



सत्यमेव जयते
भारत सरकार

Government of India
विद्युत मंत्रालय
Ministry of Power
पूर्वी क्षेत्रीय विद्युत समिति

Eastern Regional Power Committee

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सं/NO. ERPC/EE/OPERATION/2024/ 456

दिनांक/DATE: 07.06.2024

सेवा में /To
संलग्न सूची के अनुसार /As per list enclosed.

विषय :22.05.2024(बुधवार) को माइक्रोसॉफ्ट टीम ऑनलाइन मीटिंग प्लेटफॉर्म से आयोजित 215वीं ओसीसी बैठक का कार्यवृत्त - संबंध में।

Sub: Minutes of 215th OCC Meeting held on 22.05.2024(Wednesday) virtually through Microsoft Teams online meeting platform - reg.

महोदय/महोदया,
Sir(s)/Madam,

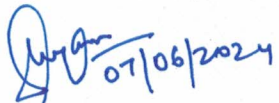
कृपया अपनी जानकारी और आवश्यक कार्रवाई के लिए **22.05.2024(बुधवार)** को माइक्रोसॉफ्ट टीम ऑनलाइन मीटिंग प्लेटफॉर्म से 10:30 बजे आयोजित **215वीं ओसीसी बैठक** के संलग्न **कार्यवृत्त** देखें। यह ईआरपीसी वेबसाइट (www.erpc.gov.in) पर भी उपलब्ध है।

Please find enclosed **Minutes of 215th OCC Meeting** held on **22.05.2024(Wednesday)** virtually through **Microsoft Teams online meeting** platform at 10:30 hrs for your kind information and necessary action. The same is also available at ERPC website (www.erpc.gov.in).

टिप्पणियाँ, यदि कोई हों, कृपया यथाशीघ्र इस कार्यालय को अग्रेषित करें।
Observations, if any, may please be forwarded to this office at the earliest.

इसे सदस्य सचिव के अनुमोदन से जारी किया जाता है।
This issues with the approval of Member Secretary.

भवदीय /Yours faithfully,


07/06/2024

(S.Kejriwal)
SE(Operation)
एसई (ऑपरेशन)

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CC:

Chief Engineer, OPM, CEA	Chief Engineer, NPC, CEA	ASSISTANT SECRETARY,ERPC
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ERPC:: Kolkata

पतों की सूची:

1. मुख्य अभियंता (ट्रांस., ओ एंड एम), बीएसपीटीसीएल, पटना, (फैक्स नं. 0612- 2504557/2504937)।
2. मुख्य अभियंता (सिस्टम ऑपरेशन), बीएसपीटीसीएल, पटना, (फैक्स नं. 0612- 2504557/2504937)।
3. मुख्य अभियंता, ट्रांसमिशन (ओ एंड एम), जेयूएसएनएल, रांची (फैक्स नं.-0651- 2490486/2490863)।
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9. महाप्रबंधक, टीटीपीएस, तालचेर, (फैक्स नंबर 06760-243212)
10. एसआर. महाप्रबंधक (विद्युत), ओएचपीसी लिमिटेड, भुवनेश्वर, (फैक्स नंबर 0674-2542102)
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20. कार्यकारी निदेशक, ईआरएलडीसी, पोसोको, कोलकाता, (फैक्स नंबर 033-2423-5809)
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26. महाप्रबंधक (ओ एंड एम), पावरग्रिड, ओडिशा प्रोजेक्ट्स, साहिद नगर, भुवनेश्वर - 751 007
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ईआरपीसी:: कोलकाता



MINUTES
OF
215TH OCC MEETING

Date: 22.05.2024

Eastern Regional Power Committee

14, Golf Club Road, Tollygunge

Kolkata: 700033

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EASTERN REGIONAL POWER COMMITTEE

MINUTES OF 215TH OCC MEETING HELD ON 22.05.2024 (WEDNESSAY) AT 10:30 HRS

Member Secretary, ERPC chaired the 215th OCC meeting. On welcoming all the participants, he outlined the performance of ER grid during April 2024 and highlighted the following points:

- In April-2024, energy consumption of ER was **18231 MU** which is **12.6 % more** than April-2023
- In April-2024, Peak demand met of ER was **31890 MW** which is **8.6% more** than April-2023.
- During April-2024, **78.56%** of time, the grid frequency was in IEGC Band (49.90Hz-50.05Hz).
- Thermal PLF of ER during April-2024 was **81 %**.
- Bakreswar TPS, Sagardighi TPS and Santaldih TPS of **WBPDC** achieved PLF of 98%,97% and 96% respectively . Besides, Chandrapura TPS (93%) of **DVC** and one IPP(Derang TPP(**JITPL**) with 96% PLF) achieved PLF of **more than 90%** during April-2024.
- All these Thermal generating units were appreciated for maintaining PLF more than 90% stressing that such performance of Thermal GENCOs shall prove pivotal in meeting high demand during the ongoing crunch period(especially in non-solar hours).
- **Coal stock position:**
 - Good coal stock position on national level was highlighted with no significant coal deficit.
 - Coal stock position (As on 19.05.2024) is detailed as follows:

SL.	Name of States/Power Stns.	% of Actual Stock vis-à-vis Normative Stock
1.	Jharkhand (TVNL)	26%
2.	Odisha/IBTPS	69%
3.	WBPDC	44% (Min. Kolaghat TPS-29% & Bakreswar TPS-29%, Max. Bandel TPS -68 %)
4.	DVC	91% (Min. Mejia TPS -44 %; Max Bokaro TPS `A` - 198%)
5.	NTPC	90% (Min Talcher STPS –45% & Nabinagar TPP(BRBCL)-50%; Max. Farakka STPS - 167%)

- All generating units (specially TVNL(Jharkhand),Kolaghat TPS & Bakreswar TPS of WBPDC, Meja TPS of DVC and Talcher STPS of NTPC) were advised to diligently focus on building coal stock as per normative requirement.
- He emphasized that all generating units having availed planned shutdown with consent of OCC in any of the previous OCC meetings must be restored to service as per the schedule approved by OCC forum. In addition to this, generating units must strive to scale down the instances of frequent forced outage and even if forced outage is encountered the respective units must be revived to service in shortest possible timeframe with adoption of best O&M practices.
- Significant contribution of pan-India Thermal capacity in meeting All India Peak Demand of 229 GW last month was also underlined.
- Powergrid ER-II was commended for diligent efforts in safely transporting the 500 MVA ICT to Subhasgram(PG).

ED, ERLDC at the outset emphasized following major issues:

- Eastern region has met nearly 32 GW (all time high) on 30th April 2024 and also all-time energy met of 666.8 MU in April 2024. West Bengal has also recorded highest peak demand of 12.75 GW in April 2024.
- Meticulous planning and coordination among WB SLDC, WBSETCL, Powergrid and CESC, which has made reliable operation of WB network possible despite several constraints, was hailed.
- CESC system got islanded almost 3 times in April 2024 but was successfully self-sustained every time.
- Powergrid ER-I was commended for quick restoration of 400 kV Gaya-Koderma D/C line after tower collapse.
- Maximum power transfer capability of ± 500 kV Talcher-Kolar bipolar HVDC link being limited to 1500 MW owing to issues related with converter transformer was highlighted.
- Non-availability of 400 kV Meramandali-Lapanga D/C line owing to tower collapse was highlighted. Interim arrangement has been sorted out in coordination with SLDC Odisha imposing restriction (backing down) of Talcher STPS generation.
- Concerns raised on transmission constraints in inter-regional corridor due to injection of high quantum of renewable power from northern as well as western regions.

1. PART-A: CONFIRMATION OF MINUTES

1.1. Confirmation of Minutes of 214th OCC Meeting held on 23rd April 2024 physically at ERPC Secretariat, Kolkata

The minutes of 214th Operation Coordination Sub-Committee meeting held on 23.04.2024 was circulated vide letter dated 01.05.2024.

Members may confirm the minutes of 214th OCC meeting.

Deliberation in the meeting

- *Following alterations are hereby incorporated in MOM of 214th OCC meeting:*
 - *As per observations submitted by ERLDC:*
 - *In Item No: B.2.4:: “Barh stage-I U#3 (660 MW) to be commissioned by March 2025.”*
 - *In Item No: B.2.11:: “In case data not submitted by power plant, FRP calculated based on SCADA data will be used for taking decision of primary frequency response testing.*
ERLDC is monitoring each individual state as a whole while bifurcation i.r.o state generators needs to be done by concerned SLDCs and performance analysis of individual control areas within the jurisdiction of SLDC needs to be shared with ERLDC”
 - *In Item No: B.2.12:: “OCC also opined that the issue of timely demand forecasting, sharing with RLDC & uploading of error on website by the states must get resolved before the next OCC meeting.”*
 - *As per submission by WBSEDCL:*
 - *In Item No:B.2.12:: “WBSEDCL representative pitched for exploring EMS portal in-built in ULDC project for fetching demand estimation data for DISCOMs as the same was provisioned to serve this purpose with considerable cost implications.It was also suggested to deploy the already operational STLF feature available in EMS portal at ERLDC end for demand forecasting of state DISCOMs. Accordingly, ERLDC and West Bengal SLDC were requested to figure out the feasibility of demand estimation as suggested by WBSEDCL and update the status of the same in subsequent OCC meeting(s)”*
- *These modifications shall form an integral part of the MOM of 214th OCC meeting issued vide letter dated 01.05.2024.*
- *Other OCC members confirmed the minutes of 214th Operation Coordination Sub-Committee meeting.*

2. PART-B: ITEMS FOR DISCUSSION

2.1 Maintaining Adequate Generation Capacity to Ensure Zero Load Shedding: ERPC

India's electricity demand, driven by robust economic growth, is showing a rapidly rising trend and the summer months are particularly challenging in this regard. The Indian Meteorological Department (IMD) has also predicted above-normal maximum temperatures over most parts

of the country during the current summer season. It is anticipated that the country may witness a peak demand of around **260 GW**, as against the highest ever peak demand of **243 GW** during 2023-24.

Hon'ble Minister for Power and NRE has held several meetings in the recent past with all the stakeholders to review the preparedness for meeting the summer power demand in the country. Accordingly, Ministry of Power has taken the following steps:

- All thermal generating stations have been instructed to be on bar and **mandatorily offer their surplus power in power exchange** in line with the recently amended LPS rules.
- Planned maintenance of the thermal power plants have been rescheduled to the monsoon season.
- Around 860 MW additional gas-based capacity (non-NTPC) has been tied up through competitive bidding, especially for the summer months. Moreover, around 5000 MW of gas based capacity of NTPC have also been instructed to be kept in ready mode, for operationalization on short notice.
- Directions under Section-11 of Electricity Act, 2003, for mandatory operationalization of Imported Coal Based plants (ICBs), has been extended till 15th October'24. Further, Directions under Section-11 of Electricity Act, 2003 has also been issued to Gas Based Generating Stations to ensure availability of these plants, as per the schedule given by Grid-India.
- Instructions have been issued to all the **domestic coal based** (DCBs) plants to blend imported coal, as per requirements, with domestic coal and maintain adequate stocks.
- Regular monitoring of coal stocks at DCB plants is being done through Inter-Ministerial Committee comprising representative of MoP, MoC and Railways.

While measures are being put in place to ensure adequate availability of power, it is imperative that proactive steps should also be taken by all the States to ensure Zero load shedding during the ongoing summer season. To achieve this objective, **all State Governments, State Generating Companies (GENCOs) and Distribution licensees** are advised to take the following steps:

(i) **Tariff Policy, 2016** mandates that all the power stations are required to be available and ready to dispatch at all times. Also, as per the recently amended, Section 9 (5) of the Electricity **(Late Payment Surcharge and Related Matters) Rules** of 2022 provides for sale of surplus power, by the generating station, which is within its declared generation capacity but is not requisitioned by the distribution companies. Hence, the **Un-requisitioned/surplus power from all the generation stations: Thermal/Gas/Hydro power plants should be promptly offered in power exchanges to augment overall power availability in the country.**

(ii) All the **Thermal/Gas power plants** under states' jurisdiction must operate at their **full capacity.**

(iii) Planned maintenance/overhauling activities should be deferred to prevent any disruptions. All efforts should be made, through adequate preventive maintenance activities, to **minimize partial outages and forced outages** of thermal stations.

(iv) Hydro generation optimization may be carried out to ensure **maximum generation availability in the non-solar hours** while **minimizing the hydro generation during solar hours**.

Relevant communication in this regard has been circulated by MOP to **Principal Secretaries (Energy)** of all States.

All states are requested to **ensure compliance to these directives** to **reduce the risk of power shortages, within their jurisdiction** and to also **help other States** in meeting their **power requirements** during these crucial high demand months.

Members may discuss.

Deliberation in the meeting

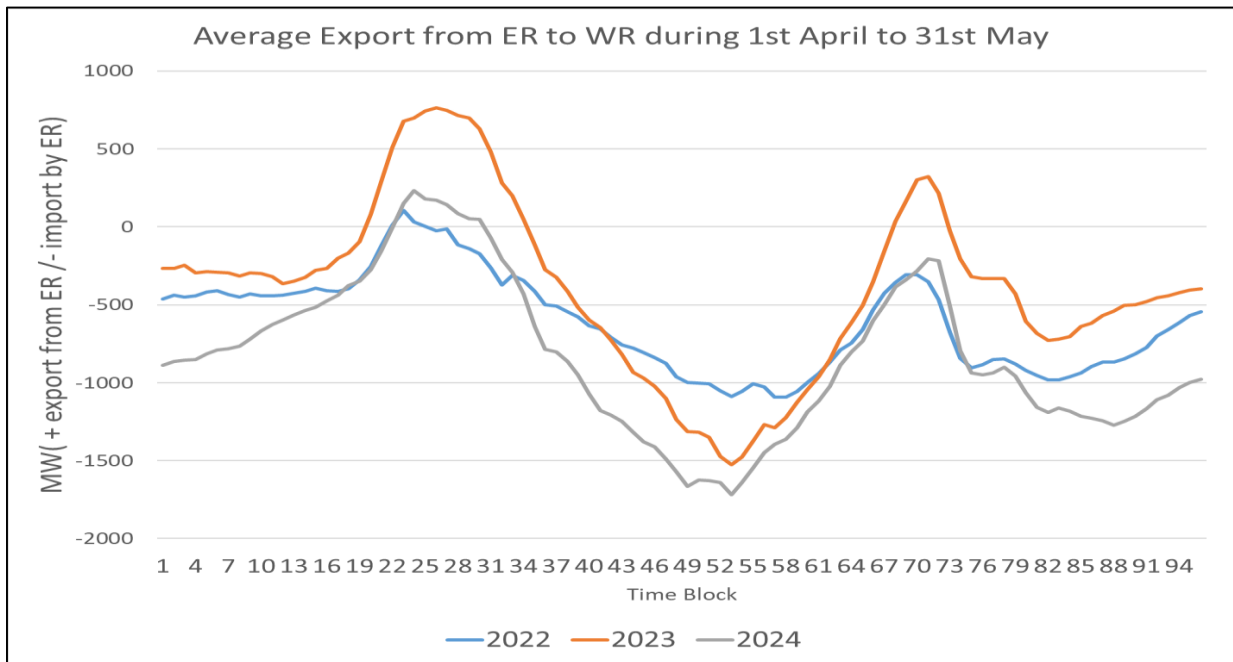
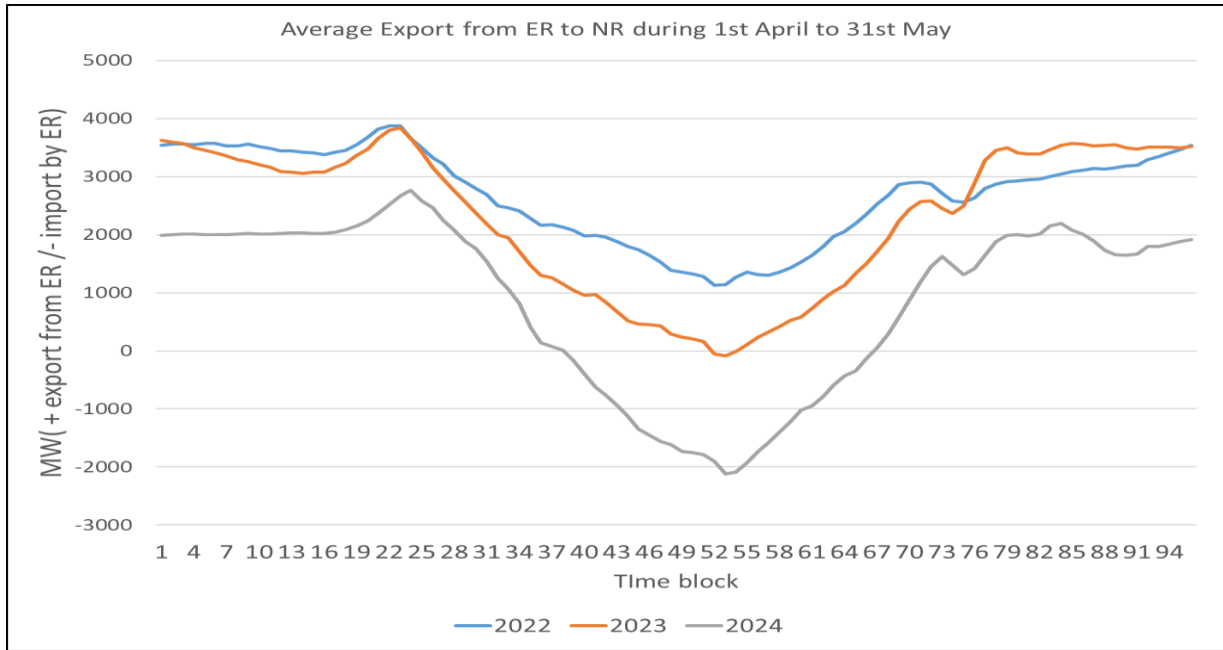
- *OCC forum was apprised of the directions received from Ministry of Power (Govt. of India) dated 01.05.2024 regarding reduction in quantum of load shedding in Summer months to the minimum possible extent.*
- *Following key responsibilities on part of State Governments, State Generating Companies (GENCOs) and Distribution licensees were underlined:*
 - *Compulsory operation of all the Thermal/Gas power plants under states' jurisdiction at their full capacity.*
 - *Un-requisitioned/surplus power from all the generation stations: Thermal/Gas/Hydro should be promptly offered in power exchanges to augment overall power availability in the country.*
 - *Minimization in forced as well as partial outages of thermal stations.*
 - *Deferment of planned maintenance activities for preventing power supply disruption.*
 - *Maximization of Hydro generation availability during non-solar hours while scaling down the same in solar hours.*

OCC decision:

- *All states were advised for compliance to the directives of Ministry of Power (Govt. of India) in a bid to mitigate power deficit within their jurisdiction as well as extending assistance to other states in effective management of their demand portfolio.*

2.2 Operational Constraint in Eastern Region with Increasing Power flow from Northern and Western Region and rapid demand growth in ER: ERLDC

Historically, the Eastern Region in the Indian grid has been a net exporter of electrical power to all the connected regions i.e. Northern, Western, Southern and North-eastern region. The generation capacity of the eastern region mostly consists of coal based thermal plants and hydro power plants. The installed capacity of the Eastern Region as on April 2024 is around 35 GW which comprises of almost 28 GW (80%) of coal-based generation plants. However, with rapid increase in the renewable capacity addition in other regions, particularly Northern & Western Region, a shift in the power flow pattern has been observed in the recent years. These unforeseeable power flow patterns coupled with some of the thermal generation back down & outage of power plants, rapid demand growth in post COVID time have resulted in a number of transmission constraints.



Most critical constraints that are being present are as follows:

1. 400 kV Kahalgaon-Farakka D/C
2. 400 kV New Ranchi –NPPSP D/C
3. 400 kV Farakka-Sagardighi D/C
4. 400 kV Talcher -Meramundali D/C
5. 400 kV OPGC-Lapanga D/C

Few of the above constraints even have a high degree of cascading effect in case N-2 tripping.

Already the matter has been **highlighted to CTU** for comprehensive planning, however implementation of new transmission system may take some time. While ERLDC in consultation with NLDC trying to optimize the reliability margin in the grid, at the same time

collective effort by all the stake holders will be required for ensuring reliability of the grid.

ERLDC may explain. Member may discuss.

Deliberation in the meeting

- *ERLDC delivered a comprehensive presentation to engender awareness amongst all ER constituents outlining the following key facets:*
 - *400 kV Kahalgaon-Farakka D/C line is already experiencing a power flow of 800 MW in each circuit having thermal capacity of 850 MW.*
 - *Probability of cascaded outage in event of tripping of 765 kV New Ranchi to Midnapore D/C line was highlighted wherein a series of important lines catering important load centres may undergo sequential tripping and endangering system reliability.*
 - *Overloading of 400 kV Talcher-Meramandali D/C line with huge influx of power from WR via Jharsuguda and Rourkela was pointed out. Backing down of generation of Talcher STPS was highlighted due to reversal in power flow from Rourkela to Talcher. The situation is aggravated in event of outage of 400 kV Lapanga-Meramandali D/C line.*
- *I.r.o. 400 kV Lapanga-Meramandali D/C line OPTCL updated:*
 - *Collapse of one transmission tower was cited as reason behind outage of the line.*
 - *Sufficient manpower has been deployed at site for erection of ERS tower.*
 - *The line is expected to be put to service with help of ERS by 26th May 2024 (only one circuit).*

OCC decision:

- *OCC opined in favour of carrying out a detailed study on this issue by CTU to facilitate long term planning of the inter-regional transmission corridor that may sustain substantial quantum of power import to ER from NR & WR in face of enhanced RE capacity addition in future.*
- ***OCC advised OPTCL to expedite erection activities of ERS tower for reinstating both circuits of 400 kV Lapanga-Meramandali D/C line latest by 14.06.2024. This was underscored as an urgent task to prevent backing down of generation of Talcher STPS.***

2.3 Restriction of Talcher-Kolar HVDC Bi-pole and Frequent Outages of Bi-pole: ERLDC

On 20th April'24, ERLDC received one mail from HVDC Talcher stating the requirement of replacement of the R-phase converter transformer necessitating restriction of the power order of HVDC Talcher bi-pole to 1500MW till the replacement. It was also informed that the spare Converter Transformer of HVDC Kolar is being diverted from HVDC Kolar to HVDC Talcher and is expected to reach HVDC Talcher by 31st May 2024.

Since April'24, either pole of HVDC blocked 5 times out of which, in 4 times the other pole went to ground return mode instead of metallic return mode resulting in overloading of 400kV Talcher-Meeramundali D/C and generation backdown was done either manually or through operation of SPS.

Further, while availing the planned shutdown of Pole-2 on 28.04.2024, the other pole didn't go to metallic return mode as the automatic changeover sequence failed and remained in Ground return mode for around 15 minutes.

Powergrid Odisha may:

- 1. Update the present status of the Converter Transformer.**

2. **Share the reason of the frequent tripping of either pole.**
3. **Share action taken to prevent failure of automatic changeover sequence in the future.**

ERLDC and Powergrid Odisha may update. Members may discuss.

Deliberation in the meeting

Powergrid Odisha updated:

- *The R-phase converter transformer has already started from Kolar and expected to reach Talcher by 25th June 2024 and the same shall be put to service by mid of July 2024.*
- *Fault in jurisdiction of southern region was cited as reason for frequent tripping of either pole and hot line washing of porcelain insulators has been taken up henceforth as a preventive measure.*
- *Failure of automatic changeover sequence from ground return to metallic return mode was attributed to overtravel of operating rod and auxiliary contacts in MR isolator and after adjusting the operating rod along with auxiliary contacts, metallic return changeover was done manually.*
- *Transportation route as well as associated challenges in shifting a bulky converter transformer was highlighted.*

OCC decision:

- *OCC advised Powergrid Odisha to expedite the commissioning of converter transformer at Talcher end of HVDC Talcher-Kolar Bipolar link as per submitted timelines so that the same can be utilized upto rated capacity for reliable grid operation.*

2.4 Proposal for installation of 5th 400/220 KV 315 MVA ICT in place of existing age old 50 MVAR (3x16.6 MVAR single phase units) ISTS Reactor at Jeerat 400 KV SS of WBSETCL to maintain N-1 criteria. : WBSETCL

- At present the total installed capacity of 400/220 KV ICTs at Jeerat 400 KV SS of WBSETCL is 4X315 MVA. The defective 4th 315 MVA ICT which was out of system for over 2 years has been replaced with a Regional pool spare 315 MVA ICT & put into service on 14th April-2024.
- Peak demand of Jeerat 400 KV SS in 2023-24 was 971 MVA (Jun-2023) i.e. more than full load capacity of the ICTs in service at that time i.e. 3X315 MVA.
- After recommissioning of the 4th ICT, it is evident from the load flow studies that the load shared by Jeerat SS with 4 nos of ICTs will increase considerably as compared to earlier load sharing with 3 nos of ICTs. The anticipated load during 2024-25 will increase further & may approach the full load capacity of all the four ICTs thus violating (N-1) criterion.
- So to cater the load growth at Jeerat 400 KV SS at 400/220 KV level maintaining (N-1) condition, augmentation of 400/220 KV ICT capacity from 4X315 MVA to 5X315 MVA is necessary at an early date.
- Clear space for construction of 220 KV bay for 5th ICT is available at Jeerat SS but there is no space for construction of new 400 KV bay & installation of 5th ICT.
- Due to space constraint, it is hereby proposed to use the 400 KV bay & equipment space of existing 50 MVAR (3X16.6 MVAR single phase units) Bus reactor which is at present operating with another 3-Ph 50 MVAR reactor in group control, both of which were installed under ISTS scheme a long time ago.

- Feasibility for keeping the 3-Ph 50 MVAR reactor in service by alternative arrangement is being explored by WBSETCL. WBSETCL is also considering the possibility for installation of a 3-Ph 125 MVAR Bus Reactor in place of the age old 50 MVAR 3-Ph Reactor depending on VAR compensation requirement as per system study.
- Considering the above facts proposal for installation of 5th ICT at Jeerat 400 KV SS was placed in the **29th CMETS-ER** on **27.03.2024** Region for consideration and approval. It was decided that since the existing ISTS bus reactors (50MVA (3x16.67MVA single phase units) & 50MVA 3-Ph) are to be disconnected and the vacated ISTS bay and space is to be used for installation of 5th ICT, the matter needs stakeholder's consultation & needs to be placed before ERPC forum for further discussion.
- Accordingly the matter was deliberated in the **214th OCC** Meeting of ERPC on **23.04.2024**.
- WBSETCL submitted that after exploring all feasible avenues, disconnecting the existing ISTS bus reactors (50MVA (3x16.67MVA single phase units) & 50MVA 3-Ph) and vacating 400 kV ISTS bay stands out as the only option for 5th ICT installation at Jeerat (WB) S/S.
- OCC opined in favour of technical requirement of the 5th ICT at 400 kV Jeerat S/S and suggested WBSETCL to commence procurement of the ICT. OCC also opined that the existing bus reactors (3*16.67 MVA and 3-ph 50 MVA) being ISTS assets, consent from Powergrid is essential prior to granting approval to the proposal of WBSETCL.
- In absence of Powergrid representative, the proposed scheme couldn't be acceded to by the forum for execution. OCC decided to convene a special meeting comprising Powergrid ER-II, WBSETCL, WB SLDC, ERLDC and ERPC to forge a consensus on execution plan for accommodating the 5 th ICT(315 MVA) at Jeerat(WB) S/S as well as future applicability / utilisation of ISTS bus reactors.
- The issue was thereafter deliberated in **30th CMETS-ER** meeting dated **26.04.2024**.
- **Deliberation in 30th CMETS-ER:**

Modifications suggested by WBSETCL vide email dated 22-04-2024 were deliberated in the **30th CMETS-ER** meeting and agreed modifications are as under:

Agreed Modifications in 30th CMETS-ER meeting as per proposal of WBSETCL	
6.4	WBSETCL informed that installation of 5 th ICT has been planned for compliance of (N-1) considering anticipated load growth. 315MVA ICT has been planned for installation as 5 th ICT, as all the existing ICTs are 315MVA & in case of outage of 500MVA ICT the available capacity would remain same i.e. 4x315MVA. CTU mentioned that progressively WBSETCL can plan for replacement of 315MVA ICTs with load growth, thus, keeping same in view, 5 th ICT may be installed as 500MVA. WBSETCL stated that the augmentation program of 315MVA ICTs with 500MVA ICTs, if necessary, will be considered in due course.
6.8	CTU mentioned that as there are issues of space constraints at Jeerat (WBSETCL) S/s, a joint visit of WBSETCL and POWERGRID can be carried out to work out feasibility for installation of 5th ICT, re-arrangement for reinstallation of 2x50MVA bus reactor and new 125MVA bus reactor. WBSETCL mentioned that Jeerat S/s being an intra-State S/s they have already carried out the feasibility study considering the issue of space constraint & finalized the scheme for installation of 5th ICT after removing 2x50MVA (3x16.67MVA single phase units

& 50MVAR 3-Ph) bus reactors installed in parallel.

6.9 CTU mentioned that in past for termination of new lines at Jeerat (WBSETCL) S/s space constraints were observed and after joint site visits some arrangements were finalised including implementation of GIL in 4 no. 400kV lines. Accordingly, CTU once again suggested for a joint site inspection of Jeerat (WBSETCL) S/s by officials of CTU, WBSETCL, and POWERGRID.

In response WBSETCL stated that it appears that since the mentioned issue was one of new ISTS connectivity at Jeerat S/s, the joint site inspection might have been required. But in the present case since scheme for installation of 5th ICT has already been finalized & detailed engineering will be taken up soon, joint site inspection is not considered essential. CTU further mentioned that, if space is not provided by WBSETCL for re-installation of ISTS reactors (2x50MVAR) along with associated bay(s) at Jeerat S/S, then a joint site visit would be essentially required.

- Considering the extreme urgency for installation of the 5th ICT at Jeerat 400 kV SS the matter is again placed before the OCC Forum of ERPC for further deliberation & necessary approval.

Single line diagram (SLD) of 400 KV Jeerat S/S (WBSETCL) and power map of West Bengal attached at **Annexure B.2.4**

WBSETCL may update. Members may discuss.

Deliberation in the meeting

➤ *WBSETCL submitted :*

- *As per internal survey, space is not available to accommodate both 50 MVAR ISTS reactors at 400 kV Jeerat S/S.*
- *After installation of 5th ICT at 400 kV Jeerat S/S, since space shall be available only for one 50 MVAR(3*16.67 MVAR) bus reactor, the other existing 50 MVAR(3-ph) bus reactor was proposed to be deployed as line reactor on 400 kV Bakreshwar line.*
- *Repairing of the defective 315 MVA ICT that has been replaced on interim basis from ER regional pool is under progress and same shall be restored within next 5-6 months.*
- *Capacity augmentation of ATS and downstream network can be carried out as per recommendation of CTU so that N-1 violation doesn't take place in 765 kV network on installation of the 5th ICT at Jeerat(WB) S/S.*

➤ *WB SLDC informed:*

- *As per present status, the existing ICTs (4*315 MVA) at 400 kV Jeerat S/S are not even N-compliant.*
- *The 4th ICT is getting heavily overloaded (5-8%) beyond rated capacity during peak hours.*
- *In face of incremental load growth, peak demand can't be met reliably in Summer 2025 without the 5th ICT in place. Thus the process of 5th ICT commissioning needs to be expedited to avert significant quantum of PLS in West Bengal including state capital in Summer 2025.*

➤ *Powergrid ER-II apprised:*

- *Both the existing ISTS bus reactors (2*50 MVAR), though very old, are still in healthy condition and have useful life left.*
- *Violation of N-1 condition at 400 kV Jeerat S/S necessitates requirement of 5th ICT.*

- *At the same time, existence of suitable rating bus reactor is also necessary at 400 kV Jeerat S/S as otherwise it may impose VAR charges on WBSETCL in event of overvoltage.*
- *Possibility of N-1 violation at 765 kV New Jeerat (PG) S/S on commission 5th ICT at 400 kV Jeerat(WB) S/S was highlighted, hence holistic planning for ATS should also be considered by CTU in long term perspective.*
- *Joint site inspection shall be carried out in coordination with WBSETCL(CPD) by 1st week of June 2024.*

OCC decision:

- *OCC agreed for the urgent requirement of the 5th ICT at 400 kV Jeerat(WB) S/S in view of system reliability.*
- *OCC advised Powergrid ER-II, CTU and WBSETCL to carry out joint site inspection at 400 kV Jeerat(WB) S/S by first week of June 2024 and share the report of the same with ERPC.*
- *OCC also opined to explore all alternate avenues for accommodating the 5th ICT at Jeerat(WB) S/S without striking off the existing ISTS assets in healthy condition owned by Powergrid.*
- *Upon finalization of the technical aspect of 5th ICT installation at Jeerat(WB) S/S, commercial settlement pertaining to asset relocation also needs to be suitably sorted out in compliance to extant provisions and regulations.*
- *OCC observed that since the 5th ICT is being proposed to be installed in place of one no. of 50MVAR Bus Reactor, adequate reactive compensation also needs to be ensured at Jeerat(WB) S/S to prevent overvoltage conditions.*

2.5 Establishment of CPRI Regional Research & Testing Laboratory at Bhubaneswar, Odisha: GRIDCO

State of Odisha has ~1 crore electricity consumers and its grid demand hovers around 4800 - 5100 MW. Installed CGP capacity in the State is around 10 GW. Future electricity demand is likely to grow at a CAGR of 5-6% over the next 10-15 years.

Industrial clusters like Paradeep (Jagatsinghpur), Kalingnagar (Jajpur), Dhamra (Bhadrak), Angul and Badbil (Keonjhar) are developing rapidly, which provides opportunities for further downstream & ancillary industries. Apart from Mining and Metal sectors, industry interests in the State range from Chemicals, Petrochemicals & Plastics to Biotech, IT, Food processing, Textile & Apparel etc., which are attracting good investments in the State.

The network expansion & up-gradation are planned to meet the demand growth. The Power Distribution utilities in the State have plans for investment of more than Rs.5,600 crore by FY 2025-26 in the categories of PTR, DTR, Cable & Conductor, Switchgears, Poles, Meters, Battery and SCADA & Automation equipment.

To meet the huge supply requirement of the above electrical equipment and many MSMEs & other equipment manufacturers are expanding their manufacturing facility & new OEMs are also coming up. Equipment being procured are required to meet global quality standards to avoid any premature failure; therefore all such equipment are to be tested at reputed lab like CPRI before being accepted. The scope of electrical equipment testing including electricity meter is going to be huge.

Proposal of Odisha for establishment of regional research & testing laboratory of CPRI has been submitted to CPRI & CEA vide letter dated 13.12.2022 & 18.07.2023 respectively. CEA

has recommended matter to ERPC for recommendation. Copies of above letters along with relevant details is enclosed at **Annexure B.2.5** for reference.

The proposal was also deliberated in **51st TCC** meeting dated 11.01.2024:

“TCC welcomed the proposal of Odisha for establishment of Regional Research & Testing Laboratory unit of CPRI at Bhubaneswar and further advised all the utilities to submit the information as mentioned above to ERPC Secretariat within 15 days for onward submission to CEA.”

GRIDCO may update. Members may deliberate.

Deliberation in the meeting

GRIDCO representative briefly explicated the background and justification for setting up CPRI Regional Research & Testing Laboratory at Bhubaneswar. Relevant communication in this regard has also been made to CEA by GRIDCO.

OCC decision:

- *OCC advised the concerned utilities to furnish the relevant details i.r.o number of existing manufacturers of product/equipment/component pertinent to power sector, testing requirements presently being catered to, year-wise number of tests carried out, number and type of upcoming OEMs to take a final call on the proposal. The details may be furnished to ERPC Secretariat for onward submission to CEA.*

2.6 Shutdown request of U#1 : GMR

As per earlier submitted LGBR , it is herewith informed you that we are taking shutdown on Unit #1 from **06.07.2024** to **13.08.2024** for executing its **capital overhauling** . As per approved LGBR 2024-25 , GMR Unit #1 was scheduled from **12.07.2024** to **20.08.2024**

This message has already been communicated to our stake holders .

So it is requested to allow us availing shut down on **Unit #1** for executing its **capital overhauling** from **06.07.2024** to **13.08.2024**.

GMR may update. Members may discuss.

Deliberation in the meeting

- *GMR representative pleaded for preponement of shutdown of unit#01 from 06.07.2024 for 38 days which was originally approved in LGBR 2024-25 from 12.07.2024 for same duration. Capital overhauling was cited as a reason to avail this shutdown.*
- *SLDC Bihar requested for deferment of GMR Unit#01 shutdown in lean demand period i.e after October 2024.*

OCC decision:

OCC approved shutdown i.r.o GMR Unit#1 from 06.07.2024 till 13.08.2024 for a duration of 38 days to carry out capital overhauling.

2.7 Provision for construction of power supply for FGD and New Nabinagar 3 X 800 MW project from existing commercialized units of Nabinagar (3 X 660 MW): NTPC ER-I

The construction power will be required for upcoming Stage-II (3X800MW). As all the units of NSTPS are commercialised and operational, the provision for construction power shall be made from existing units of NSTPS by incorporating power drawn for construction activities in to Metering system.

Considering above, OCC may kindly approve drawl of construction power from existing units by providing appropriate meters by SBPDCL and ERLDC.

Accordingly metering logic may be incorporated for the same.

The matter was also put up in 214th OCC meeting but in absence of NTPC ER-I representative no decision could be reached. In absence of NTPC ER-I representative OCC opined this agenda may be resubmitted in the next or subsequent OCC meetings for deliberation.

NTPC ER-I may update. Members may discuss.

Deliberation in the meeting

➤ *NTPC ER-I submitted:*

- *Around 3 MW power for installation of FGD and construction of propose New Nabinagar (3 X 800 MW) project was proposed to be drawn from the existing 11 kV switchgear feeding the station load.*
- *Lack of reliable power supply from Bihar DISCOM (SBPDCL) for construction of proposed New Nabinagar (3 X 800 MW) project was highlighted.*
- *Installation of a SEM meter at the site location was proposed to account for internal power consumption by NTPC in construction of the new project. Payment for this power drawn may be made to Bihar DISCOM based on the reading of meter installed by DISCOM.*
- *Placing underground 11 kV cables in place of overhead lines from Bihar DISCOM to improve safety aspect in power plant premises was pointed out.*
- *The project shall take minimum 4 years for completion.*
- *SBPDCL confirmed that reliable power supply can be catered to NTPC Nabinagar plant from DISCOM end.*

OCC decision:

- *OCC affirmed of ensuring reliable power supply to NTPC Nabinagar and necessary coordination in this regard needs to be done mutually between SBPDCL and NTPC.*
- *OCC opined that laying of underground 11 kV cables may be explored in place of overhead lines within plant premises to mitigate safety concern.*
- *OCC observed that the proposal of drawal of construction power for the purpose of FGD installation and subsequent commissioning of 3*800 MW units from the existing station load may be in contravention with certain regulatory provisions.*
- *OCC opined that since SBPDCL has ensured to provide reliable power supply, NTPC may take up with SBPDCL. SBPDCL was requested to extend all possible co-operation to NTPC for reliable supply of construction power for installation of FGD and subsequent construction of proposed 3*800MW units at NPGC.*

2.8 Forced outage of NTPC Darlipalli Unit-1: ERLDC

On **April 24, 2024**, Darlipalli informed the ERLDC that **Unit-1** would be taken out of bar as an emergency measure on April 26th due to "**Low LP turbine differential expansion**". The unit finally went out of bar at 00:23hrs on **April 27th**, followed by an email stating a **60-day outage** for repairs.

ERLDC immediately raised concerns about the significant deviation of the outage period from the initial notification. Subsequently, Darlipalli revised the estimated restoration time to 7 days. Further, on **07.05.2024**, Unit-1 LPT-B preliminary inspection was done, and OEM/OES has suggested to do the complete inspection and overhauling of the TG and do the corrections similar to Unit-2. Accordingly, Darlipalli plant declared TG overhauling period 60 days tentatively from the date of outage.

All communications are attached as **Annexure B.2.8**

ERLDC and NTPC Darlipalli may please update. Members may discuss.

Deliberation in the meeting

- *NTPC Darlipalli representative submitted :*
- *In-Situ Rotor replacement of HP and IP turbines is under progress.*
- *The Unit-1 shall be tentatively restored within 26th June 2024.*

OCC decision:

- *OCC advised NTPC Darlipalli to expedite repair works so that the Unit-1 can be positively reinstated to service as per the submitted timeline (i.e. 26th June 2024).*
- *NTPC Darlipalli was also advised to share weekly progress report with ERPC delineating proper timeframe of the planned repair activities.*

2.9 Incurring DSM loss due to scheduled generation exceeding normative DC: NTPC Darlipali

NTPC Darlipali station received SG more than normative DC on 3rd & 8th Apr -24. SG for 3rd April has been corrected. SG correction still pending for 8th Apr. On **8th Apr-24**, rev no. 34 there is no URS power. In rev no. 35 SG has been revised to be more than normative DC. As a result the generating station has **incurred DSM loss** of around **46 lacs**. Due to introduction of TGNA and changes in WBES site, URS power was visible in WBES site and same was sold in DAM. As one time measure it is requested to **waive off DSM by considering ECR as DSM rate**.

NTPC Darlipali and ERLDC may update. Members may discuss.

Deliberation in the meeting

NTPC Darlipali pleaded to the forum for waiving off the imposed DSM penalty by considering ECR as DSM rate so that the huge amount of DSM loss incurred can be curtailed to some extent.

OCC decision:

- *OCC referred the issue to CCM for further deliberation.*

2.10 Modalities for compliance to DSM between India and Bhutan: ERLDC

CEA has issued detailed modalities for compliance to DSM between India and Bhutan on **25th April 2024** and the same has been implemented from **1st May 2024**. Detailed modalities are attached in **Annexure B.2.10**.

Following are some of the salient features of the modalities.

- The delivery point for the import/export of power by Bhutan shall be at the India-Bhutan border **after accounting for the transmission line losses**.
- All Scheduling shall be through the **Settlement Nodal Agency (SNA)** to **NLDC**, India on 15-minute time block basis as per IEGC.
- **SNA** shall provide DC/schedule of generating stations for export to India at the delivery point after deducting applicable transmission losses.

Further, as per clause 7.6(b) of the DSM Modalities, the following scheduling information is required to be provided on a daily basis:

- Ex Bus generating schedule of generating station.
 - Ex Bus schedule for export to India.
 - Schedule for export to India at the delivery point after deducting applicable transmission losses.
- For arriving at the import/export of energy at the India-Bhutan border, the meters installed in the Bhutan side shall be used primarily after accounting for the transmission line losses. In case of any discrepancy in the reading, meters installed in the Indian side shall be used. For this different transmission loss for lean season and peak season is declared. Further as per clause 7.7 (b) of the DSM Modalities, All the meters required as per clause 7.7(a) (i) & (ii) shall be time synchronized with Indian Standard Time(IST)
 - **Calculation of Deviation**
 - o Algebraic sum of export and import transactions at delivery points, shall be considered as total schedule for import/export (ESch).
 - o Actual import/export (EAct) would also be determined by summing up all the meter data at delivery points.
 - o Deviation EDev = EAct-ESch
 - Efforts shall be made by Bhutan to keep generation as per schedule and deviations shall be settled within Bhutan through the implementation of Grid Discipline Mechanism (GDM) 202, of Bhutan.

Members may note.

Deliberation in the meeting

*The OCC forum was apprised of the detailed modalities for compliance to DSM between India and Bhutan (**Annexure B.2.10**) as issued by CEA dated 25th April 2024 and implemented w.e.f 1st May 2024. Salient features of the modalities were also highlighted for awareness of all ER constituents.*

All members noted.

2.11 Mock Islanding test :ERLDC

As per **IEGC cl. 29(11)**, Mock drills of the islanding schemes are to be carried out annually by the respective RLDCs in coordination with the concerned SLDCs and other users involved in the islanding scheme. In case a mock drill with field testing is not possible to be carried out for a particular scheme, simulation testing shall be carried out by the respective RLDC.

Presently, the following islanding schemes are present in the Eastern Region:

Station/System	State/Country	Installed Capacity (MW)
CHPC	Bhutan	84
CESC	West Bengal	750 (3 x 250 MW)
NALCO	Odisha	1200
ICCL	Odisha	258 (2 x 54 MW + 1 x 30 MW + 2 x 60 MW)
RSP	Odisha	255 (2 x 60 MW + 3 x 45 MW)
Bhushan Power & Steel	Odisha	506
Aryan ISPAT and power Ltd.	Odisha	18
Maithon Ispat Limited	Odisha	30
Hindalco	Odisha	467.5
IMFA	Odisha	258 (2 X 54 MW+ 1 X 30 MW + 2 X 60 MW)
VAL	Odisha	1215 (9 X 135 MW)
Bakreswar Islanding Scheme	West Bengal	1050 (5 x 210 MW)
Tata Power Haldia Islanding Scheme	West Bengal	120 (2 x 45 MW+ 1 x 30 MW)
Bandel Islanding Scheme	West Bengal	215
Narbheram Power & Steel Pvt. Ltd (Dhenkanal) Islanding Scheme	West Bengal	8

These islanding schemes shall be reviewed and augmented depending on the assessment of critical loads at least once a year or earlier if required. Therefore, all the concerned SLDCs are requested to coordinate with respective users and share a plan for conducting a Mock test or in case a mock test not possible then may share the following data for conducting simulation studies:

1. Updated Network (in PSSE file)
2. Updated LGBR details of the island node wise (in PSSE file)
3. Machine dynamic data as per FTC documents of ERLDC
4. Islanding logic

ERLDC may explain. Members may update.

Deliberation in the meeting

- *ERLDC apprised:*
- *As mandated in IEGC 2023:*

Mock drills of the islanding schemes need to be carried out annually by the respective RLDCs in coordination with the concerned SLDCs and other users involved in the islanding scheme. In case a mock drill with field testing is not possible to be carried out for a particular scheme, simulation testing should be carried out by the respective RLDC.

OCC decision:

- *All concerned SLDCs were advised to coordinate with all users of existing islanding schemes in ER (mentioned above) and share the plan for respective mock drills with ERLDC at the earliest.*
- *In case of non-feasibility of physical mock drills, the following details for carrying out simulation studies i.r.o individual islanding schemes may be shared with ERLDC in coordination with concerned users by respective SLDCs:*
 - *Updated Network (in PSSE file)*
 - *Updated LGBR details of the island node wise (in PSSE file)*
 - *Machine dynamic data as per FTC documents of ERLDC*
 - *Islanding logic*

2.12 Stakeholders Comments on Draft SOP for supply, installation & replacement of ISTS IEM as per IEGC 2023 and CEA metering regulations 2006(with ammendments):ERPC

As per **IEGC 2023**, CTUIL shall be responsible for procurement & installation of Interface Energy Meters and replacement of faulty meters. Further as per CEA, all interface meters installed at the points of interconnection with Inter-State Transmission System (ISTS) for the purpose of electricity accounting and billing shall be owned by CTU. Accordingly, CTUIL has prepared a draft SOP for supply, installation & replacement of **ISTS IEM/SEMs** which is put up for stakeholders' comments by **31st May, 2024** in compliance to **IEGC 2023** and CEA metering regulations.

This Standard Operating Procedure (SOP) (attached at **Annexure B.2.12** for Procurement and Installation of **Interface Energy Meter (IEM/SEM)** will be applicable only for the IEM/SEM falling under the purview of CTU as per the provisions under Regulations 49.12 (a) of CERC (Indian Electricity Grid Code), Regulations, 2023 and amendments thereof.

The objective of this procedure is to ensure timely installation of IEM/SEM in the new ISTS system and timely replacement of the defective IEM/SEM. Presently, **POWERGRID** is an authorized agency for procurement of IEM/SEM, installation of new IEM/SEM and replacement of defective IEM/SEM. Any mention of POWERGRID in this procedure shall also

mean any other agency authorized by CTUIL to carry to aforesaid functions. CTUIL may authorize any other agency to carry to aforesaid functions in future. Replacement/Installation of IEM/SEM shall mean all the activities including **supply** of new meter and its **installation, testing and commissioning**.

Stakeholders (**Generators, Bulk consumers, STUs, RLDCs, SLDC and other ISTS users**) may give their observations, if any, latest by **31.05.2024** at mail ids; rshakya@powergrid.in & tanay@powergrid.in

Members may note.

Deliberation in the meeting

- *The OCC forum was apprised of the Draft SOP for supply, installation & replacement of ISTS Interface Energy Meters prepared by CTU in compliance to IEGC 2023 as well as CEA metering regulations 2006(with amendments).*
- *SLDC Odisha pitched for extension of SEM data in real time available via AMR at RLDCs to SLDCs to facilitate better grid operation. Additional expenditure in establishing the communication link from RLDC server to SLDCs may be borne by respective SLDCs*
- *NTPC Darlipalli also raised the same issue of inherent mismatch as raised by SLDC Odisha and requested for remedial action.*
- *Powergrid ER-II submitted:*
 - *The possibility of sharing AMR data from RLDC to all SLDCs with structural modifications in existing framework is already under planning and the same shared with the forum in subsequent OCC meeting(s) along with cost implications.*

OCC decision:

- *OCC advised all stakeholders to put forth their view/comments on the circulated Draft SOP (**Annexure B.2.12**) of CTU latest by 31.05.2024.*

2.13 Details of failure of Transmission line towers of 220 kV and above voltage level during period of January 2024 to April 2024: ERPC

A Standing Committee of Experts in the field of design & operation of EHV Transmission lines was constituted by Central Electricity Authority in 1999 as per the Electricity (Supply) Act No. 54 of 1948 and re-composition of the Standing Committee was issued in 2012 (with representative from CEA, CPRI, DTU, RPCs and representative from Power Utilities), which continues to carry out investigation of failure of transmission line towers of Power utilities as per the Section 73(1) of the Electricity Act, 2003. The scope and terms of reference of the committee are:

- (i) To investigate the cause of failure of transmission towers of 220 kV & above voltage level.
- (ii) Recommendations to avert recurrence of such failures in future.

2. As per the requirement of the Standing committee, all utilities/ transmission licensees are supposed to report the failure of towers of 220 kV and above voltage class transmission lines to CEA. However, many a times such information is not provided to this office or the information is provided, but after significant amount of time from the date of incident. In this regard, it is highlighted that Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations, 2023 mandates that utilities shall inform to CEA regarding

transmission system failures within forty-eight hours. The clause related to the intimation of failures may be referred to below:

Clause 48(8): "Failures of any 220 kV and above voltage level transformer, reactor and transmission line towers shall be reported by the owner of electrical installation, within forty-eight hours of the occurrence of the failure, to the Central Electricity Authority and the reasons for failure and measures to be taken to avoid recurrence of failure shall be sent to the Central Electricity Authority within one month of the occurrence in the format given in Schedule-VII."

It is requested that the aforementioned regulations shall strictly be complied with and intimation of incident of tower failure, if any, shall be provided within the stipulated time.

Further, it is informed that a meeting of Standing Committee of experts to investigate on Tower failure is **proposed to be held in 3rd week of the May, 2024**, wherein all the incidents of the failure of 220 kV and above voltage Transmission line towers, which occurred during the period from January 2024 to April 2024, are to be discussed.

4. It is requested to provide the below-mentioned details of the incidents failure of transmission towers of **220 kV & above** voltage level, which occurred in-between the period from **January 2024 to April 2024**, so that the same can be examined and included in the agenda of the next meeting of the Standing Committee :

- I. Duly filled CEA proforma for intimation of tower failure incident (soft copy in Word format). The proforma is available on the CEA website at following link: https://cea.nic.in/wp-content/uploads/2021/03/format_failure_trans_line.pdf
- II. Detail failure analysis report.
- III. Material test report for the tests conducted on the members, nuts & bolts of failed towers including impact test on the members/bolts from NABL accredited lab.
- IV. Tower spotting data.
- V. Detail of weight spans adopted for the towers located in the affected stretch.
- VI. Soft copy of the colored photograph.
- VII. Soft copy of foundation drawing & design for the failed tower locations.
- VIII. Soft copy of the structural drawing & design for failed tower locations.
- IX. Tower Schedule of the relevant section of line.
- X. If the cause of failure is attributed as wind then wind speed data of the time and location of the failure of towers obtained from a nearby authorized observatory.
- XI. If the cause of failure is attributed as flood in nearby river, then velocity, discharge and highest water level observed in the river at the time and near the location of the failure of towers. The report of nearby authorized observatory in this regard.
- XII. Any other relevant information.

All ISTS and state transmission licensees were intimated regarding the same on behalf of ERPC vide mail dated 08.05.2024.

Only Powergrid ER-II has updated failure details till date.

All transmission licensees (ISTS and state) may update.

Deliberation in the meeting

The OCC forum was apprised of Details of failure of Transmission line towers of 220 kV and above voltage level during period of January 2024 to April 2024 as sought by CEA for deliberation in a meeting of Standing Committee of experts to investigate on Tower failure which is proposed to be held in 3rd week of the May, 2024.

All members noted and consented for the needful in this regard.

ADDITIONAL AGENDA

2.14 Proposal for installation of 4th 220/132 KV, 200 MVA Transformer in place of existing 220KV Waria (DVC) II bay at Durgapur 220 KV SS of WBSETCL to maintain N-1 criteria: WBSETCL

- At present the total installed capacity of 220/132 KV Power Transformer at Durgapur 220 KV SS of WBSETCL is 3X200 i.e. 600 MVA
 - Peak load of approx 530 MVA has already been catered by the above mentioned 220/132KV Transformers during this year violating the (N-1) criteria
 - Considering further increase in load at 132KV level at Durgapur S/S due to 132KV network re-configuration planned in & around Durgapur, augmentation of transformation capacity with installation of 4th 200 MVA Transformer is required before the next summer
 - Space for construction of 220 KV bay is not available at Durgapur SS but there is space for construction of new 132 KV bay & installation of 4th 220/132 KV Power Transformer at the SS
 - Due to constraint of space for 220KV bay, it is proposed to use the existing 220 KV Waria (DVC) bay which is lying unutilised since a long time due to system constraint
 - SLD of Durgapur 220KV SS is enclosed for reference in this regard
 - Considering extreme urgency for installation of the 4th 220/132KV Power Transformer at Durgapur 220KV SS the matter is placed before the 215th OCC Forum of ERPC for further deliberation & necessary approval
- WBSETCL may update. Members may discuss.

Deliberation in the meeting

- *WBSETCL submitted :*
- *Around 530 MVA peak loading is observed in existing three 200 MVA transformers at 220 kV Durgapur S/S that is resulting in violation of N-1 condition.*
- *With consideration of further load growth at Durgapur S/S (at 132 kV level), necessary network re-configuration as well as augmentation of transformation capacity via 4th transformer installation before next Summer is proposed.*
- *With space constraint in installing the 4th transformer, relinquishment of connectivity of one circuit of 220KV Waria (DVC) line is proposed whose bay may in turn be utilized to serve the purpose.*
- *WB SLDC submitted:*

- Since the erstwhile 220 kV Parulia-Waria(DVC)(ckt –I & II) line was LIL Oed at DSTPS, the line couldn't be switched on owing to very high power flow.
- These lines are presently non-functional, kept only in anti-theft charging mode.
- These 220 kV lines are exceeding their thermal limit while harnessing power from nearby generating stations (i.e Mejia TPS and DSTPS of DVC) to meet demand of major adjacent load centre i.e Bidhannagar.
- The forum was requested for expediting the process of dismantling these non-operational lines to make room for 4th 220/132 KV Power Transformer at the 220 kV Durgapur S/S .

OCC decision:

- OCC opined that since the ownership of 220KV Waria (DVC) line lies with DVC, proper consent from DVC is essential i.r.o future applicability of this line prior to disconnecting the same from 220 kV bay at Durgapur (WBSETCL) S/S.
- OCC advised WBSETCL and DVC to carry out comprehensive study as well as bilateral discussion to arrive at a concrete solution.

2.15 SPS for 400KV OPGC - Lapanga Circuit - I & II: SLDC,ODISHA (OPTCL)

As per deliberation in 210th OCC meeting:

- IBEUL representative requested for modification in SPS logic from MW to current as actuating signal for the numerical relay.
- As confirmed by SLDC Odisha and OPTCL, line loading of any one circuit of 400kV-OPGC-Lapanga-DC should be restricted to 1000MW.
- OCC, agreeing to this request suggested modified SPS logic as follows:
- It was finally decided that SPS shall be implemented in three stages where the current in Ampere per conductor of any of the 400 KV OPGC lapanga double ckt lines shall be used to trip one unit of Ind- bharaat.
- The earlier decided MW value which is 950 for alarm and 1000 for trip will be converted to amps considering 0.95 Pf.

Stage 1 (Alarm)

- The current of OPGC-Lapanga S/C is greater than 1440 Amps and less than 1520Amps

Stage 2 (trip with 10 minutes delay)

- The current of OPGC-Lapanga S/C is greater than 1520 Amps and less than 1550Amps.

Stage 3 (trip with 10 Second delay)

- The current of OPGC-Lapanga S/C is greater than 1550 Amps
- OCC also advised OPGC to extend all necessary support to IBEUL for implementing SPS logic as well as for proposed LIL O connection.

CURRENT SPS PROPOSAL BY SLDC, ODISHA:

- With reference to the above minutes, SPS is functional taking the actual current in 400KV OPGC-- Lapanga Circuit- I & II into consideration aiming at 950MW power flow per circuit (Alarm initiation followed by backing down of generation at IBEUL) & 1000MW powerflow per circuit (Tripping of Unit at IBEUL).

- The above SPS logic was set to prevent overloading of the other circuit if one of the circuits trips.
- During the prevailing peak summer load conditions, the power flow through each circuit of 400KV OPGC -- Lapanga Circuit –I & II has touched 811MW each at 01.12hr on dt.01.05.2024. At the same time, power flow through other 400KV connected lines were as follows.
 - 400KV IBEUL -- OPGC CKT-336MW
 - 400KV Jharsuguda CKT -- OPGC-- 160MW
 - IBEUL Generation -- 340MW
 - OPGC Stage - II Generation -1120MW (Ex - BUS)
- At an ambient temperature of 45°C, it is quite alarming to run the 400KV OPGC-- Lapanga Circuit- I & II at higher power flow i.e above 770MW each during day time on continuous basis endangering system security of the State Grid. In such situation, tripping of one circuit may lead to very higher loading of the other circuit, which is not desirable from system security point of view.

Therefore, this has become necessary to re-visit the SPS Logic implemented earlier & amend the same considering the present scenario.

It is proposed that SPS Logic may be implemented as per the following power flow parameters:

(i) When power flow in each circuit exceeds 750MW (continuous for 10minutes) alarm should be initiated followed by backing down at /BEUL.

(ii) When power flow in each circuit exceeds 800MW, IBEUL Unit should be tripped (5 minute time delay).

It is requested that ERLDC may conduct system studies taking the present power flow scenario into consideration and extend valuable inputs in the forthcoming OCC meeting in respect of system security.

Deliberation in the meeting

- *SLDC, Odisha submitted:*
 - *Loading of 400 kV Jharsuguda-OPGC, Jharsuguda-Ind Bharat, Ind-Bharat-OPGC, OPGC-Lapanga lines is surpassing thermal limit as per flow pattern practically observed at SLDC end in past few months of crunch demand. Same situation persists Lapanga onward network to Vedanta and Meramandali.*
 - *The present loading pattern if continued unabated, may jeopardize the intra-state network of Odisha and the SPS already in place shall not be good enough to safeguard this damage owing to high current settings being deployed w.r.t flow in 400KV OPGC-- Lapanga D/C line.*
 - *Under these circumstances, modification in existing SPS settings is proposed as follows:*
 - (i) *When power flow in each circuit exceeds 750MW (continuous for 10minutes) alarm should be initiated followed by backing down at IBEUL.*
 - (ii) *When power flow in each circuit exceeds 800MW, IBEUL Unit should be tripped (5 minute time delay).*
 - *Possibility of loss of 1600 MW power flow from OPGC to Lapanga in case of overload tripping of 400KV OPGC-- Lapanga D/C line was highlighted.*

OCC decision:

- *ERLDC was advised to conduct a comprehensive study validating the observations made by SLDC Odisha.*

3. PART-C: ITEMS FOR UPDATE/FOLLOW-UP

3.1. ER Grid performance during April 2024.

The average and maximum consumption of Eastern Region and Max/Min Demand (MW), Energy Export for the month April -2024 were as follows:

AVERAGE CONSUMPTION (MU)	MAXIMUM CONSUMPTION(MU)/ DATE	MAXIMUM DEMAND (MW)	MINIMUM DEMAND (MW)	SCHEDULE EXPORT	ACTUAL EXPORT
		DATE/TIME	DATE/TIME	(MU)	(MU)
606.9 MU	667 MU 30.04.2024	31890 MW, 30.04.2024 at 23:18 Hrs.	20447 MW, 12.04.2024 at 05:27 Hrs.	1538	1656

ERLDC/ERPC may highlight the performance of the ER grid.

Deliberation in the meeting

The grid performance of ER for the month of April 2024 was highlighted.

3.2. Status of ongoing Generation Projects: ERPC

Enhancing thermal capacity is imperative due to escalating load demands. As we approach the summer season, ensuring preparedness is of utmost importance. Possessing adequate capacity during peak load periods is crucial for effective grid management. There are several forthcoming thermal projects within the region, with a few Thermal Power Plants (TPPs) awaiting their CODs such as North Karanpura, Barh, Patratu, IBEUL (Unit #02) and SJVN.

It is necessary for these thermal power plants to strategize for their timely completion and integration into the grid, ensuring the region's readiness for the upcoming demand surge.

COD of Unit #02(660 MW) of North Karanpura TPP was completed on 20.03.2024. Status of Unit#03(660 MW) may please be confirmed by NTPC.

Generating unit	Update as per 212 th OCC meeting	Update as per 214 th OCC meeting
North Karanpura TPP U#3(660 MW)	-	to be commissioned by December 2024.
Barh stage-I U#3 (660 MW)	-	to be commissioned by April 2025.
Patratu	COD expected in Q4 of FY 2024-25.	-
Buxar TPP(SJVN)	-	Synchronization of Unit#1 is targeted in September, 2024 and Unit#2 in December, 2024
IBEUL	-	<ul style="list-style-type: none"> • IBEUL U#2(350 MW) to be commissioned by end

		<p>of June 2024. Presently w.r.t the project, Boiler inspector clearance and clearance from MOEFCC is pending.</p> <ul style="list-style-type: none"> • Dedicated Transmission line (DTL) of the project to be tentatively completed by 1st week of September 2024. • As per progress report submitted by IBEUL dated 13.04.2024, status of 400 kV IBEUL-Sundergarh DTL is as follows: <ul style="list-style-type: none"> ○ Foundation works: 91.5% completed ○ Erection works: 87% completed ○ Stringing works: 55% completed
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As per deliberation in 214th OCC:

- OCC advised IBEUL to share the specific issue pertaining to MOEFCC clearance that is delaying commissioning of the IBEUL U#2 so that the same may be pursued with MOEFCC for early resolution.
- OCC further advised IBEUL to submit regular progress report of DTL highlighting significant progress in activities and also strictly adhere to the committed timeline for DTL commissioning.
- OCC advised all Thermal GENCOs to expedite progress of their new generation projects to ensure timely commissioning of the respective units, thereby keeping pace with unprecedented escalation in load demand.

All concerned Thermal GENCOs may update. Members may discuss.

Deliberation in the meeting

- *NTPC representative confirmed the same timeline for commissioning of North Karanpura TPP U#3(660 MW) and Barh stage-I U#3 (660 MW) as updated in 214th OCC meeting, i.e by December 2024 and April 2025 respectively.*
- *SJVN representative was not present in the meeting.*
- *IBEUL apprised:*
 - *In respect of U#2(350 MW), Boiler inspector clearance is still awaited while scrutiny of the submitted documents is under progress.*

- *Environmental clearance was applied for along with reply to all queries to MOEFCC and the same is likely to be received within a week.*
- *400 kV IBEUL-Sundergarh DTL commissioning shall be completed latest by September 2024.*
- *As per progress report submitted by IBEUL dated 30.05.2024, status of 400 kV IBEUL-Sundergarh DTL is as follows:*
 - *Foundation works: 97 % completed*
 - *Erection works: 94% completed*
 - *Stringing works: 58.5% completed*

OCC decision:

- *OCC advised IBEUL to expedite Boiler as well as MOEFCC clearance so that commissioning of the IBEUL U#2 can be done by June 2024.*
- *OCC further advised IBEUL to submit regular progress report of DTL highlighting significant progress in activities and also strictly adhere to the committed timeline for DTL commissioning i.e by September 2024.*
- *OCC advised all Thermal GENCOs to expedite progress of their new generation projects to ensure timely commissioning of the respective units, thereby keeping pace with unprecedented escalation in load demand.*

3.3. Update on installation of 7th (Interim) 500 MVA ICT at 400 kV Subhasgram (PG)-ERPC

As per deliberation in 214th OCC:

Powergrid ER-II representative was not present in the meeting.

Member Secretary ERPC apprised the forum of the following:

- The 500 MVA ICT is still stranded near Achipur Ghat (Budge Budge).
- An alternate route has been explored for further movement of the ICT from Budge Budge and a separate bridge construction has commenced to materialize the same.
- As per present progress, the 500 MVA ICT is likely to be commissioned at Subhasgram(PG) by third week of May 2024.

OCC decision:

OCC forum noted the shared update in optimism to put the 7th (interim) 500 MVA ICT in service at 400 kV Subhasgram(PG) amid the ongoing crunch demand period.

As per latest available status, 7th (interim) **500 MVA ICT** has **already reached 400 kV Subhasgram(PG)** on **16.05.2024** which shall be put to service shortly.

Powergrid ER-II may please update. Members may discuss.

Deliberation in the meeting

Powergrid ER-II updated:

- *The 7th (interim) 500 MVA ICT has already reached 400 kV Subhasgram(PG) safely on 16.05.2024*

- There may be slight delay in commencement of erection process of the ICT owing to inclement weather conditions as per weather forecast.
- The ICT shall be put to service latest by 15th June 2024.

OCC decision:

Considering the critical requirement of the 500 MVA ICT i.r.o system reliability, OCC requested Powergrid ER-II to expedite erection activities for the 7th (interim) 500 MVA ICT at Subhasgram(PG) to the best feasible extent.

3.4. Regarding Non-Submission of Forecasting Data from States:ERLDC

The **Clause 2 of Regulation 31 of IEGC 2023** has mandated all the **SLDCs** to timely submit the demand estimate data to the respective RLDC and RPC.

The demand estimation data provided by SLDCs will be required in resource adequacy planning and regional load forecasts conducted by the RLDC. Currently, Jharkhand SLDC regularly provides day ahead and weekly forecasts and West Bengal SLDC is submitting day-ahead forecasts. ERLDC has planned to visit all the SLDCs to sensitize them about the Forecasting. Following the visit by the ERLDC team, DVC has started sending day day-ahead forecasts to ERLDC. The latest Forecast receipt status is shown below:

AS ON 16-05-2024	Forecast Receipt Status		
Entity Name	Day ahead	Weekly	Monthly
JHARKHAND	REGULAR	REGULAR	NOT RECEIVED
WEST BENGAL	IRREGULAR	NOT RECEIVED	NOT RECEIVED
DVC	RECEIVED	NOT RECEIVED	NOT RECEIVED
BIHAR	RECEIVED	NOT RECEIVED	NOT RECEIVED
SIKKIM	NOT RECEIVED	NOT RECEIVED	NOT RECEIVED
ODISHA	NOT RECEIVED	NOT RECEIVED	NOT RECEIVED

Hence it is again requested to all the concerned for timely submission of demand estimation data to ERLDC. This collaboration is essential for effective planning and preparedness to meet the region's electricity demands efficiently and reliably.

ERLDC may please update. Members may discuss.

Deliberation in the meeting

➤ ERLDC informed:

- All SLDCs of ER have been duly made aware about the importance and modalities of timely demand estimation on behalf of ERLDC. A joint workshop was also organized in coordination with DVC SLDC in this regard.
- All SLDCs need to furnish the demand forecasting data irrespective of the tool being deployed for the same as per IEGC 2023 guidelines.

OCC decision:

- OCC advised all SLDCs for strictly adhering to the schedule of demand estimation as mandated in IEGC 2023, timely sharing with ERLDC as well as uploading of forecasting error on their respective websites.
- West Bengal SLDC was advised to strive for resolving technical glitch of EMS portal in coordination with concerned vendor. If the issue still remains unresolved, the same may again be intimated to ERPC.
- SLDC Odisha was advised to expedite implementation of the forecasting software while in the meantime day ahead demand forecast must be submitted to ERLDC based on historical data.
- Sikkim SLDC was advised to immediately commence regular demand estimation and timely sharing with ERLDC.
- SLDCs who are submitting day ahead forecast were advised to also share the forecasting data on weekly as well as monthly basis with ERLDC.

3.5. Regarding Non-Submission of FRC data: ERLDC

Adhering to IEGC clauses 30.8 and 30.10.(a) to 30.10.(q), generating stations within the eastern region are required to submit essential data to ERLDC within two days of receiving a notification regarding a reportable frequency event. Additionally, according to clause 30.10.(n), all control areas within the eastern region must assess their frequency response characteristics and share the evaluation, along with high-resolution data, with the ERLDC. If any data is not received or is incomplete, ERLDC resorts to using Scada data (low resolution) to calculate the performance of the respective control area. Therefore, timely submission of primary response data is crucial for compliance with the IEGC.

As per the decision taken in the 214th OCCM, all the regional generators as well as states were advised to send the high-resolution data to ERLDC for assessing their performance. The data receipt status of the relevant events is attached herewith:

STATIONS	23.04.2024	02.05.2024
	20:15	14:41
Barh stage-1	Pending	Pending
Barh stage-2	Pending	Pending
BRBCL	Received	Received
Darlipalli	Pending	Received
FSTPP #STG 1 & 2	Pending	Pending

FSTPP # STG 3	Pending	Pending	
KhSTPP #STG 1	Pending	Pending	
KhSTPP #STG 2	Received	Received	
NPGC	Received	Pending	
TSTPP #STG 1	Pending	Pending	
TALCHER STG2	Pending	Pending	
TEESTA V	Pending	Pending	
North Karanpura	Pending	Pending	
TEESTA III	Pending	Pending	
ADHUNIK	Received	Pending	
DIKCHU	Pending	Pending	
TASHIDING	Pending	Pending	
GMR	Received	Received	
JITPL	Received	Received	
MPL	Received	Received	
Bihar	Pending	Pending	
Jharkhand	Pending	Pending	
DVC	Pending	Pending	
OPTCL	Received	Received	
WB	Pending	Pending	
Updated on 14.05.23			
STATE	Station Name	23.04.2024	02.05.2024
		20:15	14:41
Bihar	Barauni	Pending	Pending
Jharkhand	Tenughat	Pending	Pending
DVC	Mejia	Pending	Pending

	Koderma TPS	Pending	Pending
	RAGHUNATHPUR	Pending	Pending
	CTPS	Pending	Pending
	DSTPS	Pending	Pending
	Bokaro	Pending	Pending
OPTCL	Balimela	Pending	Pending
	GMR	Pending	Pending
	IBTPS	Pending	Pending
	U-Indravati	Pending	Pending
	OPGC	Pending	Pending
	U-Kolab	Pending	Pending
WB	Bakreshwar	Pending	Pending
	Bandel	Pending	Pending
	DPL	Pending	Received
	Budge-Budge	Pending	Pending
	Kolaghat	Pending	Pending
	Sagardighi	Pending	Received
	HALDIA	Received	Received
	Santaldih		

In view of the same the following action points may be noted:

- All regional generators are once again requested to take necessary action to ensure consistent data submission for every frequency event flagged by ERLDC.
- SLDCs to access FRC as well as the performance of their intra-state entities.

ERLDC may please update. Members may review and discuss.

Deliberation in the meeting

➤ *ERLDC submitted :*

- *Based on high resolution data submitted by each generator against reportable frequency events, ERLDC shall recommend for re-testing of primary frequency response by respective generators as per IEGC 2023.*

- In case data not submitted by power plant, FRP calculated based on SCADA data will be used for taking decision of primary frequency response testing.
- Consideration of SCADA data(with low resolution) for FRC has inherent error that may lead to erroneous assessment of FRP for individual control areas.
- ERLDC is monitoring each individual state as a whole while bifurcation i.r.o state generators needs to be done by concerned SLDCs and the relevant performance analysis of the individual control areas within the jurisdiction of SLDC needs to be shared with ERLDC. West Bengal SLDC and DVC SLDC have already started sharing these details.
- If case of non-receipt of FRC data against each frequency event on time, reconciliation of the same for a series of events at a time shall be difficult. Consequently, erroneous assessment of FRP owing to latency of data at ERLDC may lead to financial loss to generators in future in missing the incentive against their actual frequency response performance.

OCC decision:

- All generators whose data submission against frequency events flagged by ERLDC is pending (detailed above in agenda) were advised to submit the necessary FRC data to ERLDC at the earliest.
- All generators were also advised to regularly share high resolution data against each reportable frequency event with ERLDC on time to facilitate accurate assessment of FRP for respective control areas.

3.6. Finalisation of dates for mock black start in capable units of Eastern region: ERLDC

As per IEGC 2023 regulations, each user is required to carry out a mock trial run of the restoration 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.

As such a tentative list for the year 2024 is prepared for conducting mock Blackstart of capable hydro units in the Eastern Region, matching with the dates in which such tests were conducted in previous years. The same agenda was discussed in the **214th OCC** meeting and it was deliberated that all hydro stations of ER to update the schedule of mock black start as prepared by ERLDC.

A few tentative dates, as received, have been highlighted in sky blue color.

SI No	Name of Hydro Station	2022 Actual Date of Test	2023 Actual Date of Test	Schedule of Mock Black Start	2024 Actual Date of Test
1	U. Kolab	23 rd , June 2022		June-2024	
2	Balimela	08 th Sep-2022		July-2024	
3	Rengali	08-	12 th July 2023	June-2024	

		December- 2022			
4	Burla	23-June- 2022		July-2024	
5	U. Indravati	25-May- 2022		May-2024	
6	Maithon	DVC representative submitted that upgradation work is under progress due to issues in the governing system. Detailed timeline would be submitted to ERPC and ERLDC. Detail timeline yet to be received from DVC SLDC	14 th August 2023	Dec-2024	
7	TLDP-III			Oct-2024	
8	TLDP-IV			Oct-2024	
9	Subarnarekha	13 th December 2022		Sep-2024 4 th week	
10	Teesta-V			N/A	
11	Chuzachen			Oct-2024	
12	Teesta-III	08-April- 2022		N/A	
13	Jorethang		19 th and 20 th December 2023	Dec-2024 3rd week	
14	Tashiding		12 th December 2023	2nd week of Dec 2024	
15	Dikchu			N/A	

16	Rongnichu			April 2024	18 th April and 20 th April 2024
17	Mangdechu				

The users, in this case mean includes generating company and they are requested to kindly respond and review the tentative dates specific to their plant units and update the list. For intra state blackstart capable hydro units, SLDCs are requested to respond on their behalf.

So far , only Tashiding, Jorethang and Subarnarekha(JUSNL) have updated.

ERLDC may update. Members may review and discuss.

Deliberation in the meeting

➤ *ERLDC submitted :*

- *Tentative schedule of mock black starts in capable hydro generating units of Eastern region has been prepared based on available historical data.*
- *So far, relevant details have been received only from Tashiding, Jorethang and Subarnarekha(JUSNL).*

OCC decision:

- *OCC advised all black start capable hydro generating units of ER to update their schedule of mock black start to ERLDC at the earliest.*
- *OCC also opined to finalize this schedule of mock black start by next OCC meeting if no update on the same is received at ERLDC from concerned hydro generating units in the meantime.*

3.7. Commissioning Status of ADMS: ERLDC

Automatic demand management scheme (ADMS) has been already commissioned in West Bengal, DVC, Odisha, and Jharkhand and partially implemented by Bihar.

It was deliberated by Bihar in the **214th OCC** that an 80 MW load has already been implemented under ADMS while an additional 400 MW load is yet to be implemented. A detailed feeder list for 80 MW load under ADMS shall be shared with ERLDC. The feeder list is yet to be received at ERLDC.

DVC deliberated that after implementation of the Chandrapura islanding scheme, the ADMS scheme has got changed and the revised logic has been implemented. SCADA integration is pending for some of the ADMS feeders which shall be completed at the earliest.

ERLDC may update present status. Bihar may update the list. DVC may update the status of SCADA integration.

Deliberation in the meeting

SLDC Bihar confirmed of sharing the feeder details of 80 MW load implemented under ADMS with ERLDC.

3.8. Ensuring the healthiness of ADMS: ERLDC

State	Criteria for ADMS operation	Number of instances for which ADMS criteria satisfied in April 2024	Number of instances for which detail received	Discussion regarding previous month performance	Update in 214th OCC meeting
West Bengal	1. System Frequency < 49.7 Hz 2. WB over-drawl > 150 MW 3. Delay = 4 min	0	-	-	-
Jharkhand	1. System Frequency < 49.9 Hz 2. Jharkhand over-drawl > 150 MW 3. Delay = 3 min	36	Not received	-	-
DVC	1. System Frequency < 49.9 Hz 2. DVC over-drawl > 150 MW 3. Delay = 3 min	4	Not received	-	-
Odisha	1. System Frequency < 49.9 Hz 2. Odisha over-drawl > 150 MW 3. Delay = 3 min	33	Not received	-	-

Deliberation in the meeting

Members noted.

OCC decision:

OCC advised Jharkhand, DVC and Odisha to share relevant details against instances for which ADMS criteria was satisfied, to ERLDC at the earliest. This is to facilitate monitoring of successful ADMS operation.

4. PART-D: OPERATIONAL PLANNING

4.1. Anticipated power supply position during June-2024

The abstract of peak demand (MW) vis-à-vis availability and energy requirement vis-à-vis availability (MU) for the month of June 2024 were prepared by ERPC Secretariat (**Annexure D.1**) on the basis of LGBR for 2024-25 and feedback of constituents, keeping in view that the units are available for generation and expected load growth etc.

Members may update.

Deliberation in the meeting

The updated anticipated power supply position for June 2024 is provided at **Annexure D.1**

4.2. Major Thermal Generating Units/Transmission Element outages/shutdown in ER Grid (as on 15-05-2024)

a) Thermal Generating Stations outage report:

SL No	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	BARAUNI TPS	BIHAR	NTPC	7	110	Poor condenser vacuum	19-Jul-2023
2	BARAUNI TPS	BIHAR	NTPC	6	110	Low vacuum	22-Jul-2023
3	RTPS	DVC	DVC	2	600	Initially Unit was taken out due to very low lube oil pressure, later unit was taken under annual overhauling w.e.f 00.00 hrs of 27/02/2024, now under forced outage w.e.f 23/03/2024 due to damage in turbine bearing.	26-Feb-2024
4	RTPS	DVC	DVC	1	600	Boiler Tube Leakage	14-May-2024
5	DARLIPALI	ODISHA	NTPC	1	800	Turbine related problem	27-Apr-2024
6	BARH	BIHAR	NTPC	1	660	Abnormal sound in the boiler of Unit-1	13-May-2024

All Generating stations are requested to update expected restoration time and reason outage to ERLDC/ERPC on weekly basis in case of any change at their end.

b) **Major Generating stations Out on Reserve Shutdown due to low system demand:**

SL No	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
NIL							

c) **Hydro Unit Outage Report:**

S. NO	STATION	STATE	AGENCY	UNIT NO	CAPACITY (MW)	REASON(S)	OUTAGE DATE
1	TEESTA STG III Hep	SIKKIM	TUL	1-6	200	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	04-Oct-2023
2	DIKCHU Hep	SIKKIM	SKPPL	1-2	48	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	04-Oct-2023
3	TEESTA HPS	SIKKIM	NHPC	1-3	170	Sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in Teesta River and damage of Teesta III Dam & downstream Powerhouses	04-Oct-2023
4	INDRAVATI	ODISHA	OHPC	2	150	Capital Maintenance	23-Nov-2023

5	CHIPLIMA HPS / HIRAKUD II	ODISHA	OHPC	1	24	Capital Overhauling	15-Dec-2023
6	BALIMELA HPS	ODISHA	OHPC	2	60	High Turbine Vibration	14-Mar-2024
7	BURLA HPS/HIRAKUD I	ODISHA	OHPC	1	49.5	Annual maintenance	18-Apr-2024

d) **Long outage report of transmission lines (As on 15.05.2024):**

Transmission Element / ICT	Outage From	Reasons for Outage
220/132KV 100 MVA ICT II AT LALMATIA	22.01.2019	Commissioning work of 220/132KV, 100MVA Transformer and its associated control Panel under progress.
220 KV PANDIABILI - SAMANGARA D/C	03.05.2019	Tower Collapsed during Cyclone FANI (Restoration project is entrusted upon PGCIL & 220kV Samangara-Pandiabili ckt-I&II are anti-theft charged from Pandiabili end from loc no.01 to loc no.74)
220/132KV 100 MVA ICT 3 AT CHANDIL	30.04.2020	Due to Fire hazard ICT damaged and burnt.
220KV-FSTPP-LALMATIA-I	21.04.2021	Conductor stringing 12.965 km has been completed and Stringing between Tower Loc. no. 152 to 159 is under progress. Transmission line is idle charged between Lalmatia GSS end to Tower Loc.no.169
220KV-WARIA-BIDHANNAGAR-1 & 2	08.06.2022	To control overloading of 220 kV Waria-DSTPS (Andal) D/C line
220KV-MUZAFFARPUR(PG)-GORAUL(BH)-1	11.06.2022	Main Bay is under breakdown due to flashing in GIS module
400/220KV 315 MVA ICT 2 AT PATRATU	27.09.2022	ICT tripped on few occasions due to Buchholz later DGA violation found, internal fault in transformer to be rectified. (DGA violation)

132KV-BARHI-RAJGIR-1	25.03.2023	Dismantling of tower no. 227, 228, and 229 crossing the premises of Mahabodhi Cultural centre along with Destrining of conductor of both circuits and Earth wire between tension tower no. 218-237 in same line.
132KV-NALANDA-BARHI(DVC)-1	25.03.2023	
400KV-RANGPO-TEESTA-V-1 & 2	04.10.2023	Tower near gantry of Teesta V powerhouse collapsed due to sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in TEESTA river and damage of Teesta III Dam & downstream Powerhouses
400KV-TEESTA-III-RANGPO-1	04.10.2023	Hand tripped from Teesta-III end due to sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in TEESTA river and damage of Teesta III Dam & downstream Powerhouses
400KV-TEESTA-III-DIKCHU-1	04.10.2023	
400KV-RANGPO-DIKCHU-1	04.10.2023	Hand tripped from Rangpo end due to sudden cloudburst at glacier fed LOHNAK Lake followed by huge inrush of water in TEESTA river and damage of Teesta III Dam & downstream Powerhouses
400KV/220KV 315 MVA ICT 1 AT FARAKKA	21.02.2024	Replacement of 220kV circuit breaker of 315 MVA ICT-1 bay under ADDCAP.
400KV-KHSTPP-BANKA (PG)-1	24.02.2024	Switchyard bay updation work
132KV-RIHAND-NAGARUNTARI-1	08.03.2024	Height raising of 132 KV Rihand-Nagaruntari & 132 KV Rihand-Garhwa Rd. T/L
400KV-JHARSUGUDA-ROURKELA-3&4	01.04.2024	Reconductoring work
132KV-MADHEPURA (BH)-SAHARSA(PMTL)-1	04.04.2024	To control loading on 132KV Madhepura-Saharsa line
400KV-BIHARSARIFF(PG)-SAHUPURI(CHANDAULI)-1	27.04.2024	Diversion works due to construction of four lane from Bakhtiyarpur to Rajauli by NHAI
400KV-BIHARSARIFF(PG)-VARANASI-2	27.04.2024	Diversion works due to construction of four lane from Bakhtiyarpur to Rajauli by NHAI

400KV-ALIPURDUAR (PG)- PUNASANGCHUN-JIGMELING-1	29.04.2024	APD:R-Ph,148km,Z-II Jigmelling: Tripped Yphase and Bphase,Distance 95.5km,Ir=1.43kA,Iy=0.62kA,I b=0.28kA
HVDC PUSAULI	06.05.2024	Inspection of HVDC Valve hall to inspect the VESDA alarm reason
400KV/220KV 315 MVA ICT 2 AT RENGALI	07.05.2024	Commissioning of ICT-2 at Rengali under ADD CAP 2019-24

Transmission licensees/ Utilities are requested to update expected restoration date & work progress regarding restoration regularly to ERLDC/ERPC on monthly basis by 5th of each month so that status of restoration can be reviewed in OCC. Utilities are also requested to update outage of any elements within their substation premises like isolator/breaker to ERLDC/ERPC regularly. (Reported as per Clause 5.2(e) of IEGC)

Deliberation in the meeting

Members noted.

4.3. Commissioning of new units and transmission elements in Eastern Grid in the month of April -2024.

The details of new units/transmission elements commissioned in the month of April -2024 based on the inputs received from beneficiaries:

NEW ELEMENTS COMMISSIONED DURING APRIL, 2024							
GENERATING UNITS							
SL. NO.	Location	Owner/ Unit name	Unit No / Source	Capacity added (MW)	Total/Installed Capacity (MW)	DATE	Remarks
NIL							
ICTs/ GTs / STs							
SL. NO.	Agency/ Owner	SUB-STATION	ICT NO	Voltage Level (kV)	CAPACITY (MVA)	DATE	Remarks
NIL							
TRANSMISSION LINES							
SL. NO.	Agency/ Owner	Line Name	Length (KM)	Conductor Type	DATE	Remarks	
1	BSPTCL	220KV-PUSAULI-NADHOKAR-1 or 220KV Pusauli(BSPTCL)- Pusauli(PG) ckt-1	4.417	HTLS Conductor	05-04-2024	Reconductoring of the this line is done with HTLS conductor with its Bays are rated enough to match the uprated capacity of the line	

LILO/RE-ARRANGEMENT OF TRANSMISSION LINES

SL. NO.	Agency/ Owner	Line Name/LILO at	Length (KM)	Conductor Type	DATE	Remarks
1	PGCIL	400 kV Biharsharif-Sahupuri(Chandauli)-1	289.44	Quad Moose	20-04-2024	400kV Biharsharif-Varanasi Ckt-1 Liloed at Sahupuri(Chandauli)(UPPTCL)

BUS/LINE REACTORS

SL. NO.	Agency/ Owner	Element Name	SUB-STATION	Voltage Level (kV)	DATE	Remarks
NIL						

BUS

SL. NO.	Agency/ Owner	Element Name	SUB-STATION	Voltage Level (kV)	DATE	Remarks
NIL						

BAYS

SL. NO.	Agency/ Owner	Element Name	SUB-STATION	Voltage Level (kV)	DATE	Remarks
NIL						

Members may note.

Deliberation in the meeting

Members noted.

4.4. UFR operation during the month of April 2024.

Frequency profile for the month as follows:

MONTH	MAX	MIN	% LESS IEGC BAND	% WITHIN IEGC BAND	% MORE IEGC BAND
	(DATE/TIME)	(DATE/TIME)			
Apr, 2024	50.43 Hz on 18-04-2024 at 18:04 hrs	49.55 Hz on 06-04-2024 at 11:24 hrs	5.25	78.56	16.19

Hence, no report of operation of UFR has been received from any of the constituents.

Members may note.

Deliberation in the meeting

Members noted.

Annexure A

List of Participants

SI No.	Name	First Join	Last Leave	In-Meeting Duration	Role
1	ERPC Kolkata	5/22/24, 9:47:35 AM	5/22/24, 4:21:51 PM	4h 27m	Organizer
2	Abir Satrki (Unverified)	5/22/24, 9:56:09 AM	5/22/24, 1:55:01 PM	3h 58m 52s	Presenter
3	SLDC ODISHA (Unverified)	5/22/24, 10:03:34 AM	5/22/24, 2:06:55 PM	4h 3m 21s	Presenter
4	WBSETCL (Unverified)	5/22/24, 10:19:02 AM	5/22/24, 2:15:56 PM	3h 56m 54s	Presenter
5	WB SLDC (Unverified)	5/22/24, 10:19:02 AM	5/22/24, 2:05:56 PM	3h 46m 53s	Presenter
6	R K Pradhan ERLDC (Unverified)	5/22/24, 10:19:02 AM	5/22/24, 2:07:00 PM	3h 47m 57s	Presenter
7	Pelchuk Dema_DGPC (Unverified)	5/22/24, 10:19:03 AM	5/22/24, 11:59:50 AM	1h 40m 47s	Presenter
8	Dillip ERPC (Unverified)	5/22/24, 10:19:04 AM	5/22/24, 2:07:03 PM	3h 47m 59s	Presenter
9	Birendra kumar TTPS (Unverified)	5/22/24, 10:19:08 AM	5/22/24, 10:21:04 AM	1m 56s	Presenter
10	Mahendra Malik (External)	5/22/24, 10:19:08 AM	5/22/24, 2:07:03 PM	3h 47m 54s	Presenter
11	SLDC BIHAR (Unverified)	5/22/24, 10:22:04 AM	5/22/24, 1:01:25 PM	2h 39m 20s	Presenter
12	Sajan George (External)	5/22/24, 10:24:31 AM	5/22/24, 2:07:06 PM	3h 42m 34s	Presenter
13	Soumya Shankar Roy (Unverified)	5/22/24, 10:24:32 AM	5/22/24, 10:26:30 AM	1m 58s	Presenter
14	N S MONDAL (Guest) (Unverified)	5/22/24, 10:25:01 AM	5/22/24, 3:48:16 PM	5h 23m 15s	Presenter
15	SLDC,Ranchi (Guest) (Unverified)	5/22/24, 10:26:06 AM	5/22/24, 2:10:35 PM	3h 44m 29s	Presenter
16	M Prasad DGPC (Unverified)	5/22/24, 10:26:38 AM	5/22/24, 10:35:39 AM	9m 1s	Presenter
17	Hare Ram Singh (External)	5/22/24, 10:26:39 AM	5/22/24, 1:40:51 PM	3h 14m 11s	Presenter
18	Soumya Shankar Roy, Haldia Energy Ltd (U	5/22/24, 10:27:18 AM	5/22/24, 1:50:30 PM	3h 13m 1s	Presenter
19	Pinki Debnath (External)	5/22/24, 10:28:08 AM	5/22/24, 1:44:55 PM	3h 16m 47s	Presenter
20	Sneh Daheriya (External)	5/22/24, 10:28:08 AM	5/22/24, 1:03:26 PM	2h 28m 57s	Presenter
21	D.DE (CESC) (Unverified)	5/22/24, 10:28:33 AM	5/22/24, 2:07:01 PM	3h 38m 27s	Presenter
22	Premkant Kumar Singh (External)	5/22/24, 10:30:05 AM	5/22/24, 2:03:05 PM	3h 33m	Presenter
23	Saurav Kr Sahay (External)	5/22/24, 10:30:06 AM	5/22/24, 2:34:21 PM	4h 4m 15s	Presenter
24	Rahul Anand (External)	5/22/24, 10:30:07 AM	5/22/24, 2:08:48 PM	3h 38m 41s	Presenter
25	WBSETCL (Unverified)	5/22/24, 10:30:55 AM	5/22/24, 2:15:50 PM	3h 41m 24s	Presenter
26	Birendra kumar ttps (Unverified)	5/22/24, 10:31:31 AM	5/22/24, 2:15:04 PM	3h 43m 33s	Presenter
27	Dillip Swain (Unverified)	5/22/24, 10:31:42 AM	5/22/24, 11:02:07 AM	30m 24s	Presenter
28	WBPDC (Unverified)	5/22/24, 10:31:43 AM	5/22/24, 10:37:41 AM	5m 57s	Presenter
29	Ranjan Das	5/22/24, 10:31:44 AM	5/22/24, 11:56:29 AM	1h 24m 45s	Presenter
30	PS (Unverified)	5/22/24, 10:31:44 AM	5/22/24, 1:31:31 PM	2h 47m 33s	Presenter
31	S K PANDEY(OS), DVC (Unverified)	5/22/24, 10:31:44 AM	5/22/24, 2:16:05 PM	3h 44m 21s	Presenter
32	Gulshan, Rongnichu (Unverified)	5/22/24, 10:31:44 AM	5/22/24, 2:24:32 PM	3h 52m 47s	Presenter
33	SMS SAHOO, DGM(ELECT), OPTCL, BHUBA	5/22/24, 10:31:44 AM	5/22/24, 2:07:11 PM	3h 35m 27s	Presenter
34	Pranay Jena	5/22/24, 10:31:52 AM	5/22/24, 2:04:47 PM	3h 32m 54s	Presenter
35	I K MEHRA,SE/Director,ERPC (Unverified)	5/22/24, 10:32:13 AM	5/22/24, 3:47:36 PM	5h 15m 23s	Presenter
36	P K De, ERPC (Unverified)	5/22/24, 10:32:49 AM	5/22/24, 2:06:44 PM	3h 33m 55s	Presenter
37	Bilash Achari (External)	5/22/24, 10:32:49 AM	5/22/24, 2:56:17 PM	4h 23m 28s	Presenter
38	OHPC (Unverified)	5/22/24, 10:32:49 AM	5/22/24, 2:09:20 PM	3h 36m 30s	Presenter
39	s Konar (Unverified)	5/22/24, 10:32:50 AM	5/22/24, 2:07:06 PM	3h 34m 16s	Presenter
40	GRIDCO Ltd., Odisha (Unverified)	5/22/24, 10:32:55 AM	5/22/24, 10:41:52 AM	8m 57s	Presenter
41	Manas Das (External)	5/22/24, 10:33:51 AM	5/22/24, 4:21:51 PM	5h 47m 59s	Presenter
42	DGET-Bhutan (Unverified)	5/22/24, 10:33:53 AM	5/22/24, 2:09:44 PM	3h 35m 51s	Presenter
43	Mayank Teotia (Unverified)	5/22/24, 10:34:11 AM	5/22/24, 3:10:14 PM	4h 36m 2s	Presenter
44	DVC SLDC (Unverified)	5/22/24, 10:34:25 AM	5/22/24, 2:07:03 PM	3h 32m 38s	Presenter
45	Rajib Sutradhar (External)	5/22/24, 10:34:52 AM	5/22/24, 11:28:47 AM	53m 55s	Presenter
46	Karma Phuntsho (Unverified)	5/22/24, 10:34:52 AM	5/22/24, 1:45:54 PM	3h 11m 1s	Presenter
47	NITIN KATIYAR (External)	5/22/24, 10:34:53 AM	5/22/24, 1:48:39 PM	3h 13m 45s	Presenter
48	Nishant Kumar Shankwar (External)	5/22/24, 10:34:57 AM	5/22/24, 2:26:48 PM	1h 14m 24s	Presenter
49	Atanu Mandal (External)	5/22/24, 10:34:57 AM	5/22/24, 4:21:51 PM	5h 46m 53s	Presenter
50	Chandan Mallick (External)	5/22/24, 10:34:57 AM	5/22/24, 4:21:51 PM	5h 46m 53s	Presenter
51	Prashant Soni (Unverified)	5/22/24, 10:35:27 AM	5/22/24, 4:21:51 PM	5h 46m 23s	Presenter
52	Prasanna Kumar Sahoo (External)	5/22/24, 10:35:30 AM	5/22/24, 2:10:05 PM	3h 34m 35s	Presenter
53	M Prasad DGPC (Unverified)	5/22/24, 10:36:28 AM	5/22/24, 2:06:52 PM	3h 30m 23s	Presenter
54	Suryaprakash Mohapatra (External)	5/22/24, 10:37:25 AM	5/22/24, 12:15:51 PM	1h 38m 26s	Presenter
55	WBPDC (Unverified)	5/22/24, 10:37:35 AM	5/22/24, 2:08:51 PM	3h 31m 15s	Presenter
56	om nath (Guest) (Unverified)	5/22/24, 10:38:44 AM	5/22/24, 2:05:29 PM	3h 26m 45s	Presenter
57	sandeep (Unverified)	5/22/24, 10:39:18 AM	5/22/24, 10:41:32 AM	2m 14s	Presenter
58	Suryaprakash GMR (Unverified)	5/22/24, 10:40:17 AM	5/22/24, 10:49:34 AM	9m 17s	Presenter
59	Ashok Kumar Singh (External)	5/22/24, 10:42:42 AM	5/22/24, 1:37:23 PM	2h 54m 40s	Presenter
60	Hanumanth Rao D (External)	5/22/24, 10:43:43 AM	5/22/24, 2:48:41 PM	4h 4m 57s	Presenter
61	Saibal Ghosh (External)	5/22/24, 10:43:59 AM	5/22/24, 4:21:51 PM	5h 37m 51s	Presenter
62	Alok Kumar (आलोक कुमार) (External)	5/22/24, 10:44:38 AM	5/22/24, 2:07:12 PM	2h 59m 14s	Presenter
63	Sourav Mandal (External)	5/22/24, 10:44:56 AM	5/22/24, 2:07:05 PM	3h 22m 8s	Presenter
64	Ankit Jain (External)	5/22/24, 10:45:55 AM	5/22/24, 2:06:52 PM	3h 20m 56s	Presenter
65	Preetam Banerjee (External)	5/22/24, 10:45:55 AM	5/22/24, 2:08:54 PM	3h 21m 48s	Presenter
66	SAMIM MONDAL ERLDC (Unverified)	5/22/24, 10:46:48 AM	5/22/24, 2:07:12 PM	3h 20m 24s	Presenter
67	V Premkumar (External)	5/22/24, 10:46:49 AM	5/22/24, 1:31:32 PM	2h 44m 43s	Presenter

Annexure A

List of Participants

Sl No.	Name	First Join	Last Leave	In-Meeting Duration	Role
68	Surajit Roy (HEL) (Unverified)	5/22/24, 10:47:28 AM	5/22/24, 2:30:57 PM	3h 43m 29s	Presenter
69	PARTHA (Unverified)	5/22/24, 10:47:51 AM	5/22/24, 2:07:03 PM	3h 19m 11s	Presenter
70	GRIDCO, Odisha (Unverified)	5/22/24, 10:48:38 AM	5/22/24, 12:16:22 PM	1h 27m 44s	Presenter
71	Alok Pratap Singh (External)	5/22/24, 10:49:42 AM	5/22/24, 2:29:39 PM	3h 39m 56s	Presenter
72	Akash Kumar Modi (External)	5/22/24, 10:49:42 AM	5/22/24, 2:46:26 PM	3h 56m 43s	Presenter
73	GMR (Unverified)	5/22/24, 10:49:48 AM	5/22/24, 10:56:47 AM	6m 58s	Presenter
74	GUEST (Unverified)	5/22/24, 10:51:06 AM	5/22/24, 2:06:53 PM	3h 15m 47s	Presenter
75	Ratnakar Padhy (External)	5/22/24, 10:51:49 AM	5/22/24, 1:59:51 PM	3h 8m 1s	Presenter
76	ce com (Unverified)	5/22/24, 10:52:28 AM	5/22/24, 11:14:50 AM	22m 22s	Presenter
77	Rahul CTUIL (Unverified)	5/22/24, 10:53:49 AM	5/22/24, 12:51:03 PM	1h 57m 13s	Presenter
78	Pradeep Mohanty (External)	5/22/24, 10:55:09 AM	5/22/24, 12:04:30 PM	39m 28s	Presenter
79	Jitendra Prasad Mallik (Unverified)	5/22/24, 10:56:25 AM	5/22/24, 12:04:23 PM	1h 7m 58s	Presenter
80	Satyapriya Behera (External)	5/22/24, 10:58:35 AM	5/22/24, 1:46:47 PM	2h 40m 11s	Presenter
81	Nutan Mishra (नूतन मिश्रा) (External)	5/22/24, 11:00:12 AM	5/22/24, 11:26:03 AM	9m 30s	Presenter
82	P K Senapati (Unverified)	5/22/24, 11:00:30 AM	5/22/24, 11:27:44 AM	27m 14s	Presenter
83	vineet kumar (Guest) (Unverified)	5/22/24, 11:02:37 AM	5/22/24, 12:38:22 PM	1h 35m 45s	Presenter
84	Tanay CTUIL (Unverified)	5/22/24, 11:03:53 AM	5/22/24, 1:23:32 PM	2h 19m 39s	Presenter
85	D.Biswas (Unverified)	5/22/24, 11:04:18 AM	5/22/24, 4:21:51 PM	5h 17m 32s	Presenter
86	SASWAT RANJAN (Unverified)	5/22/24, 11:04:19 AM	5/22/24, 11:23:20 AM	19m 1s	Presenter
87	Dagachhu Bhutan (Unverified)	5/22/24, 11:04:24 AM	5/22/24, 2:07:03 PM	2h 32m 37s	Presenter
88	Ramashankar kumar	5/22/24, 11:04:43 AM	5/22/24, 12:33:53 PM	1h 29m 9s	Presenter
89	Raj Protim Kundu (External)	5/22/24, 11:05:48 AM	5/22/24, 1:51:29 PM	2h 45m 40s	Presenter
90	Samar Chandra De (External)	5/22/24, 11:06:23 AM	5/22/24, 2:48:01 PM	3h 41m 37s	Presenter
91	Jeti Rabisankar (External)	5/22/24, 11:07:01 AM	5/22/24, 2:09:50 PM	3h 2m 48s	Presenter
92	Amit Chowdhury (ERLDC) (Unverified)	5/22/24, 11:10:07 AM	5/22/24, 11:16:32 AM	6m 25s	Presenter
93	Rishav Kumar (External)	5/22/24, 11:10:17 AM	5/22/24, 11:57:54 AM	47m 37s	Presenter
94	Leela sharma (Unverified)	5/22/24, 11:18:47 AM	5/22/24, 11:45:25 AM	26m 37s	Presenter
95	OHPC AK MOHANTY SGM (Guest) (Unverified)	5/22/24, 11:19:06 AM	5/22/24, 2:08:18 PM	2h 49m 11s	Presenter
96	ce com (Unverified)	5/22/24, 11:25:17 AM	5/22/24, 1:25:38 PM	2h 20s	Presenter
97	HIMADRI SEKHAR SARKAR (External)	5/22/24, 11:29:41 AM	5/22/24, 2:07:06 PM	2h 37m 25s	Presenter
98	Pritam Mukherjee (External)	5/22/24, 11:32:02 AM	5/22/24, 1:52:20 PM	1h 12m 33s	Presenter
99	A Basu (Unverified)	5/22/24, 11:39:49 AM	5/22/24, 3:27:28 PM	3h 47m 39s	Presenter
100	SASWAT RANJAN (Unverified)	5/22/24, 11:45:44 AM	5/22/24, 1:01:40 PM	1h 15m 55s	Presenter
101	sandeep das (Unverified)	5/22/24, 11:54:02 AM	5/22/24, 12:39:42 PM	45m 39s	Presenter
102	OHPC AK MOHANTY SGM (Guest) (Unverified)	5/22/24, 11:56:58 AM	5/22/24, 11:57:13 AM	14s	Presenter
103	Leela sharma (Unverified)	5/22/24, 11:58:38 AM	5/22/24, 2:03:16 PM	2h 4m 37s	Presenter
104	KP (Unverified)	5/22/24, 11:58:53 AM	5/22/24, 12:35:46 PM	48s	Presenter
105	Dhanurjay Nikhandia (धनुर्जय निखण्डिया) (External)	5/22/24, 12:02:17 PM	5/22/24, 12:38:23 PM	36m 6s	Presenter
106	KHUSHBOO GUPTA (Unverified)	5/22/24, 12:02:48 PM	5/22/24, 12:16:43 PM	13m 54s	Presenter
107	SLDC Bihar (Unverified)	5/22/24, 12:06:20 PM	5/22/24, 12:26:37 PM	20m 17s	Presenter
108	ARNAB BHATTACHARYA (External)	5/22/24, 12:06:43 PM	5/22/24, 12:28:58 PM	22m 14s	Presenter
109	ULDC, BSPTCL (Unverified)	5/22/24, 12:12:47 PM	5/22/24, 2:02:54 PM	1h 50m 7s	Presenter
110	GRIDCO Ltd., Odisha (Unverified)	5/22/24, 12:16:47 PM	5/22/24, 12:58:06 PM	41m 19s	Presenter
111	KHUSHBOO (Unverified)	5/22/24, 12:24:13 PM	5/22/24, 12:30:26 PM	6m 12s	Presenter
112	a bhaumik (Unverified)	5/22/24, 12:25:26 PM	5/22/24, 12:54:35 PM	29m 9s	Presenter
113	KHUSHBOO GUPTA (Unverified)	5/22/24, 12:33:13 PM	5/22/24, 12:50:19 PM	17m 5s	Presenter
114	RAKESH KR SINGH (External)	5/22/24, 12:36:47 PM	5/22/24, 12:39:28 PM	2m 40s	Presenter
115	Ranajit Pal (External)	5/22/24, 12:45:51 PM	5/22/24, 2:06:53 PM	1h 21m 2s	Presenter
116	Suresh Babu Kummara (External)	5/22/24, 12:46:40 PM	5/22/24, 1:33:23 PM	46m 43s	Presenter
117	Gagan Kumar EEE SLDC BSPTCL (Unverified)	5/22/24, 12:48:13 PM	5/22/24, 1:10:01 PM	21m 47s	Presenter
118	Rahul CTUIL (Unverified)	5/22/24, 12:50:23 PM	5/22/24, 1:20:02 PM	29m 39s	Presenter
119	teamsvisitor:3e11b17a814346aeaaaa6953	5/22/24, 12:53:37 PM	5/22/24, 12:56:22 PM	2m 45s	Presenter
120	Sourav Biswas (Unverified)	5/22/24, 12:57:47 PM	5/22/24, 3:47:02 PM	2h 49m 15s	Presenter
121	GRIDCO LTD (Unverified)	5/22/24, 1:01:30 PM	5/22/24, 2:07:06 PM	1h 5m 35s	Presenter
122	AEE ULDC Khusboo (Unverified)	5/22/24, 1:26:49 PM	5/22/24, 1:32:56 PM	6m 6s	Presenter
123	ce com (Unverified)	5/22/24, 1:30:46 PM	5/22/24, 1:59:32 PM	28m 46s	Presenter
124	SLDC Ranchi (Unverified)	5/22/24, 1:34:01 PM	5/22/24, 2:08:15 PM	34m 14s	Presenter
125	GAGAN KUMAR (Unverified)	5/22/24, 1:39:25 PM	5/22/24, 2:01:21 PM	21m 56s	Presenter
126	KHUSHBOO (Unverified)	5/22/24, 1:52:44 PM	5/22/24, 2:06:56 PM	12m 42s	Presenter
127	THP (Unverified)	5/22/24, 1:58:13 PM	5/22/24, 4:21:51 PM	2h 23m 37s	Presenter
128	ce com (Unverified)	5/22/24, 1:58:41 PM	5/22/24, 2:12:12 PM	13m 30s	Presenter

Modalities for compliance to Deviation Settlement Mechanism (DSM) between India and Bhutan

1. Introduction

India and Bhutan share unique and exemplary bilateral relations, which are based on mutual trust, goodwill and understanding. Mutually beneficial hydro-power cooperation with Bhutan is a key pillar of bilateral economic cooperation. The Jaldhaka Agreement signed in 1961 was the first bilateral agreement between India and Bhutan for electricity exchange between the two countries. Further, the agreement for the development of the 336 MW Chhukha run-of-the-river (RoR) Hydro-Electric Project (HEP) was signed in 1974, thereafter construction of Kurichhu HEP completed and sale of power from there started in 2001-2002.

An Agreement between the Government of the Republic of India (GOI) and the Royal Government of Bhutan (RGoB) concerning Cooperation in the field of Hydroelectric Power was signed on 28th July, 2006 and its Protocol was signed in 2009. Four hydro-electric projects (HEPs) namely Tala, Chhukha, Kurichhu and Mangdechhu, totaling 2136 MW are supplying electricity to India under Government to Government (G2G) mode. Further, Dagachhu HEP and Basochhu HEP are supplying power to Indian entities/Indian power exchanges through separate agreements.

Bhutan also imports electricity during the winter months from Indian Power Exchanges, from past few years.

A Secretary-level discussion in the field of hydropower cooperation between the RGoB and the GOI was held in Thimphu on 31st October 2022. In the meeting, GOI desired to work towards bringing the existing long-term Power Purchase Agreements (PPAs) under the Deviation Settlement Mechanism (DSM) by the end of 2023. RGoB intended to bring their domestic market under grid discipline through the introduction of suitable regulatory and policy framework.

2. Power System of India

Power System of India is one amongst the largest in the world. Installed electricity generation capacity in India is about 425 GW (September, 2023) comprising about 44% from non-fossil fuel capacity. Peak demand has been of the order of 240 GW in September, 2023.

All India National Grid having voltage level up to 765 kV AC and +/- 800 kV HVDC system is widely spread over 476,000 circuit km (ckm, 220 kV and above voltage level) across the country integrated with the latest technologies such as Flexible Alternating Current Transmission System (FACTS), Gas Insulated System (GIS switchgear and sub-station), Advanced Load Despatch Centres, Phasor management Units (PMUs) Renewable Energy Management Centres (REMC), Unmanned sub-stations, on-line maintenance practices etc.

Indian grid is operated as per provisions of the Indian Electricity Grid Code and other regulations. Several measures for grid discipline measures like Deviation Settlement Mechanism (DSM), reactive energy charges, congestion charges etc are in place.

Vibrant power market is under operation. Apart from long term power purchase agreements, power exchange between India and neighbouring countries has been started through market mechanisms as well.

3. Power System of Bhutan

Bhutan's hydropower installed capacity is 2,335 MW as on September 2023. The national coincidental peak demand was recorded as 921.87 MW in November 2023. About 65% of the electricity generated in Bhutan is being exported to India in 2022.

The transmission network consists of 66 kV, 132 kV, 220 kV and 400 kV voltage levels. Prior to the commissioning of 2x63/80 MVA, 220/132 kV Jigmeling substation the Eastern and Western grids, were operated in isolation. With the establishment of the east-west interconnection, the energy security in the country has been enhanced. Grid Map of Bhutan is given at Figure 1.

In Bhutan, the Guidelines for scheduling and deviation settlement mechanism for sellers and buyers is in the process of being implemented.

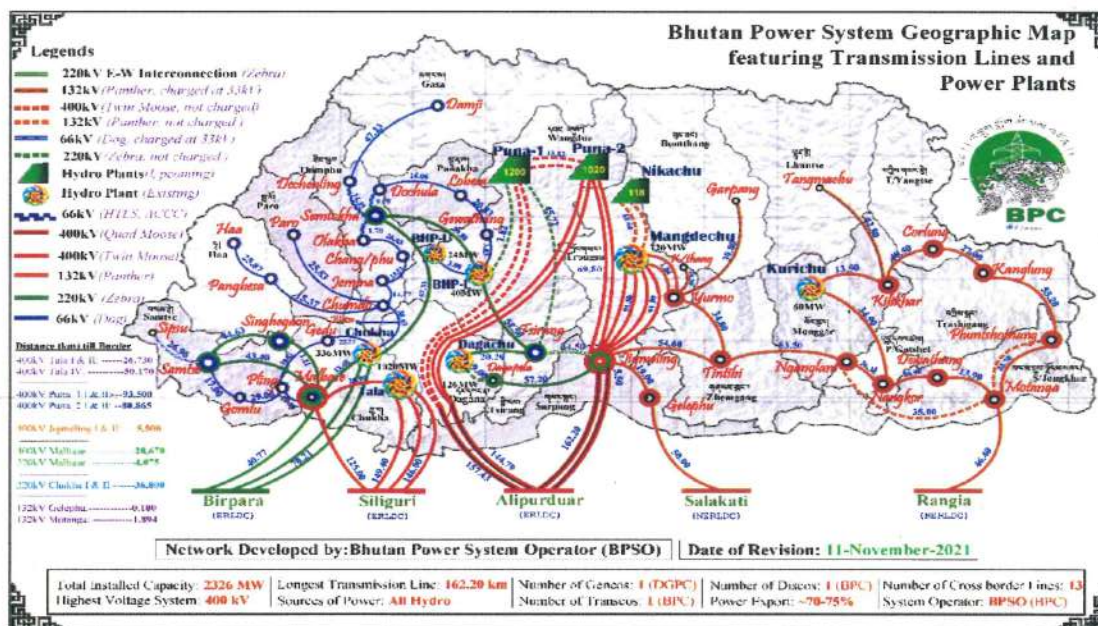


Figure 1 Grid map of Bhutan

4. Generating Stations in Bhutan exporting power to India

Power from Tala (1020 MW), Chukha (336 MW), Kurichhu (60 MW), and Mangdechhu (720 MW) is being imported by India under existing long-term Power Purchase Agreements (PPAs). Details of these projects are given in Table 1 below:

Table 1

Project	Capacity (MW)	Commissioned in	Transmission link	Indian Beneficiaries
Tala HEP (West Bhutan)	1020 (6x170)	2006-07	400 kV 1. Tala- Binaguri Ckt-I 2. Tala- Binaguri Ckt-II 3. Tala-Malbase- Binaguri Ckt-III	ER (85%): Bihar, Jharkhand, DVC, Odisha, West Bengal

Project	Capacity (MW)	Commissioned in	Transmission link	Indian Beneficiaries
			4. Tala- Binaguri Ckt-IV	NR (15%): UP, Rajasthan, J&K, Haryana, Punjab, Delhi
Chhukha HEP (West Bhutan)	336 (4x84)	1986-88	220 kV 1. Chhukha –Birpara Ckt-I 2. Chhukha –Birpara Ckt-II 3. Chhukha -Malbase – Birpara Ckt-III	ER (100%): Bihar, Jharkhand, DVC, Odisha, West Bengal, Sikkim
Kurichhu HEP (East Bhutan)	60 (4x15)	2001-02	132 kV 1. Motanga-Rangia 2. Gelephu -Salakati	ER: DVC (50%), West Bengal (50%)
Mangdechhu (Central Bhutan)	720 (4x180)	2019 (Jun-Aug)	400 kV 1. Mangdechhu Jigmeling twin circuit (Circuit -I to IV) & Jigmeling - Alipurduar D/C Quad line & Jigmeling - Punatsangchhu – II - Alipurdar D/C line	ER (79.98%): Bihar, Odisha, West Bengal NER (20.02%): Assam

Apart from above generating stations, power from Dagachhu HEP 126 MW (2x63) is being imported by Indian Entities under short term access and Basochhu HEP 64 MW (2x12 + 2x20) is being sold through Indian power exchanges.

Further, Punatsangchhu-II HEP 1020 MW (6x170) is expected to be commissioned in the year 2024 and Punatsangchhu-I HEP 1200 MW (6x200) is expected to be commissioned in near future.

5. Existing Accounting Methodology for import/export of electricity

The Power Purchase Agreements (PPAs) of Tala HEP (THP), Chhukha HEP (CHP), Kurichhu HEP (KHP) and Mangdechhu HEP (MHP) provides about metering points and accounting methodology for export of electricity from respective generating stations. Relevant provisions of energy accounting from PPAs are enclosed at **Annexure-I**. Power from Dagachhu HEP is exported to India as per the modalities provided by Central Electricity Regulatory Commission (CERC) vide Order in Petition No. 187/MP/2014 dated 11.09.2014.

Single Line Diagram (SLD) showing generating projects in Bhutan and transmission system for import/export of power is shown at

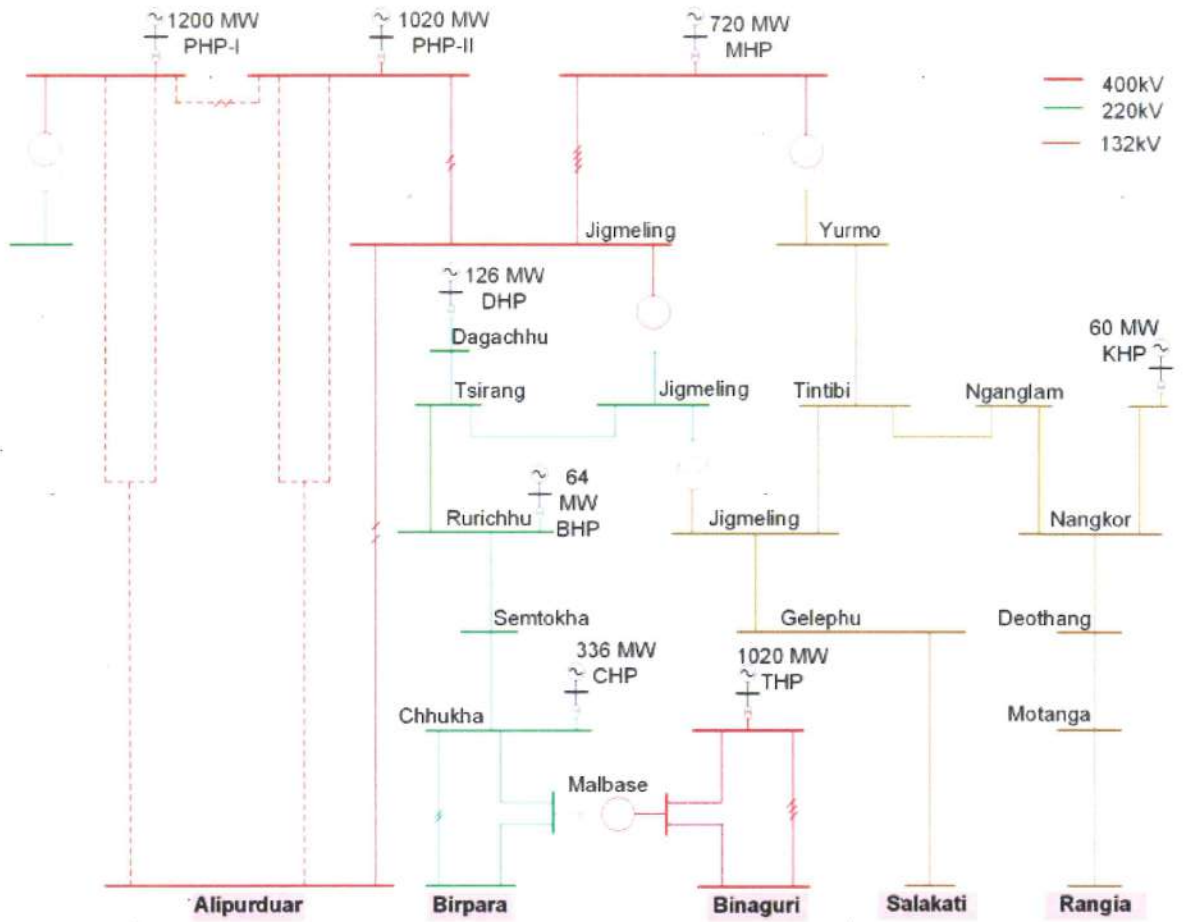


Figure 2.

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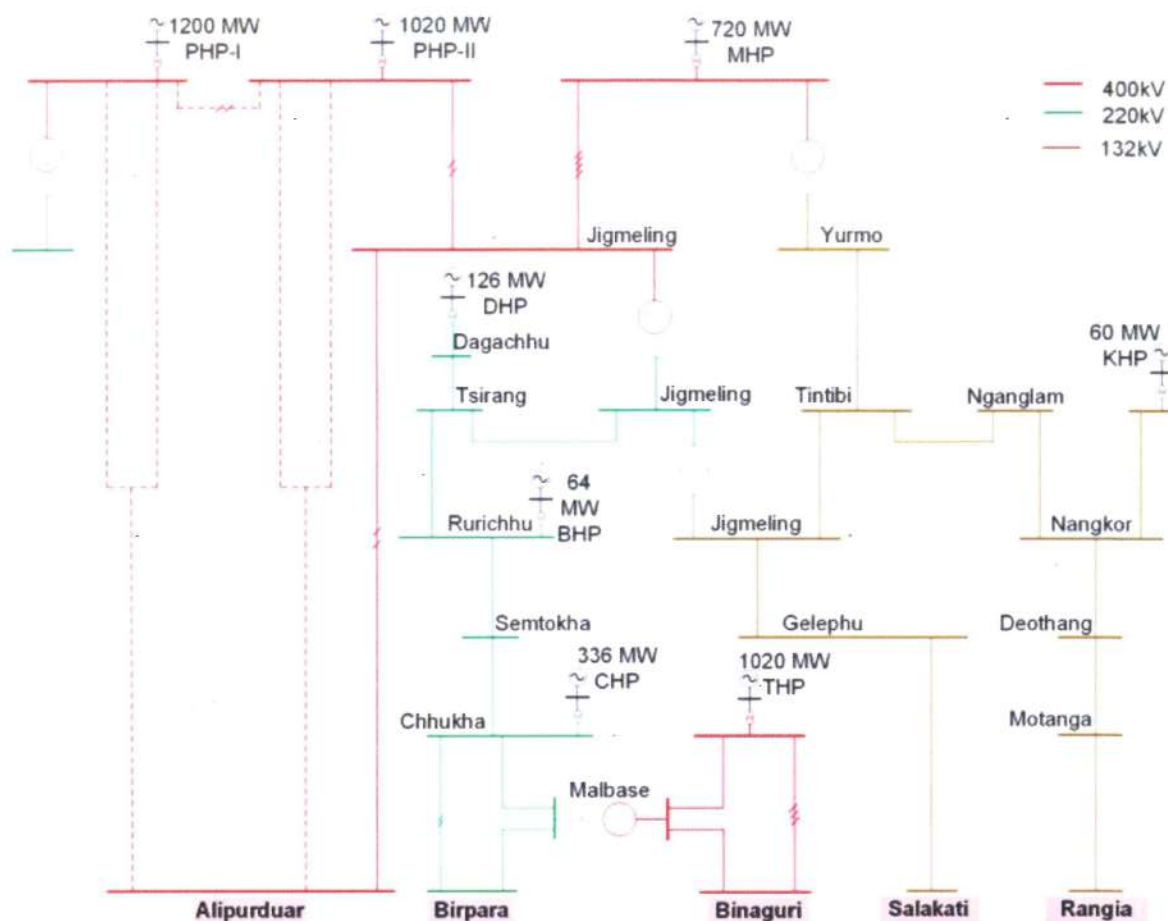


Figure 2 Generating stations in Bhutan and transmission system for Import/Export of electricity

Considering the provisions of PPAs, order of CERC and other decisions, accounting of energy exchange between India and Bhutan is being carried out by Eastern Regional Power Committee (ERPC) Secretariat as briefed below:

- Power from Tala, Chhukha, Kurichhu and Mangdechhu HEPs are not covered under DSM and energy accounting is done based on actual energy receipts at agreed delivery points, after meeting internal consumption of Bhutan.
- The energy accounting of Bhutan's generators is done on a monthly basis after the receipt of Energy Meters' data of all the hydro power generators through PTC (PTC India Ltd, PTC being the nodal agency for these projects).

Tala HEP, Chhukha HEP, Dagachhu HEP

- Receipt through 3 Nos. of Tala-Binaguri and Malbase-Binaguri 400 kV lines and 220 kV Chhukha/Malbase – Birpara circuits is considered as receipt from Tala, Chhukha and Dagachhu. The electricity receipt is adjusted with transmission losses of respective territory to reflect it at agreed points as per the PPAs (i.e. Khogla, Pugli and Phuentsholing).
- The receipt from Dagachhu HEP is calculated by deducting 2% loss from ex-bus generation of Dagachhu HEP. Since the HEP is covered under Deviation Settlement Mechanism (DSM) (as per CERC Order for Petition No. 187/MP/2014 dated 11.09.2014), deviation charges and transmission deviation charges are

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calculated accordingly. The charges are settled by Tata Power Trading Company Limited (TPTCL) with the Eastern Regional deviation pool of India.

- After deduction of Dagachhu energy, the net receipt is segregated at a predetermined ratio between Tala and Chhukha.

Kurichhu HEP

- Energy from Kurichhu HEP is received through 132 kV Gelephu-Salakati and 132 kV Motanga-Rangia transmission interconnections. The energy flow from 220 kV side of Jigmeling transformer to 132 kV side is considered as Chhukha power and is added to the Chhukha receipt and subtracted from Kurichhu receipt.

Mangdechhu HEP

- For Mangdechhu HEP, Indo-Bhutan border at Jigmeling is considered to be the delivery point for energy received from 4 nos. of 400 kV Mangdechhu -Jigmeling–Alipurduar transmission lines and also for power flowing through 400/132 kV Mangdechhu Pothead Yard.
- Summation of energy from 4 nos. of 400 kV Mangdechhu-Jigmeling feeders is considered. Flow of energy from HV to LV side of 400/132 kV ICT at Mangdechhu Pothead Yard is considered as internal consumption of Bhutan. As per the agreement with Bhutan, its internal power consumption during any month shall be met through cheapest power source among Tala, Kurichhu, Chhukha and Mangdechhu in the ascending order of its exportable tariff. Therefore, the energy flow HV to LV side through 400/132 kV ICT is subtracted from Tala HEP receipt and added to Mangdechhu export after considering the transmission losses. In case the receipt at Tala is not sufficient, the adjustment is to be done in order from Kurichhu, Chhukha, and Mangdechhu.
- When power flows from LV to HV side of 400/220 kV ICT at Jigmeling (as this power is not included in MHP energy), it is considered as power of Chhukha and added to the export of Chhukha.
- In case of flow of power from HV to LV side of 400/220 kV ICT at Jigmeling [as this power is already included in MHP energy (shown in Mangdechhu export)], it is subtracted from cheapest source among Tala, Kurichhu, Chhukha, Mangdechhu in the ascending order of its tariff.

General

- The final available receipt of power from each hydro-generator is segregated among its beneficiaries in the ratio of their share of allocation from respective generators
- Deviation from schedule is settled by the beneficiaries of India of the plant as per the rate of the power purchase cost from the plants on monthly basis with Eastern Regional Deviation and Ancillary Service Pool Account.

Import by Bhutan from India

- During winter months, Bhutan is importing power from India through Indian power exchanges. During such period, the transactions between India and Bhutan are covered under DSM. Accordingly, actual interchange of Druk Green Power Corporation Limited (DGPC Bhutan) is computed from the meters at Indian periphery after subtracting Dagachhu injection. Deviation of DGPC-Bhutan is

based on the actual interchange and net schedule prepared by ERLDC. This deviation of energy to be computed as per CERC DSM Regulations and settled with Bhutan from ER Deviation Pool Account by the Settlement Nodal Agency (SNA). For Dagachhu HEP, DSM is computed as per CERC DSM Regulations and settled with Bhutan from the ER Deviation Pool Account.

6. Requirement of scheduling and deviation settlement mechanism

- (i). Guidelines for Import/Export (Cross Border) of Electricity-2018 issued by Ministry of Power, Government of India provides that "8.7 *The transmission charges, scheduling, metering, accounting, deviation settlement, secure grid operations involving the Indian Grid and any other related operational mechanism shall be governed in accordance with the applicable Regulations of the Government of India.*"
- (ii). CERC (Cross Border Trade of Electricity) Regulations, 2019 provides that "26(3) *The Settlement Nodal Agency shall pay or receive charges on account of deviation to or from Regional Deviation Pool maintained by NLDC as per Deviation Pool account issued by Regional Power Committee. The Settlement Nodal Agency shall settle the same with the selling entity or buying entity of the neighbouring country, as the case may be.*"
- (iii). Presently, several adjustments are carried out to account for Bhutan's internal consumption before booking energy from the generating projects to the beneficiaries of India. Such post facto adjustments imposed deviation charges on beneficiaries.
- (iv). Power of various Bhutanese power plants is intermingled at Indian periphery, segregation of power based on some ratio may lead to improper booking from that plant.
- (v). Power of Dagachhu HEP is being sold under bilateral transaction and accounts are settled on the basis of schedule, whereas, CHP, THP, KHP and MHP energy is settled on actual basis. Further, during import by Bhutan, the energy charges are paid based on schedule. Different accounting philosophies for different projects/time is not desirable. Therefore, rational, transparent and verifiable accounting and settlement system need to be in place.
- (vi). In the Secretary-level discussion on hydropower cooperation between the Royal Government of Bhutan (RGoB) and the Government of India held in Thimphu on 31st October 2022, Government of India (GoI) desired to work towards bringing the existing long-term Power Purchase Agreements (PPAs) under the Deviation Settlement Mechanism (DSM) by the end of 2023.
- (vii). DGPC, Bhutan has signed Cross Border Settlement Nodal Agency Agreement with NVVN [NTPC Vidyut Vyapar Nigam Ltd. (NVVN)] on 13th December, 2022. The PPAs of THP, CHP, KHP, MHP and DHP are mentioned as "Legacy PPAs" and SNA Agreement for Legacy PPAs shall be effective from 01.01.2024. Further, it is mentioned that "For any extensions or exemptions, the Parties shall refer the matter to their respective Governments for directions/ decisions".
- (viii). The CERC Order for Petition No. 187/MP/2014 dated 11.09.2014 approved modalities for DSM on Dagachhu. Further, CERC vide order dated 16.02.2016

mentioned that the Commission is in the process of framing draft Regulations on Cross Border Transactions. Therefore, the interim arrangement approved by the Commission in order dated 11.9.2014 shall continue till the notification of the Regulations on Cross Border Transactions and thereafter, the transaction for evacuation of power from Dagachhu HEP shall be governed in accordance with the said regulations.

- (ix). As, the Regulations on cross border trade of electricity have already been notified by CERC, the accounting methodology for Dagachhu HEP need to be aligned to the provisions of the Regulations.

7. Proposed methodology for electricity transactions with Bhutan

The proposed methodology charts out the activities to be carried out for bringing the transactions with Bhutan under the ambit of Import/Export (Cross Border) Guidelines-2018 of India and Central Electricity Regulatory Commission (Deviation Settlement Mechanism and Related Matters) Regulations, 2022 and as amended from time to time.

As and when the regulations are being revised by CERC, Bhutan may submit their suggestions and comments.

Since the power of various generators are getting mixed up at Indian Boundary, the Scheduling, Accounting and DSM aspects need to be applied holistically. Further, the energy charges for each project are governed by separate PPAs.

7.1. Control Area Jurisdiction

Geographically, Bhutan grid is connected with Eastern Region of India at Birpara 220 kV, Binaguri [Siliguri (New)] 400 kV and Alipurduar 400 kV and with North-Eastern Region of India at Salakati 132 kV and Rangia 132 kV. As whole Bhutan grid is synchronously connected with Indian grid, Bhutan system will be treated as a single control area for the purpose of bidding, scheduling, deviation settlement, reactive energy charges, and transmission deviation.

7.2. Data Telemetry and Voice communication

Telemetry of cross-border transmission lines between Indian Grid and Bhutan Grid shall be made available through Supervisory Control and Data Acquisition (SCADA) and voice communication system to National Load Despatch Centres (NLDCs) of India and Bhutan.

Further, real time data and interface meter data of the generating station of Bhutan exporting power to India shall be provided to NLDC (India).

Similarly, real time data and interface meter data at interconnection point in India shall be provided to Bhutan NLDC.

NLDC Bhutan and NLDC India shall maintain seamless communication and availability of data.

The telemetry and data shall be firewall protected and compliant to cyber security standards.



7.3. Agreements/Approvals

- (a) The generating stations namely Tala, Chhukha, Kurichhu and Mangdechhu HEPs are under Government to Government (G2G) Agreements, therefore, no additional approvals will be required to export power from these stations to India.
- (b) Similarly, export by new projects under G2G agreements will not require approval from the Designated Authority under Guidelines for Import/Export (Cross Border) of Electricity-2018.
- (c) Transactions from Dagachhu HEP and Nikachhu HEP shall be deemed to have approval under the Guidelines-2018, till validity period of PPAs.
- (d) For the generating projects, other than the projects covered above, agreements need to be signed between generating company and Indian entity (either directly or through trader) for export of power from Bhutan.
- (e) For (d) above, the Indian entity shall seek approval from Designated Authority as per Guidelines for Import/Export (Cross Border) of Electricity -2018.

7.4. Transfer Capability Assessment

- (a) Total transfer capacity (TTC)/Available transfer capability (ATC) between Indian grid and Bhutan grid shall be carried out by National Load Despatch Centre (NLDC) of India and Bhutan.
- (b) Scheduling of transactions shall be considered the minimum of the TTC as calculated and agreed by the Indian and Bhutanese side.
- (c) If capacity is not there, both sides may consider upgradation of the transmission interconnectivity.

7.5. Delivery Points

Presently, delivery points for exporting power from each generating stations in Bhutan are different points on India-Bhutan Border. Also, billing of energy is at delivery points. Since, meters can be installed in substations only, energy at the delivery point is a calculated (assessed) figure for transmission lines, namely Feeder I, II and IV for Tala HEP and Feeder I and II for Chhukha HEP while the actual metered energy from all other interconnecting lines are used.

In case of import of power by Bhutan, the delivery points were considered as substations in Indian Territory.

With the implementation of the DSM modalities, the delivery points for import/export of power by Bhutan shall be at the India-Bhutan border after accounting for the transmission line losses.

7.6. Scheduling

- (a) All Scheduling shall be through Settlement Nodal Agency (SNA) to NLDC, India on 15-minute time block basis as per Indian Electricity Grid Code (IEGC).
- (b) All generating stations exporting power to the India shall provide following scheduling information:
 - a. Total Ex-bus generation schedule of the generating station.



- b. Ex-bus schedule for export to India
- c. Schedule for export to India at delivery point after deducting applicable transmission losses.
- (c) In case of import of power by Bhutan, the drawal schedule of Bhutan shall be considered at delivery points.
- (d) Both side NLDCs shall make efforts to keep the import/export within schedule so as to minimise the deviations.
- (e) Re-scheduling of export from the run-of-river hydropower plants in Bhutan shall be carried out as per provisions of IEGC.

7.7. Metering

- (a) Interface Energy Meters as per class and specifications mentioned in Central Electricity Authority (Installation and Operation of Meters) Regulations shall be installed at following locations :
 - (i). The existing and upcoming generating stations exporting power to India shall have Interface Energy Meters at all the outgoing feeders, generating units and station transformers. Meter readings at generating units and station transformers will be used in case of discrepancy in main and check meters.
 - (ii). Both side sub-stations of transmission interconnectors.
(The schematic of metering arrangement at Generating station and Transmission Interconnector is shown at **Annexure-II**).
- (b) All the meters shall be time synchronised with Indian Standard Time (IST).
- (c) Weekly meter readings (import or export in terms of MWh and MVarh) for actual injection or drawl by exporting generators/importing entity of Bhutan shall be provided to the RLDC(s) /NLDC through Settlement Nodal Agency as per timelines prescribed in IEGC.

7.8. Energy Accounting

- (a) Energy accounting for scheduled energy, charges for deviation, reactive energy, and transmission deviation shall be done by Eastern Regional Power Committee (ERPC) / National Power Committee (NPC) Secretariat of India. The data used for accounting shall be provided to NLDC, Bhutan. The discrepancy, if any noticed by Bhutan shall be intimated to ERPC/NPC within prescribed time schedule.
- (b) For arriving at the import/export of energy at India-Bhutan border, the meters installed in the Bhutan side shall be used primarily after accounting for the transmission line losses. In case of any discrepancy in the reading, meters installed in the Indian side shall be used.
- (c) The energy charges of the generating station exporting power to India shall be based on Scheduled Energy at the agreed delivery point.
- (d) Algebraic sum of export and import transactions, at delivery points, shall be considered as total schedule for import/export (E_{Sch}).

- (e) Actual import / export (E_{Act}) would also be determined by summing up all the meter data at delivery points.
- (f) Deviation energy from schedule of Bhutan shall be calculated based on total actual import/export and total schedule energy ($E_{Dev} = E_{Act} - E_{Sch}$).
- (g) The rate of deviation energy (D_{rate}) will be as per CERC regulations.
- (h) Deviation charges shall be calculated by multiplying deviation energy with rate of deviation energy ($C_{Dev} = E_{Dev} \times D_{rate}$).
- (i) Efforts shall be made by Bhutan to keep generation as per schedule and deviations shall be settled within Bhutan through implementation of Grid Discipline Mechanism (GDM) 2024, of Bhutan which is likely to be implemented w.e.f. 1st May 2024.
- (j) The discrepancy, if any noticed by India, shall be intimated to NLDC, Bhutan
- (k) Infirm energy by the upcoming generating stations under G2G mode, shall be accounted from the interface energy meters installed at generating units. The energy metered by the infirm unit, shall be subtracted from the total export from the generating station and treatment of infirm energy will be as per Agreements.
- (l) Reactive energy accounting will be done on the basis of meter readings at both ends i.e., interconnecting substations.
- (m) Transmission Deviation Account shall be prepared according to CERC regulations considering the total General Network Access (GNA) quantum and total actual meter data computed at agreed delivery point.

7.9. Settlement of Charges

- (a) Energy charges shall be settled between Bhutan and Indian entities based on energy figures provided in the energy accounts issued by ERPC/NPC Secretariat. The discrepancy, if any noticed by Bhutan shall be intimated to ERPC/NPC within prescribed time schedule
- (b) Transmission charges, scheduling charges etc. shall be settled as per Agreements.
- (c) Grid related charges i.e. Deviation Settlement Charges, Reactive Energy Charges, Transmission Deviation charges, Congestion charges, ancillary service charges or other charges, as applicable, shall be settled by SNA. SNA in turn will settle the charges with Bhutan.

8. Applicability, Review and Revision of the DSM Modalities

- 8.1. The modalities shall be reviewed and revised as and when necessary, as mutually agreed by the Bhutan and India sides.
- 8.2. These modalities shall not be applicable for radial inter connections between the two countries.



(Sh. M.A.K.P Singh)

Member (Hydro), CEA & Team lead, India



(Daho Chhewang Rinzin)

Managing Director, DGPC & Team lead, Bhutan

Annexure-I

Existing provisions for energy accounting in the PPAs

(i). **Chhukha HEP (CHP)** - Agreement between PTC and DoE, Bhutan signed on 31st August, 2002, the relevant excerpt of the agreement are as below:

2.2 CHPC shall supply to PTC, and PTC shall purchase, all surplus energy from CHPC that is in excess of the requirements within Bhutan.

3.1 Delivery Points : Phuentsholing (220 kV level), the midpoint between Chhukha and Birpara shall be deemed to be the Delivery Point for the energy to be received by PTC for power flowing on 220 kV Chhukha-Birpara Circuits I and II.

6.1 The quantum of energy received by PTC during any month shall be the actual energy delivered to PTC at the Delivery Point during that month.

6.2 The actual energy delivered to PTC at the Delivery Point shall be taken as follows:

- The average of net energy recorded by the energy meters at Chhukha end and Birpara end of 220 kV Chhukha- Birpara Circuits - I & II feeders
- The net energy recorded by the energy meters at Singyegaon end on feeder III in respect of 220 kV Singyegaon-Birpara feeder.
- In the event any of these feeders are tapped between the above said ends, the procedure for accounting of energy shall be appropriately revised in a manner as may be decided jointly between PTC and CHPC/BPC.

(ii). **Tala HEP (THP)** - Agreement between PTC and DoE, Bhutan signed on 27th September, 2006, the relevant excerpt of the agreement are as below:

2.2 THPA shall supply to PTC, and PTC shall purchase, all surplus energy from THPA that is in excess of the requirements within Bhutan.

3.1 Delivery Points: The Indo-Bhutan border, shall be deemed to be the Delivery Point for the energy to be received by PTC for power flowing on 400 kV Tala – Siliguri (New) D/c Lines. For the power flowing on 400 kV feeders I and II, Khogla shall be deemed to be the Delivery Point, and each feeder Delivery Point is located at 115.65 km from Siliguri (New) and 24.615 km from THP, Pagli shall be deemed to be Delivery Point for the power to be received by PTC for power flowing on 400 kV feeders III and IV. Pagli is at a distance of 98.087 km from Siliguri (New) and 47.967 km from THP. Feeder III is tapped within Bhutan for loop-in loop-out connection with 220 kV system at Malbase, which is 24.010 km from THP and 27.079 km from Pagli.

6.0 ACCOUNTING OF ENERGY

6.1 The quantum of energy received by PTC during any month shall be the actual energy delivered to PTC at the delivery point during that month.

6.2 The actual energy delivered to PTC at the delivery point shall be taken as follows:





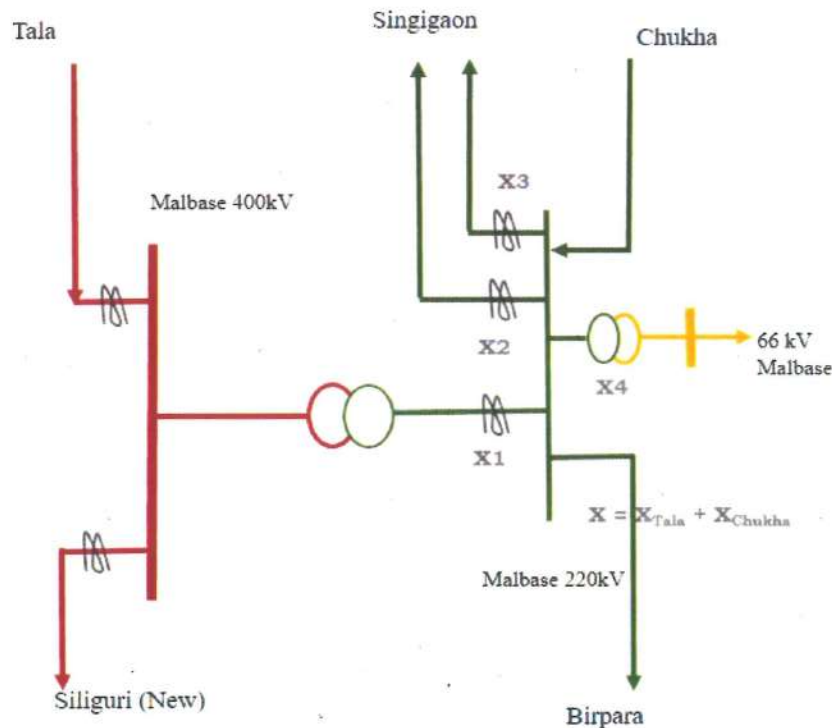
- 6.2.1 Energy recorded by the energy meters at Tala end less 17.55% of the difference of energy recorded at Tala and Siliguri (New) ends of 400 kV Tala-Khogla- Siliguri (New) feeders
- 6.2.2 Energy recorded by the energy meters at Tala end less 32.84% of the difference of energy recorded at Tala and Siliguri (New) ends of 400 kV Tala-Pugli- Siliguri (New) feeder IV.
- 6.2.3 Energy recorded by the energy meters at Malbase outgoing end less 21.63% of the difference of energy recorded at Malbase and Siliguri (New) ends of the 400 kV Tala Malbase-Pagli-Siliguri (New) feeder III.
- 6.2.4 Energy recorded by the energy meters at Malbase 220 kV outgoing feeder to Birpara.

In order to ascertain plant wise injection from Tala HEP and Chhukha HEP and to ascertain the booking of energy for Bhutan Loads (Malbase/Singhigaon) the meter readings at the following locations shall also be required:

- Energy recorded by energy meters at 220 kV side of 200 MVA, 400/220 kV Malbase transformer.
- Energy recorded by energy meter of 220 kV Malbase - Singhigaon D/C at Malbase end.
- Energy recorded by energy meter at 220 kV side of 220 kV/66 kV Malbase Transformer.

METHODOLOGY:

Computation of Energy Injection (Ref: Diagram at Figure 3)



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Figure 3 Tala and Chukha Energy Computation

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Let X_1 = net export from Malbase 220 kV Transformer to Malbase 220 kV Bus.

$X_2 + X_3 + X_4$ = net energy export to Singhigaon and Malbase 220/66 kV transformer recorded at Malbase.

A) If Singhigaon/Malbase Consumption booked against Tala

Say, $X_{transf} = X_1 - (X_2 + X_3 + X_4)$

Energy Injected from Tala = (Summation of energy readings for Siliguri (New) – Tala feeders 1, 2 & 4 + energy meter reading for Malbase - Siliguri (New) feeder 3 + X_{transf})

Energy injected from Chukha = Summation of energy readings for Birpara – Chukha feeders 1 & 2 + Energy meter readings for Malbase- Birpara 220 kV feeder- X_{transf}

Note: X_1 is (+) ve for energy flow from 220 kV side of Transformer to 220 kV Bus

X_2, X_3, X_4 are (+) ve for energy flow from Malbase to Singhigaon and Malbase 220 kV bus to 220/66 kV Transformer

B) If Singhigaon / Malbase Consumption booked against Chukha

Say, $X_{transf} = X_1$

Energy injected from Tala = Summation of energy readings for Siliguri (New) - Tala feeders 1, 2 & 4 + energy meter reading for Malbase - Siliguri(New) feeder 3 + X_{transf}

Energy injected from Chukha = Summation of energy readings for Birpara - Chukha feeders 1 & 2 + Energy meter readings for Malbase - Birpara 220 kV feeder - X_{transf}

Note: X_1 is (+) ve for energy flow from 220 kV side of Transformer to 220 kV Bus of Malbase.

Under normal circumstances, methodology under A) above will be used for computation of energy injection.

6.3 In the event any of these feeders are tapped between the above said ends, the procedure for accounting of energy shall be appropriately revised in a manner as may be decided jointly between PTC and THPA/BPC.

(iii). **Kurichhu HEP (KHP)** - Agreement PTC and DoE, Bhutan signed on 31st October, 2002

2.2 KHPC shall supply to PTC and PTC shall purchase, all surplus energy from KHPC that is in excess of the requirements within Bhutan.

3.1 Delivery Point(s):

3.1.1 Gelephu end of 132 kV Salakati – Gelephu line shall be the Delivery Point for the energy to be received by PTC from KHP.

3.2 Motanga end of 132kV Motanga-Rangia line shall be the additional Delivery Point for the energy to be received by PTC from Druk Green's Kurichhu Hydropower Plant

6.1 The quantum of energy received by PTC during any month shall be the actual energy (i.e. net of export and import) delivered to PTC at the Delivery Point during that month.





6.2 The joint meter readings of the main and check meters installed at Gelephu and Salakati ends shall be taken as per the regional energy accounting procedures.

(iv). **Mangdechhu HEP (MHP)** - Agreement between PTC and DGPC, Bhutan signed on 15th August, 2019

2.2 DGPC shall supply to PTC, and PTC shall purchase all surplus energy from MHP that is in excess of the requirements within Bhutan.

3.1 Delivery Point(s):

3.1.1 The Indo-Bhutan international border at Jigmeling shall be deemed to be the Delivery Point for the energy to be received by PTC for power flowing on the 4 Nos. of 400 kV Mangdechhu- Alipurduar transmission lines and also for power flowing through 400/132 kV ICT at MHP pot head yard.

3.1.2 For Mangdechhu power flowing through transmission lines other than provided in Clause 3.1.1 above, Indo-Bhutan international border shall be deemed to be the Delivery Point for energy received by PTC.

6.0 ACCOUNTING OF ENERGY

6.1 The quantum of MHP energy received by PTC during any month shall be accounted as below:

$$MHP_{EXP} = MJ1 + MJ2 + MJ3 + MJ4 +/- \{ICT (HV) - Transmission loss\} - MHP_{INT}$$

Where:

- MHP_{EXP} is the quantum of MHP energy received by PTC during the month.
- MJ1, MJ2, MJ3 and MJ4 are the energy meter readings on the 4 Nos. of 400 kV Mangdechhu -Jigmeling incoming at Jigmeling end.
- ICT (HV) is the energy meter reading on the HV side of the 400/ 132 kV ICT at Mangdechhu pot head yard. *(The readings shall be considered positive for energy flowing from 400 kV to 132 kV side and the reading shall be considered negative for energy flowing from 132 kV to 400 kV side. The Transmission Loss shall be calculated and be applicable only when the energy flows from HV Side to LV Side).*
- Transmission Loss = % Average Transmission Loss in 400 kV Mangdechhu - Jigmeling 400 kV feeders * ICT(HV)
- MHP_{INT} is the quantum of MHP energy internally consumed by Bhutan during the month, which shall be determined as specified in Clause 6.2 below.

6.2 The internal power requirements within Bhutan during any month shall be met from the cheapest source among THP, KHP, CHP and MHP in the ascending order of its exportable tariff, as applicable from time to time.





Annexure-II

1. Schematic of Metering arrangement at Generating Station

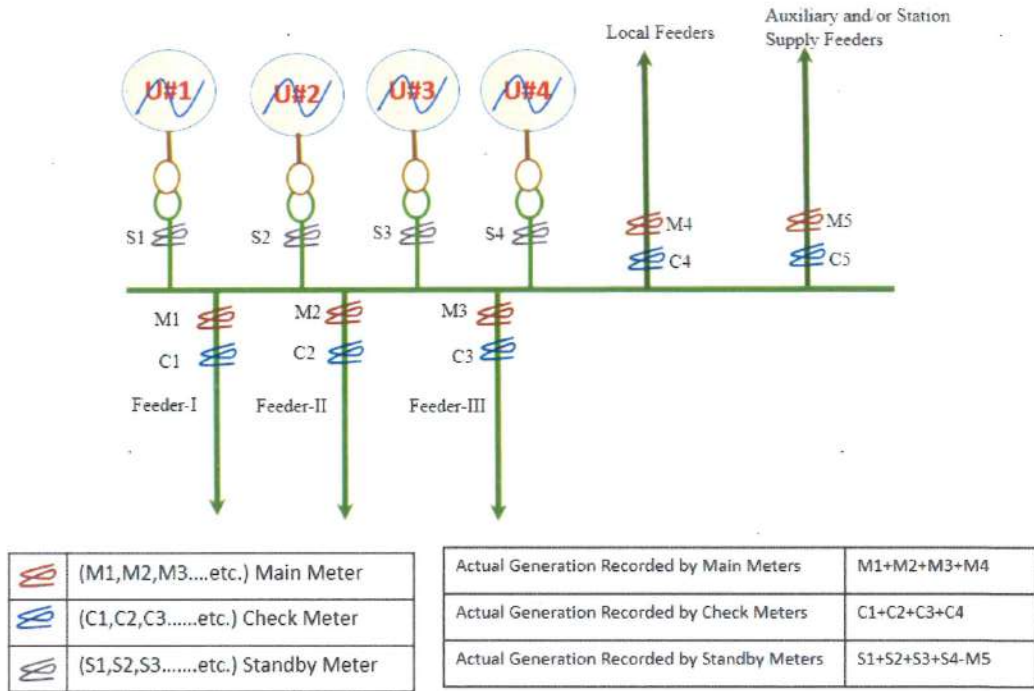


Figure 4 Schematic of Metering arrangement at Generating Station

2. Schematic of Metering arrangement at Transmission Interconnector

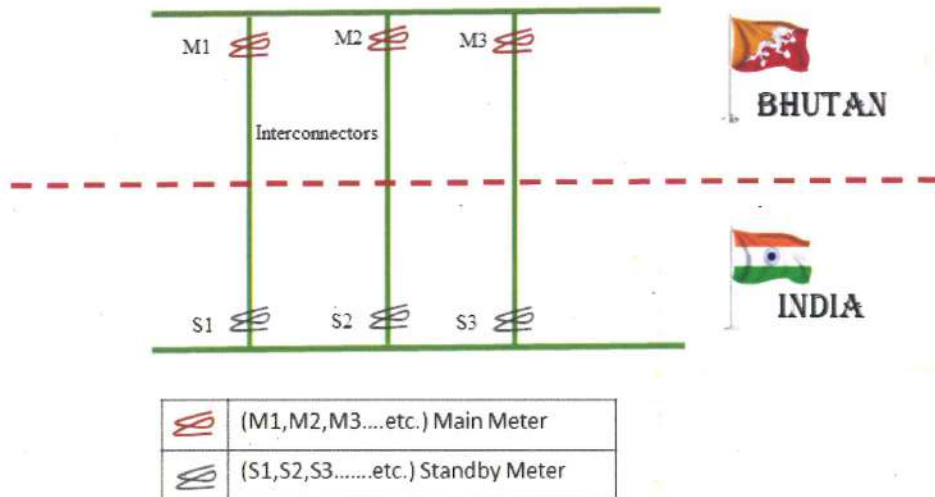


Figure 5 Schematic of Metering arrangement at Transmission Interconnector

Note: Meter connections should be such that power leaving the BUS is recorded as positive and power entering into the BUS is recorded as negative.

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Annexure B.2.12

Standard Operating Procedure (SOP)

Procurement & Installation of ISTS Interface Energy Meter (IEM/SEM)

Introduction:

This Standard Operating Procedure (SOP) for Procurement and Installation of Interface Energy Meter (IEM/SEM) will be applicable only for the IEM/SEM falling under the purview of CTU as per the provisions under Regulations 49.12 (a) of CERC (Indian Electricity Grid Code), Regulations, 2023 and amendments thereof. The Regulation 49.12(a) is re-produced below:

“49.12 Energy Metering and Accounting:

(a) The CTU shall be responsible for procurement and installation of Interface Energy Meters (IEM/SEM), at the cost of respective entity, at all the ISTS interface points, points of connections between the regional entities, cross border entities and other identified points for recording of actual active and reactive energy interchanged in each time-block through those points, and its operation and periodic calibration shall be done by the respective entity. CTU shall be responsible for replacement of faulty meters.”

The objective of this procedure is to ensure timely installation of IEM/SEM in the new ISTS system and timely replacement of the defective IEM/SEM.

Presently, POWERGRID is an authorized agency for procurement of IEM/SEM, installation of new IEM/SEM and replacement of defective IEM/SEM. Any mention of POWERGRID in this procedure shall also mean any other agency authorized by CTUIL to carry to aforesaid functions. CTUIL may authorize any other agency to carry to aforesaid functions in future. Replacement/Installation of IEM/SEM shall mean all the activities including supply of new meter and its installation, testing and commissioning.

The complete cycle of installation/replacement of IEM/SEM has been divided in various steps as described in Part A & B. Since timely procurement and availability of sufficient no. IEM/SEM is the key a critical requirement, Part C of this procedure deals with timely estimation of requirement & procurement of IEM/SEM.

A. Procedure for replacement of Faulty ISTS IEM/SEM

1. Identification of faulty IEM/SEM and communication to CTU:

1.1 Based on the inputs from respective RLDC & its observations on the meter data (received through AMR system or otherwise), the Entity in whose premises the said IEM/SEM for ISTS is installed, shall identify the defective IEM/SEM. The RLDC shall send a communication to the entity within 5 working days from the detection of defective IEM/SEM.

1.2 Within 7 working days from receipt of above communication from RLDC, the Entity shall send a communication (through letter or e-mail) to CTUIL requesting replacement of the defective IEM/SEM. The said communication shall include the followings:

- a. The location, serial no. and make of the defective IEM/SEM
- b. The date of installation of the above IEM/SEM
- c. The observations wrt the said defective IEM/SEM

A copy of this communication shall be sent to respective RLDC and regional nodal officer of POWERGRID. The contact details of POWERGRID Nodal officers shall be made available on CTUIL's website.

- 1.3 In line with applicable Regulations, the replacement of IEM/SEM shall be on a chargeable basis. The Entity shall undertake in the said communication that they will make payment for supply & installation of the IEM/SEM having automatic remote meter reading facility as per the invoice raised by POWERGRID within 45 working days from the date of installation/replacement of IEM/SEM.

2. Communication to POWERGRID:

- 2.1 On receipt of the above communication from the Entity, CTUIL shall advise POWERGRID to replace the defective IEM/SEM within 5 working days from receipt of the said communication.
A copy of the advice shall also be sent to the respective Entity.

3. Replacement of Faulty IEM/SEM:

- 3.1 The POWERGRID shall raise the invoice on the Entity within 7 working days from the receipt of the advice from CTUIL and shall replace the defective IEM/SEM within 10 working days from date of issuance of invoice. POWERGRID shall inform CTUIL after replacement of the defective IEM/SEM.
- 3.2 After replacement of faulty IEM/SEM, the entity shall inform respective RLDC & CTUIL about the same.
- 3.3 The Entity shall make payment to POWERGRID within 45 working days from the date of replacement of IEM/SEM.

4. Payment and Warranty:

- 4.1 The payment towards supply & replacement of IEM/SEM by POWERGRID shall be made by entity within 45 (Forty-Five) working days from its, failing which late payment surcharge @ 0.04% of the invoice amount per day shall be payable for the delayed period.
- 4.2 IEM/SEM once replaced, shall be under the warranty of 1 year from the date of installation. During this period, the entity shall take up the matter pertaining to the replaced IEM/SEM directly with POWERGRID's nodal officers with copy to CTUIL. POWERGRID's nodal officers shall arrange to replace such IEM/SEM within 15 working days from the date of intimation by the entity.

B. Procedure for Installation of ISTS IEM/SEM for new systems

1. The Entity shall request for installation of new IEM/SEM to CTUIL along with the metering scheme issued by respective RLDC (Suggestive format for metering scheme is attached with this SOP). Entity shall send its request to CTUIL for supply & installation of IEM/SEM at least three months in advance.
2. CTUIL shall communicate, within 5 working days from receipt of communication from entity to POWERGRID for installation of new IEM/SEM.

3. The POWERGRID shall raise the invoice on the Entity within 7 working days from the receipt of the advice from CTUIL and shall install the IEM/SEM within 10 working days from date of issuance of invoice. POWERGRID shall inform CTUIL after installation of IEM/SEM.
4. After installation of IEM/SEM, the entity shall inform respective RLDC & CTUIL about the same.
5. The Entity shall make payment to POWERGRID within 45 working days from the date of installation of IEM/SEM.
6. Payment and Warranty:
 - 6.1 The payment towards supply & installation of IEM/SEM by POWERGRID shall be made by entity within 45 (Forty-Five) working days from its, failing which late payment surcharge @ 0.04% of the invoice amount per day shall be payable for the delayed period.
 - 6.2 IEM/SEM once installed, shall be under the warranty of 1 year from the date of installation. During this period, the entity shall take up the matter pertaining to the installed IEM/SEM directly with POWERGRID's nodal officers with copy to CTUIL. POWERGRID's nodal officers shall arrange to replace such IEM/SEM within 15 working days from the date of intimation by the entity.

C. Bulk Procurement of ISTS IEM/SEM

1. By the end of September of each year, CTUIL/STU shall provide the details of ISTS projects coming up in the next 2 years to respective RLDC.
2. RLDC shall work out the metering scheme for total requirement of IEM/SEM under the following heads:
 - i. For new ISTS system
 - ii. Spares @10% of the IEM/SEM population in the region
 - iii. Projected requirement towards replacement of defective IEM/SEM based on past 2-year trend.

RLDC will get the total IEM/SEM quantity approved by respective RPCs and inform to CTUIL by November end.
3. On receive of the IEM/SEM quantity from RLDCs, CTUIL shall aggregate the requirement on PAN India basis and issue procurement advice to POWERGRID by December end.
4. Thereafter, POWERGRID shall initiate procurement process so as to get IEM/SEM within 6 months from receipt of procurement advice from CTUIL.

Annexure D.1

Updated Anticipated Peak Demand (in MW) of ER & its constituents for June 2024

1	BIHAR	Demand (MW)	Energy Requirement (MU)
	NET MAX DEMAND	7511	4411
	NET POWER AVAILABILITY- Own Sources	460	308
	Central Sector+Bi-Lateral	6496	4232
	SURPLUS(+)/DEFICIT(-)	-555	129
2	JHARKHAND		
	NET MAXIMUM DEMAND	2150	1211
	NET POWER AVAILABILITY- Own Source	330	194
	Central Sector+Bi-Lateral+IPP	1174	694
	SURPLUS(+)/DEFICIT(-)	-646	-323
3	DVC		
	NET MAXIMUM DEMAND	3400	2175
	NET POWER AVAILABILITY- Own Source	5450	3667
	Central Sector+MPL	300	217
	Bi- lateral export by DVC	2300	1660
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	50	49
4	ODISHA		
	NET MAXIMUM DEMAND (OWN)	5700	3456
	NET MAXIMUM DEMAND (In Case of 900MW CPP Drawal)	6600	3960
	NET POWER AVAILABILITY- Own Source	3780	2182
	Central Sector	1750	1174
	SURPLUS(+)/DEFICIT(-) (OWN)	-170	-100
	SURPLUS(+)/DEFICIT(-) (In Case, 900 MW CPP Drawal)	-1070	-604
5	WEST BENGAL		
	WBSEDCL		
5.1	NET MAXIMUM DEMAND	10200	5912
	NET MAXIMUM DEMAND (Incl. Sikkim)	10205	5916
	NET POWER AVAILABILITY- Own Source (Incl. DPL)	5430	3144
	Central Sector+Bi-lateral+IPP&CPP+TLDP	2509	1281
	EXPORT (To SIKKIM)	5	4
	SURPLUS(+)/DEFICIT(-) AFTER EXPORT	-2266	-1492
5.2	CESC		
	NET MAXIMUM DEMAND	2750	1305
	NET POWER AVAILABILITY- Own Source	830	557
	IMPORT FROM HEL	890	389
	TOTAL AVAILABILITY OF CESC	1720	946
	DEFICIT(-) for Import	-1030	-359
	WEST BENGAL (WBSEDCL+CESC+IPCL) (excluding DVC's supply to WBSEDCL's command area)		
	NET MAXIMUM DEMAND	12955	7217
	NET POWER AVAILABILITY- Own Source	6260	3701
	CS SHARE+BILATERAL+HPP/CPP+TLDP+HEL	3050	1670
	SURPLUS(+)/DEFICIT(-) BEFORE WBSEDCL'S EXPORT	-3640	-1847
	SURPLUS(+)/DEFICIT(-) AFTER WBSEDCL'S EXPORT	-3645	-1851
6	SIKKIM		
	NET MAXIMUM DEMAND	100	48
	NET POWER AVAILABILITY- Own Source	378	208
	Central Sector	128	82
	SURPLUS(+)/DEFICIT(-)	406	242
	EASTERN REGION		
	NET MAXIMUM DEMAND	31811	18518
	NET MAXIMUM DEMAND (In Case of 900 MW CPP Drawal of Odisha)	32711	19022
	BILATERAL EXPORT BY DVC (Incl. Bangladesh)	2305	1660
	EXPORT BY WBSEDCL TO SIKKIM	5	4
	EXPORT TO B'DESH & NEPAL OTHER THAN DVC	642	462
	NET TOTAL POWER AVAILABILITY OF ER (INCLUDING CS ALLOCATION +BILATERAL+IPP/CPP+HEL)	28864	17791
	SURPLUS(+)/DEFICIT(-)	-5899	-2853
	SURPLUS(+)/DEFICIT(-) (In Case of CPP Drawal for Odisha)	-6799	-3357