the faulty line i.e. 220kV Bhadla-Solar).

SLD depicting outage of 765kV lines owned by POWERGRID:



Antecedent Conditions:

Pre-Disturbance Scenario	Trigger event	Post-disturbance scenario
Pre-disturbance voltage at Fatehgarh-2: **753kV**	12:22:02:387 hrs: Y-B fault in 220kV Line connected to Hero Power Solar Generator	Post-disturbance voltage at Fatehgarh-2: **827kV** Lines tripped on Overvoltage: 765kV Fatehgarh-2 Bhadla Ckt-I 765kV Fatehgarh-2 Bhadla-II Ckt-II 765kV Bhadla-2 Ajmer Ckt-I 765kV Bhadla-2 Bikaner Ckt-I

Status of Shunt Reactors:

Substation	Status	Status**	Opening Time
Fatehgarh-2	765kV 240MVAr Bus Reactor-1	Out of service	08-09-2022 08:58
	765kV 240MVAr Bus Reactor-2	Out of service	11-09-2022 08:56
	400kV 125MVAr Bus Reactor	Out of service	11-09-2022 09:36
Bhadla-2	765kV 240MVAr Bus Reactor-1	Out of service	11-09-2022 10:19
	765kV 240MVAr Bus Reactor-2	Out of service	11-09-2022 10:42
	240MVAr Bikane-2 Line Reactor	Out of service	11-09-2022 11:47
	400kV 125MVAr Bus Reactor	Out of service	11-09-2022 09:52
Bhadla	765kV 240MVAr Bus Reactor-1	Out of service	11-09-2022 09:53
	240MVAr Bikane-2 Line Reactor	Out of service	11-09-2022 11:46
	400kV 125MVAr Bus Reactor	Out of service	11-09-2022 09:44

**All remaining Line Reactors were in service at above mentioned substations.*
*** Out of service on voltage regulation as per instructions of NRLDC*

The details of change in generation of connected RE generators at different substations in the Rajasthan RE complex is as follows:

	Fatehgarh-II		
Sl.No.	**Element Name**	**Pre-Tripping Load (MW) - 12:22HRS**	**Post-Tripping Load (MW) - 12:30HRS**
1	400KV FATEHGARH_2-FATEHGARH(AD) Ckt-I	444	418
2	400KV FATEHGARH_2-FATEHGARH(AD) Ckt-II	449	421
3	220KV FATEHGARH_2-RENEW SUNWAVE CKT-I	306	122
4	220KV FATEHGARH_2-RENEW SUN BRIGHT CKT-I	299	282
5	220KV FATEHGARH_2-RENEW SOLAR URJA CKT-I	288	218
6	220KV FATEHGARH_2-AHEJ3L CKT-I	292	276
7	220KV FATEHGARH_2-AHEJ2L CKT-I	274	275
8	220KV FATEHGARH_2-AHEJOL CKT-I	189	180
9	220KV FATEHGARH_2-AHEJOL CKT-II	192	187
10	220KV FATEHGARH_2-EDEN CKT-I	294	8
11	220KV FATEHGARH_2-RENEW (Jharkhad-3) CKT	297	267
	Total (MW)	**3324**	**2654**

	Bhadla		
Sl.No.	**Element Name**	**Pre-Tripping Load (MW) - 12:22HRS**	**Post-Tripping Load (MW) - 12:30HRS**
1	400KV BHADLA-BHADLA(RVPN) LINE-1	475	467
2	400KV BHADLA-BHADLA(RVPN) LINE-2	473	465
3	220KV BHADA-SAURYA URJA LINE-1	242	145
4	220KV BHADA-SAURYA URJA LINE-2	242	153
5	220KV BHADA-ADANI LINE-1	112	110
6	220KV BHADA-ADANI LINE-2	112	111
7	220KV BHADA-TATA LINE	282	289
8	220KV BHADA-HERO CLEAN SOLAR LINE	240	0
9	220KV BHADA-ACME LINE	232	231
10	220KV BHADA-MAHOBA LINE	287	288
11	220KV BHADA-ESSEL LINE	287	268
12	220KV BHADA-MAHINDRA SUSTAIN LINE	236	236
13	220KV BHADA-AZURE (300) LINE	256	260
14	220KV BHADA-AZURE (250) LINE	150	152
15	220KV BHADA-AZURE (130) LINE	130	130
	Total (MW)	**3756**	**3305**

	Bhadla-II		
Sl.No.	**Element Name**	**Pre-Tripping Load (MW) - 12:22HRS**	**Post-Tripping Load (MW) - 12:30HRS**
1	400KV BHADA_2-NTPC LINE	229	228
2	220KV BHADA_2-ABC LINE	303	300
3	220KV BHADA_2-MAHENDRA LINE	230	227
4	220KV BHADA_2-ACME LINE	220	220
5	220KV BHADA_2-AVAADA LINE	10	10
	Total (MW)	**992**	**985**

Analysis:

The 220kV Bhadla-Hero Solar energy was carrying around 240 MW load prior to the fault. The phase-phase fault created a voltage drop in the nearby area, leading to active power backdown from RE generators. This sudden loss of generation causes high temporary over voltages (~820kV) in nearby substations (Fatehgarh-2, Bhadla-2 & Bhadla). The sustained overvoltages at Fatehgarh-2 and Bhadla-2 S/s led to sequential tripping of 765kV lines on over-voltage protection (stage-I) after certain intervals.

The system was restored to normalcy one by one as per instructions of NRLDC, keeping in view the prevailing overvoltage conditions in Rajasthan due to generation throw off. The last element i.e. 765kV Bhadla-2 Bikaner-1 line was restored at 13:46 hrs.

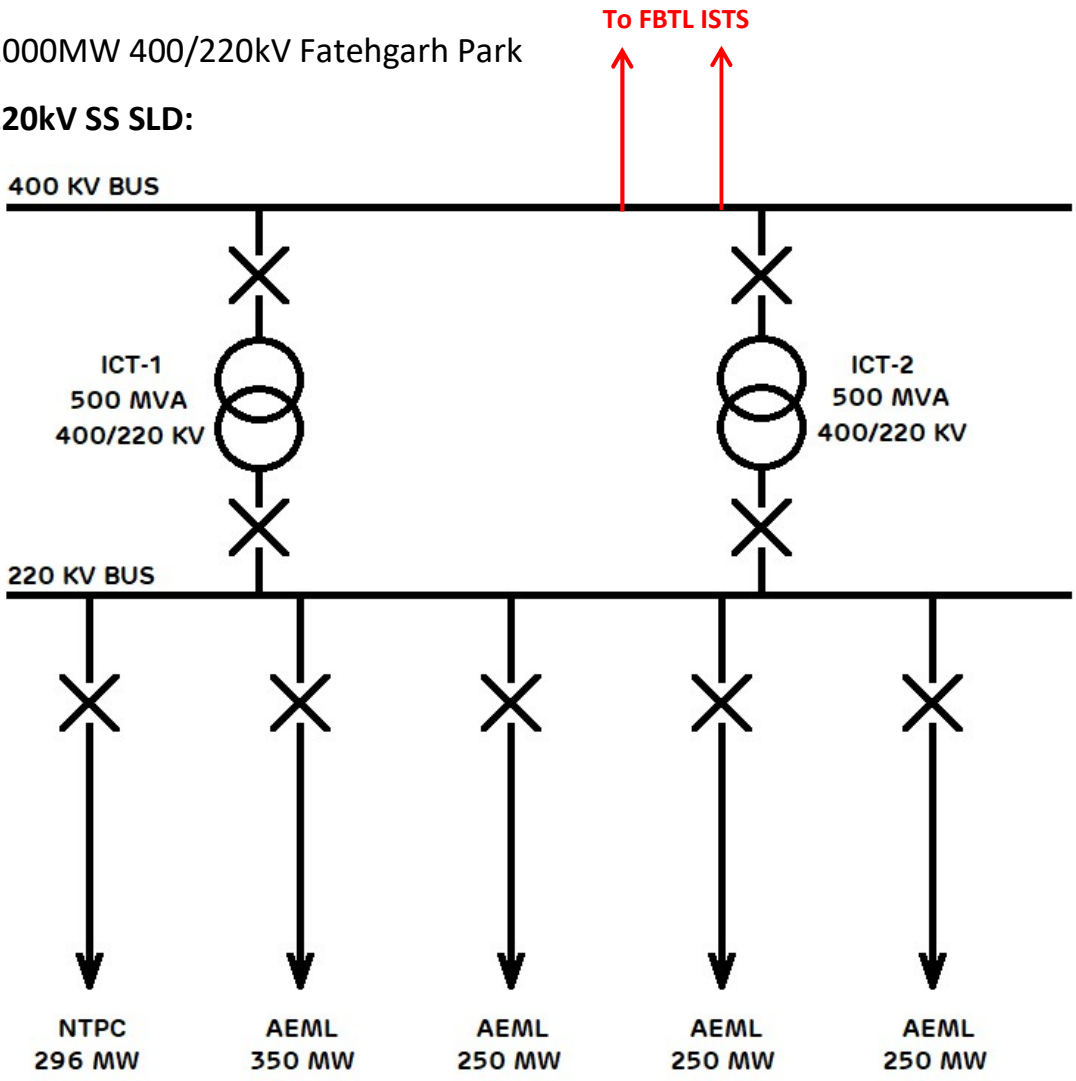
Further, 220kV Hero Solar energy line at Bhadla substation has been revived by Solar Generator (M/s Hero) at 16:34 hrs.

----------x----------x----------x----------x----------x----------x----------

Special Protection Scheme

PSS: 1000MW 400/220kV Fatehgarh Park

400/220kV SS SLD:



Pre-Condition:

- In 400/220kV Fatehgarh Solar Park, Following generating plants are connected with grid connectivity of 1000MW.
  1. 296MW NTPC Solar Project
  2. 250MW AEML Solar PSS-1
  3. 350MW AEML Solar PSS-2
  4. 250MW AEML Wind PSS-3
  5. 260MW AEML Wind PSS-4

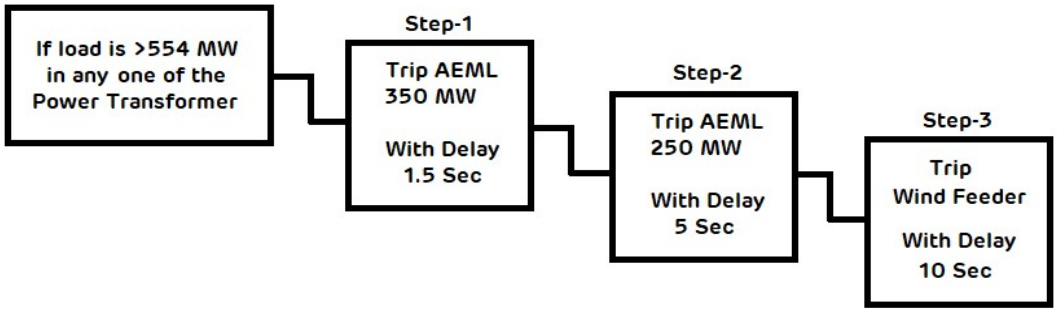
→ **700MW AEML Hybrid Project**

- Total connected generation capacity in 700MW AEML Hybrid project is 1110MW i.e., 600MW Solar & 510MW Wind.
- During normal operating condition Master PPC shall control AEML generation to 700MW at 220kV bus of Fatehgarh Park by curtailing solar generation if total connected generation exceeds > 700MW.
- Normally, both ICTs shall run in parallel condition with maximum generation transfer capacity is **1000MW.**
- Full generation scenario shall be observed during daytime when solar generation is at peak.
- Considering pro-rata generation case of AEML hybrid project. During peak generation, its Solar & Wind component would be generating 380MW & 320MW respectively.

Need of Special Protection Scheme (SPS)

- During peak or full generation period when cumulative generation on both the ICTs exceeds > 500MW up to 1000MW, if any of one ICT trips then entire load shall be transferred to other ICT leading to overload condition and subsequent tripping.
- To avoid such blackout, total generation should be restricted up to 500MW in above condition by means of shedding generation at 220kV level. Response time of Master PPC to control generation at Inverter or WTG level is not very quick so that tripping of ICT on IDMT O/C protection can be avoided.
- Hence, SPS scheme is required to be developed by using Definite Time (DT) O/C protection in 400kV side numerical relay (RET670) of ICT with multiple O/C stages which would trip multiple feeders with different time delays.
- Three DT O/C stages shall be configured with PS corresponding to 550MVA loading of ICT (considering 10% continuous overload capacity of ICT) with three different time delays which would trip three different 220kV feeders as per the selected priority.
- Time delay setting for DT stages shall be set in coordination with IDMT O/C protection operation time for ICT at different loading conditions and ensured that DT stage shall trip first and overload condition of ICT is avoided.

SPECIAL PROTECTION SCHEME (SPS) STEPS WITH TIME DELAY:



+AB

-D12.01
LINE DIST.PROTN.MAIN-1(REL670)

+B.13-XX1.2:2 /39.E3 K102

K101 /39.E5 +B.29-X04:2

-X51

DC-2 SUPPLY MCB TRIP		+ 1	K137
EVENT			
P5#BI.01	220-250VDC	/45.B6 - 2	-XX1.2 3
SPARE		+ 3	K139
P5#BI.02	220-250VDC	/45.B6 - 4	
MAIN CB R PH.CLOSE		+ 5	K141
FOR DR PURPOSE			
P5#BI.03	220-250VDC	/45.B6 - 6	
MAIN CB Y PH. CLOSE		+ 7	K143
FOR DR PURPOSE			
P5#BI.04	220-250VDC	/45.C6 - 8	
MAIN CB B PH.CLOSE		+ 9	K145
FOR DR PURPOSE			
P5#BI.05	220-250VDC	/45.C6 - 10	
SPARE		+ 11	K147
P5#BI.06	220-250VDC	/45.C6 - 12	
SPARE		+ 13	K149
P5#BI.07	220-250VDC	/45.D6 - 14	
SPARE		+ 15	K151
P5#BI.08	220-250VDC	/45.D6 - 16	

K102 /41.A3 +B.13-XX1.2:4

K101 /41.A4 +B.29-X04:11

+AA

-ABX14
16
17

-2MCB01 14 11 12 /32.D3 — I/C DC-2 MCB
-2MCB04 14 11 12 /34.C3 — MAIN-2 RLY MCB
-2MCB07 14 11 12 /34.D3 — ETHERNET SWITCH MCB
-2MCB03 14 11 12 /34.B4 — GR-B TRIP RELAY MCB
-2MCB02 14 11 12 /34.B3 — CB TC-2 MCB

-X04
6
7
8
9
10

-ABX14
12
13
14
15

+52

-52X04
54
55
56
57

-X3A 4 3 — CB OPEN RPH
-X3B 4 3 — CB OPEN YPH
-X3C 4 3 — CB OPEN BPH

REF DRG NO CB: 1HYB907794-0003, SH:8

+CB 400KV ICT-1 (-D12.01)
RET670-1
-X04 14 — SPARE P4#B0.07 — -X04 15

+CB 400KV ICT-2 (-D12.01)
RET670-1
-X04 14 — SPARE P4#B0.07 — -X04 15

Rev.	Revision note	Date	Name
01	AS PER CUSTOMER COMMENTS	10-07-2020	HV

Based on 3100063452

1MYN691003-102(A3)REV01

Prepared	05-03-2020	DEENADAYALAN A
Approved	06-03-2020	THIRUVENKADAM N
Project	ADANI RENEWABLE ENERGY PARK 400/220kV POOLING STATION AT FATEHGARH 3100108143	

Title: 220kV CONTROL & RELAY PANEL
220kV LINE CRP
MAIN-1 PROTN. CKTS- BIM

ABB INDIA LTD

Doc. kind.	Circuit diagram	Ref.Des.	=2R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind.	01
Doc. no.	1MNS500329-CADC	Language	en
		Sheet	40
		n. sheet	41

+CB 400KV ICT-1

-D12.01
RET670-1-87T-67/67HV-99 IV-50/51LV

TAP POSITION RAISE / P4#BO.03	/56,B2	-X41 5	K167	-X04 11	-RX2 37 COMMON
		4	K169	12	38 TAP POSITION RAISE
TAP POSITION LOWER / P4#BO.04	/56,C2	-X41 6	K171	13	39 TAP POSITION LOWER
O/C STAGE-1 TIME DELAY 1.5Sec SPARE / P4#BO.07	/56,C2	-X41 11	K173	14	
		10	K175	15	
GENERAL TRIP / P4#BO.08	/56,D2	-X41 12	K177	16	
O/C STAGE-2 TIME DELAY 5Sec SPARE / P4#BO.09	/56,D2	-X41 14	K179	17	
		13	K181	18	
SPARE / P4#BO.10	/56,D2	-X41 15	K183	19	
O/C STAGE-3 TIME DELAY 10Sec SPARE / P4#BO.11	/56,E2	-X41 17	K185	20	
		16	K187	21	
SPARE / P4#BO.12	/56,E2	-X41 18	K189	22	

+RTCC
REF. ABB DRG NO. 2XYN464035C2114
SH No. 2

400KV ICT-2 O/C STAGE-1 (T= 1.5Sec)
SPARE / P4#BO.07 /56,C2

+AB 220KV LINE FEEDER-1
K101 -X04 6
-X04 7
-XX1:2 3 K102
SPS O/C STAGE-1 OPTD
SPARE (~~SPS O/C STAGE-1~~)
BINARY INPUT-2
P5#BI.02 220-250VDC /45,B6 (+ / -)

400KV ICT-2 O/C STAGE-2 (T= 5Sec)
SPARE / P4#BO.07 /56,C2

+AB 220KV LINE FEEDER-2
K101 -X04 6
-X04 7
-XX1:2 3 K102
SPS O/C STAGE-2 OPTD
SPARE
BINARY INPUT-2
P5#BI.02 220-250VDC /45,B6 (+ / -)

400KV ICT-2 O/C STAGE-3 (T= 10Sec)
SPARE / P4#BO.07 /56,C2

+AB 220KV LINE FEEDER-3
K101 -X04 6
-X04 7
-XX1:2 3 K102
SPS O/C STAGE-3 OPTD
SPARE
BINARY INPUT-2
P5#BI.02 220-250VDC /45,B6 (+ / -)

Based on 3100101730			
01	AS PER CUSTOMER COMMENTS	16.06.2020	RPV
Rev.	Revision note	Date	Name

1MYN691003-102(A3)REV01

Prepared	10.12.2019 DEENADAYALAN A
Approved	10.12.2019 THIRUVENKADAM N
Project	ADANI RENEWABLE ENERGY PARK 400/220kV SUBSTATION AT FATEHGARH 3100108143

Title: 400KV ICT CONTROL & RELAY PANEL
400/220/33kV ICT BAY
TRAFO. DIFF. RLY. O/P CKT.

ABB INDIA LTD

Doc. kind.	Circuit diagram	Ref.Des.	=4R
DCC	EFS		
Resp. dept.	PG-GAS	Rev. ind. 01	Language en
Doc. no.	1MNS500329-CDCA	Sheet	53
		n. sheet	54