

Record note of the Review Meeting on Performance of OPTCL for the period from April 2021 to March, 2022 (FY 2021-22)

Date of Review : 23.06.2022 at 12: 00 Hrs
 Period of Review : FY 2021-22 (April 2021 to March 2022)
 Representative of OPTCL Present : As per list enclosed as Annexure-1.

The Commission has conducted the Performance Review Meeting of OPTCL through video conferencing on account of need for continuous adherence to the social distancing norms arising out of COVID-19 pandemic situation.

1. The Performance of OPTCL for FY 2021-22 was reviewed by the Commission on 23.06.2022. The presentation was made by OPTCL on various performance parameters. During the review, financial status, status of completed/ ongoing/upcoming projects, major O&M activities, status of telecom projects and steps taken by IT & HRD wing of OPTCL were discussed.
2. The performance of OPTCL with reference to the existing transmission system and various ongoing transmission projects have been discussed in following paragraphs. The present status of the transmission assets available with OPTCL is as follows:

	Voltage Level	As on 31.03.2021	Addition during FY 2021-22	As on 31.03.2022
No. of Grids	132 kV	125	7	131*
	220 kV	36	4	41*
	400 kV	4	1	5
Total (Nos.)		165	12	177
EHT Line(CKT KM)	132 kV	7396.330	615.098	8011.428
	220 kV	6222.362	276.792	6499.154
	400 kV	1196.872	0	1196.872
Total (CKT KM)		14815.564	891.89	15707.454
Transformation Capacity (MVA)	132 kV	9166	282.5	9448.5
	220 kV	10300	820	11120
	400 kV	2835	1000	3835
Total (MVA)		22301	2102.5	24403.5

*[*N.B.: Pratapsasan GSS was charged as 132/33 kV GSS on 30.10.2020. But, 1st 160 MVA Auto-Transformer was charged on 25.06.2021 making it a 220/132/33 kV GSS. So as on 31.03.2022, total numbers of 132 kV s/s =(125-1)+7=131 and 220 kV s/s = (36+1)+4=41]*

3. OPTCL has submitted that 17 nos. of transmission projects (12 nos. of substations, 4 nos. of transmission lines, one line bay extension at Jayanagar PG end) have been completed during the financial year 2021-22 with a total investment of about Rs.658 Cr. OPTCL further submitted the present status of 38 nos. of ongoing projects, which includes one 400 kV S/S, 12 nos. of 220 kV S/S, 14 nos. of 132 kV S/S and 11 nos. of other transmission projects (mainly transmission lines). The 400 KV s/s at Paradeep is expected to be commissioned by December, 2023 and other ongoing 11 nos. of 220 kV sub-stations & 10 nos. of 132 kV sub-stations are expected to be commissioned by

the end of the FY 2022-23. The total cost of the ongoing projects is Rs.2043.70 Cr., but the expenditure till 31.03.2022 was Rs.1228.64 Cr.

4. As regards to O&M activity, OPTCL has stated that many existing substations at different voltage levels have been augmented with transformation capacity during the period under review due to increase in load/overloading of transformers. During the period from April 2021 to March, 2022, OPTCL has augmented 3 nos. of S/s with addition of 87.5 MVA transformation capacity at an investment of Rs.15.62 Cr. The increase in transformation capacity of 3 nos. of S/s have been carried out in the area of operation of TPWODL, TPNODL and TPSODL i.e. New Bolangir s/s (52.5 MVA to 60 MVA), Joda s/s (360 MVA to 420 MVA) and Bhawanipatna s/s (25 MVA to 45 MVA).
5. In addition to the above, OPTCL has completed execution of LILO of TTPS-OPCL 132 kV S/c line, (1.807 km), B. C. Mohanty – Tomka 132 kV S/c line (0.4 km), Jagatsinghpur –Paradeep 132 kV S/c line (3 km) at plastic park, Paradeep. The construction of Budhipadar-Kalunga 132 kV D/c line (2 km) for construction of proposed Railway over-bridge as a part of deposit work by the beneficiaries has also been completed.
6. As a part of R&M activity, OPTCL has replaced/ repaired the following equipment.

	400 kV	220 kV	132 kV	33 kV
CB	400	3	16	16
CT	-	3	40	-
PT/CBT	-	13	-	02

OPTCL has also replaced 208 nos. of existing relays by numerical relays. As a part of major R&M activity under O&M, OPTCL has replaced conductors/ hardware fittings/ insulators etc. in its existing transmission system for improvement in reliability. OPTCL is also having the conductor replacement plan for 132 kV Kendrapara-Paradeep Ckt I & II (35 KM), Berhampur-Digapahandi 132 kV (34 KM) and upgradation of Joda-Barbil 132 kV line (12 km) from ACSR Panther with HTLS. OPTCL has also completed the installation of Automatic Demand Management System (ADMS) in 69 grid s/s.

7. As a part of major capital works under O&M wing, OPTCL has procured 13 nos. of 20 MVA 132/33 kV transformer, 5 nos. of 40 MVA 132/33 kV transformer, 175 nos. of 33 kV surge arrester, 46 nos. of 132 kV surge arrester, 39 nos. of 33 kV PT, 97 nos. of 132 kV PT, 65 nos. of 220 kV CVT/ IVT/ PT, 75 nos. of 33 kV, 10 nos. of 132 kV & 20 nos. of 220 kV circuit breakers. OPTCL has also placed orders for

procurement of 25 nos. of 132 kV isolators, 18 nos. of 400 kV ERS towers in 20 nos. of cargo containers, 92 nos. of numerical back up relay, 110 nos. of Master Trip Relays etc.

8. OPTCL submitted that it has undertaken the following power supply development works through assistance from Power Supply Development Fund (PSDF).
 - Installation of 125 MVAR Bus Reactor along with construction of associated bay each at 400 kV s/s at Mendhasal, Meramundali and New Duburi for VAR control for stabilization of system voltage. The installation work at Meramundali has been completed (energized on 07.01.2022) and the works at Mendhashal and New Duburi were scheduled to be completed by July, 2022.
 - Substation Automation Scheme (SAS) has been completed in 14 nos. of existing sub-stations (Brajarajnar, Karanjia, Basta, Anandpur, Argul, Shamuka, Kuchinda, Rayagada, Laxmipur, Bhawanipatna, jajpur, Kendrapara, Aska and Banki). SAS work is under progress in 12 nos. of substations at Bhubaneswar, Nayagr, Khurda, Dhenkanal, Puri, Sunabeda, Chainpal, Phulnakhara, Kharagprasad, Ranasinghpur, Khajurikanta, Rairangpur (SOC-August, 2022). OPTCL has placed work order for implementation of SAS in 7 nos. of substations namely Balasore, Bidanasi, Budhipadar, Katapali, Narendrapur, New Bolangir and Paradeep. (SOC- October, 2022)
9. OPTCL has placed order for procurement of Nitrogen Injection Fire Prevention and Extinguishing System (NIFPES) and implemented on pilot basis for remote monitoring of 400 kV transmission towers available in Meramundali-Lapanga –Ib Thermal Line, Meramundali-Mendhasal line and Meramundali-New Duburi line. Procurement of Automated Fault Analysis System (AFAS) and Remote Accessibility System (RAS) are under evaluation stage.
10. OPTCL has taken up the work for SCADA interface point at vital 132 kV s/s by laying 1745 kms of OPGW cables at an estimated cost of Rs. 48 Cr. (LOA-Post GST – 52.54 Cr.). In the meantime, OPTCL has incurred an expenditure of Rs. 43.12 Cr. till 31.03.2022 and has proposed short closure of the project before PSC. The OPGW works of 40.2 KM will be deleted from the scope since the stringing in Jaynagar-Sunabeda could not be executed. However, OPTCL has submitted that Sunabeda is having optical connectivity through other route. OPTCL is in the process of providing optical fiber based communication link of 2289 KM along with terminal equipments through rest of the over head lines connecting different substations with PSDF

support. The Letter of Award (LoA) for this purpose to the tune of Rs. 58.21 Cr. was issued on 28.02.2019, out of which OPTCL has received Rs.23.04 Cr. as grant from PSDF. Total expenditure till 31.03.2022 was Rs. 40.38 Cr. with completion of stringing of 1928 kms of OPGW. The project is expected to be completed by September, 2022. OPTCL has already laid around 6020 Ckt km. (24 fibre) of OPGW out of which OPTCL has utilized 24080 fibre km and leased 9268 fibre km (1 fibre). OPTCL has earned revenue of about Rs. 3.50 Cr. per annum by way of leasing dark fibers to Powergrid, BSNL, LWTPL, Airtel, Railtel and Tata Communication. OPTCL expects substantial increase in earning on this account after commissioning of OPGW networks in its upcoming projects. The status of OPGW laying is as follows :

Voltage level	Total OPGW laid as on 31.03.2021(in km)	Total OPGW laid during Apr, 21 – Mar, 22 (in km)	Total OPGW laid as on 30.09.2021 (in km)
132 kV	2340	426	2766
220 kV	235	134	2529
400 kV	345	96	441
Total	5080	656	5736

11. OPTCL has mapped 127 nos. of grid s/s, 29456 nos. of towers and 8427.445 route KMs in GIS. OPTCL has completed the implementation of e-Shakti in all of its 89 DDO units in HR, Pay Roll, Pension, Procurement, Project, Inventory, Finance and Energy Modules. Apart from various initiatives taken by IT wing, CCTV surveillance system is now available in 66 grid s/s (Installation of CCTV system in another 29 nos. of grid s/s is under progress).
12. The status of projects including their cost as submitted by OPTCL during the review are mentioned below :

Sl. No.	Items	Details of Projects	Cost (Rs.in Cr.)
1	Projects completed	Sub-station - 12 Nos. (including switching s/s for Rungta Mines and 12.5 MVA s/s at Daitary)	538.05
		Lines (04 Nos.)	103.98
		2 nos of extension of bay at Jaynagar PG end	16.31
2	Ongoing Projects	400 kV S/S – 01 No	2043.70
		220 kV S/S - 12 Nos.	(Expenditure till 31.03.2022 – Rs.1228.64 Cr.)
		132 kV S/S - 14 Nos.	
		Others - 11 Nos.	
Total	15.62		
3	Augmentation of S/S capacity (3 Nos. of s/s with 87.5 MVA capacity addition)	One S/S in TPSODL's area of operation – 20 MVA	3.43
		One S/S in TPWODL's area of operation – 7.5 MVA	2.25
		One S/S in TPNODL's area of operation – 60 MVA	9.94
4	Diversion of EHT line	LILO of 132 kV TTPS-OPCL line from Loc.No.80 to Loc.No.85 at OPCL (1.807 km) (work completed on 31.05.2021)	3.47
		Diversion of 132 kV BC Mohanty – Tomka line at Loc.No.06 for Angul-Sukinda Railway line (0.4 km)(work completed on 15.06.2021)	0.28

		132 kV Jagatsinghpur-Paradeep S/C line for supply to Plastic Park area (Deposit work of IDCO) (3.0 km) (work completed on 26.01.2022)	NA
		Diversion of 132kV Budhipadar –Kalunga D/C line from Loc.No.34 to Loc.No.42 for construction of proposed railway over-bridge under SE railway. (2.1 km) (work completed on 21.02.2022)	1.81
		Total	5.56
5	SCADA	Provision of SCADA at vital 132 S/S by laying 1745 KMs. OPGW cable. (LOA value -52.54 Cr.) short closure of 40.2 km of OPGW work scope deleted from the main scope.	43.12 (Total expenditure upto 31.03.2022)
6	Provision of RTU	Supply, commissioning & comprehensive AMC of 78 nos. of RTUs against replacement of old RTUs and installation of new RTUs (LOA value 6.2 Cr. issued on 13.12.2019)(Expected date of completion: August, 2022)	3.73 (Total expenditure upto 31.03.2022)
7	Provision of OPGW	Provision OPGW for balance line sections of OPTCL with PSDF support (2289 km of lines), (Rs.23.04 Cr. received from PSDF as grant). (LOA value 58.21 Cr. issued on 28.02.2019). Stringing of OPGW completed for 1928 km till 31.03.2022 (Expected date of completion – September, 2022)	40.38 (Total expenditure upto 31.03.2022)

13. OPTCL has submitted that considering both executive & non-executive posts, there are about 2455 nos. of vacancies existing (as on 31.03.2022) against the sanctioned strength of 5149 nos. The implementation of e-Shakti in its offices has been completed. The Vulnerability Assessment and Penetration Testing (VAPT), Information Security Management System (ISMS) Audit and ISO Certificate Surveillance Audit and compliance of the advisories from National Critical Information Infrastructure Protection Centre [NCIIPC] & CERT-In on regular basis have also been completed. Apart from various initiatives taken by IT wing, CCTV surveillance system is now available in 66 grid s/s and the work is under process in other 29 nos. of grid s/s. OPTCL has engaged ORSAC for developing Geographical Information System (GIS) for its transmission system.
14. OPTCL has established Primary Data Centre (PDC) for OPTCL, GRIDCO, SLDC and IPDS projects (scheme) for 3 DISCOMs namely TPNODL, TPWODL & TPSODL which was inaugurated on 15.08.2021. Now, all applications migrated from OPTCL, GRIDCO, SLDC hosted at PDC. The project is under O&M phase for 5 years.
15. As submitted, OPTCL has handled 27,731.18 MUs of energy against OERC's approval of 28,330 MUs during FY 2021-22. During this period, OPTCL has earned revenue of Rs. 775.72 Cr. against OERC's approval of Rs. 793.24 Cr. OPTCL pointed out that, there was less revenue of Rs.17.52 Cr. due to less transmission of power of 598.83 MUs during the period. The detailed comparative statement is presented in table below:

Revenue Approved vis-à-vis Actual for FY 2021-22

Source	ESTIMATE BY OERC FOR 2021-22			ACTUAL FOR 2021-22			
	Energy handled (MU)	Rate P/U	Amount Billed (Rs. Cr.)	Energy (MU)	Rate P/U	Amount Billed (Rs. Cr.)	Payment Received incl. rebate & TDS (Rs. Cr.)
TPCODL	9,290.00			8834.95	28.00	247.12	247.12
TPNODL	5,880.00			5328.55	28.00	149.04	149.04
TPWODL	8600.00			9012.27	28.00	252.11	252.11
TPSODL	4100.00			3895.51	28.00	108.97	108.97
Less energy handled in DISCOMs network	200.00						
TOTAL DISCOMS	27670.00	28.00	774.76	27071.28	28.00	757.24	757.24
CGPS Wheeling	600.00	28.00	16.80	659.89	28.00	18.48	
Sale to CPP	60.00	28.00	1.68		28.00		
SUB TOTAL	660.00		18.48	659.89	28.00	18.48	
GRAND TOTAL	28330.00		793.24	27731.17	28.00	775.72	

16. OPTCL reported cash inflow of Rs.1909.29 Cr. and a cash outflow of Rs.1457.66 Cr. during the FY 2021-22. The above cash inflow includes both revenue and capital receipts during FY 2021-22. Breakup of the above amount is given below:-

Particulars	Revenue	Capital	Total
Receipts (Cr.)	1014.08	895.21	1909.29
Expenditure (Cr.)	780.79	676.87	1457.87

17. TPWODL has raised the issue of low voltage in some parts of its area of operation. The industrial consumers like A.C.C. Cement are complaining about low voltage. During the discussion, OPTCL pointed out that the investments in many of their transmission projects were non-productive due to non-utilisation of 33 kV downstream system by DISCOMs. DISCOMs are not taking initiative for utilization of the 33 kV bays in their substation and most of them remains idle. The Commission asked OPTCL to look into these problems and sort out the issues through mutual discussion.
18. In response to the observations/ suggestions, Managing Director, OPTCL has submitted that all observations of the Commission are well taken on right earnest. OPTCL has taken steps for standardization of sub-stations, equipments, drawings, GIS mapping of transmission assets etc. The conversion of PLCC to OPGW is under process and OPTCL is earning revenue of about Rs. 3.50 Cr. by leasing the fibre to other agencies. As far as provision of spares is concerned, OPTCL has faced difficulties due to stiff price escalation by the vendors. However, the price of the elements has been reduced to some extent and OPTCL is now in the process of procurement to maintain adequate spares to meet any contingencies. In the matter of development of Disaster Resilient Power System (DRPS), OPTCL has designed 400 kV D/C line from Duburi to Ersama authenticated by IIT, Varanasi and will be a

prototype for similar transmission system. OPTCL in some places has taken steps for replacement of existing conductors by HTLS conductors to enhance power flow in the circuit, planning for massive R&M programme, implementation of SAS and also decided to go for digital substations. M.D., OPTCL admitted about the huge gap in sanctioned posts at certain levels vis-à-vis man in position and absence of requisite experienced people at some specific levels. OPTCL has floated a recruitment calendar and taking action for recruitment in a systematic manner. He emphasized that the recruitment procedure of OPTCL is one of the quickest and best process in the Country, which has also received appreciation from different quarters. OPTCL is also trying to find out other wage & means to come out of such situation of resource gap and duty bound to operate its transmission system in a more efficient manner to maintain its reputation as one of the best transmission system in the country. OPTCL will take all the suggestions/ observations/ directions of the Commission in true letter and spirit and extend 24X7 quality power to the public of the state.

19. The Chairperson, OERC in his concluding remarks while appreciating the good works done by OPTCL has suggested for maintaining the transmission system in a proper manner to face the challenges in the future because of load growth and expected large scale integration of renewable energy. Further, OPTCL should build effective disaster resilient transmission system and take appropriate measures to make the system less vulnerable to any undesired incidences.

20. Apart from the above, Commission's observations/ directions are mentioned below for your reference and necessary compliance:

(i) Transmission system connects generation source with the distribution system and plays an important role in extending 24X7 quality power to the consumers. Planning of transmission network (at least considering network upto 132/33 kV transformers) is essential which needs to be based on load flow study for at least five (5) years time frame considering the projected load growth, generation addition, operation feedback.

The summary of study report for the time frame shall bring out

- a) List of existing lines getting over loaded at 132 kV, 220 kV & 400 kV level
- b) List of existing sub-stations with over loaded transformers
- c) Requirement of additional lines & sub-stations
- d) Requirement of compensation to address over voltage problem
- e) Technical loss etc.

The implementation plan in stages has to be formulated accordingly.

DPR is to be prepared based on above studies covering required augmentation/strengthening of existing transmission infrastructure and requirement of additional infrastructure (new sub-station and lines at 400kV/220kV/132kV level) to meet the projected demand in different time frame.

- (ii) The expected peak demand for current FY 2022-23 and the projected peak demand for subsequent financial year upto the end of FY 2026-27 is also to be indicated.
- (iii) The DPR shall be prepared based on Standardisation of (a) maximum MVA capacity of sub-station (132/33 kV, 220/132 kV, 220/33 kV, 400/220/132 kV), (b) rating of Power Transformer (PT), (c) (N-1) contingency criteria for lines and transformers (d) maximum line length & the power flow per circuit in 132 kV, 220 kV and 400 kV lines under different configuration, (e) span length of 132 kV, 220 kV and 400 kV overhead lines, (f) type (ACSR/AAAC/High Tempt & low Sag/any other) & size (Dia& Area) of conductor for 132 kV, 220 kV and 400 kV overhead lines, (g) Rating of 132 kV, 220 kV and 400 kV Switchgear (CB, Isolator) (A, kA & duration, Type: SF6/any other type), (h) rating of Shunt Reactor (Bus & Line) etc. The standardization would help in the long run for smooth management of assets & investments and faster delivery of equipment/material.
- (iv) The specification for power transformer (PT), switchgear, Surge Arrester, CT, PT/CVT, conductor, insulator, fire fighting system, lighting system, AC/DC system etc. need to be standardised keeping in view the development of cyclone resilient transmission infrastructure, wherever required. This would facilitate interchangeability of equipment/material and spares across OPTCL and would also facilitate the common pooling of spares.
- (v) Planning of new sub-station shall have adequate provision for future expansion (additional bays for future lines & transformers) to avoid creation of another sub-station in nearby area.
- (vi) Details of load demand of each sub-station shall be furnished in following suggested format.

Sl. No.	Name of sub-station and highest voltage level (400 kV/220 kV/132 kV)	Transformation capacity(in MVA) & Reactive/Capacitive compensation (in MVAR)	Existing Load demand (MW)	Expected load demand at the end of				
				FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27
1	2	3	4	5	6	7	8	9
1	Name : A Highest voltage level: 400kV	Tr. capacity: (2x315 MVA, 400/220/33 kV +2x200 MVA 220/132 kV). Reactive(Bus/Line reactor) / Capacitive Compensation: Nil	500 MW	-	520 MW	550 MW	-	600 MW
2								

(vii) Details of existing & proposed new lines and sub-station to be considered for transmission network should be based on load flow study. A suggested format with typical example is enclosed as Annexure- 2, 3, 4 & 5 for submission of the information.

(viii) The transmission asset mapping in essential for an efficient way of monitoring & maintaining the existing transmission assets for healthy operation. The present status and the action plan in the stages for 100% Transmission asset mapping and time frame for implementation shall be furnished. A suggested format with typical example is given below:

Sl.No.	Present status of implementation of Transmission Asset (substations & lines) mapping		Target (in %) for 100% Asset mapping				
	No. of lines and substations	Coverage (in %)	FY 22-23	FY 23-24	FY 24-25	FY 25-26	FY 26-27
1	No. of lines – 10 No. of s/s – 5	Nil Nil	10 30	40 70	70 100	100%	
2							

Names of line(s)/sub-station(s) for which asset mapping has been completed.	
(a)	
(b)	

(ix) The list of diagnostic tools available in identified locations for Condition Based Maintenance (CBM) of Transmission assets and requirement of additional diagnostic tools for catering to entire state shall be furnished.

(x) OPTCL shall furnish its progress in the direction of implementation of 100% digital based protection system for overhead lines, cables, transformers & reactors, Bus bar protection etc.;100% Substation Automation system, creation

of Central Control Centre and measures for cyber security, etc. including the implementation schedule.

- (xi) OPTCL has taken number of good initiatives for adoption of state of art technologies for efficient operation of its system and is one among leading transmission utilities in the country. This has been possible due to the strong work force with vast experience in execution, O&M of the system. However, good numbers of vacancies have been created/likely to be created at all levels due to retirement of experienced people. It is pertinent to mention here that other transmission utilities in the country have faced difficulties due to non-availability of experienced professionals and because of non-recruitment of officers at induction level at appropriate time. Therefore, in order to avoid similar situation, OPTCL should take action on urgent basis to recruit the people against the vacant posts in a phased manner so that there will be a seamless flow of knowledge, institutional memory, information, experience etc. from the seniors to the employees at junior level. Further, capacity building through regular training program for the employees would enhance their skills, capabilities, knowledge & productivity. Updating knowledge about the latest technology and developments in the sector & to understand best practices being followed in other transmission utilities across the country & outside the country etc. would be helpful for the employees for efficient operation of the system.
- (xii) In the transmission system of OPTCL about 26 nos. of substations have crossed 40 years of their life service and more than 60 transmission lines are in operation for more than 40 years. Therefore, the role of OPTCL for proper planning of the transmission system is much more important in coming years particularly because of load growth and expected large scale integration of renewable power. OPTCL should go for RLA study of the transmission assets that have crossed 20-25 years of their service life.
- (xiii) Additional transmission strengthening proposals should be planned considering the load growth, to meet contingency conditions. It appears that OPTCL is adding substations each year although the total demand of the state is hovering around 5000 MW. OPTCL is having 177 nos. of sub-stations (as on 31.03.2022) and 38 nos. of projects are in the pipe line for execution. Addition of projects without quantified objective would lead to under utilization of transmission assets and burden the consumers on account of high

capital investment, RoE, interest on loan, O&M expenses etc. One of the reasons of OPTCL's approach for increase in ARR from year to year may be due to high capital investment in creating the stranded assets. OPTCL is directed to plan its system according to its load growth and take utmost care for optimum utilization of assets and burden on the consumers. OPTCL may revisit the proposals in the changed scenario and modify, if necessary, before execution of the project for the benefit of the sector.

- (xiv) It is pertinent to mention here that to cater the peak demand of about 5000 MW in the state of Odisha, OPTCL is having 177 nos. of grid substations with total transformation capacity of about 24403 MVA to feed about 1100 nos. of 33/11 kV s/s of DISCOMs. Hence, average demand per 33/11 KV substation is less than 5 MW and average load on transmission substation is less than 50 MW. This shows that the transmission as well as distribution system are operating in under-loaded conditions. Therefore, OPTCL and DISCOMs need to work together and take due care while adding new s/s and associated lines. Further, there is also requirement of proper matching of downstream network of DISCOMs with the upstream network of intra state transmission system. The Commission has also highlighted many other important points in the ARR and Tariff Order of OPTCL for the FY 2022-23, which may be referred for operation of its system in a more efficient manner within the allowable voltage limit with optimum utilization of its transmission assets.
- (xv) Reliable communication system is going to play an important role in the power system in future. OPTCL should gradually move from PLCC to OPGW based communication system which will not only facilitate smooth flow of data/information but also help in improving protection system for efficient operation of transmission system.
- (xvi) The Commission had allowed the provisional reactive energy charges of 3 paise/ kVARh and directed OPTCL to constitute a committee with representatives of OPTCL, DISCOMs, SLDC and other stakeholders and furnish a report with justification for finalization of reactive charges. OPTCL is therefore, directed to comply the order of the Commission without any further delay.
- (xvii) The delay execution of transmission projects leading to cost & time overrun has become a matter of concern. It is observed that execution of some of

transmission projects including critical projects are delayed due to various reasons like RoW issue, financial problems, requirement of statutory clearance, forest clearance, administrative and contractual issues etc. OPTCL should take due care for faster execution of the projects already approved by the Commission with minimization of cost and adhering to the time schedule to avoid cost and time overrun & ultimate tariff burden to consumers. The projects are to be monitored in more professional manner. Further, OPTCL is directed to take up forest clearance and RoW matters with the concerned Departments and District Administration and also to take the help of Energy Department, Government of Odisha for early resolution of these issues. In this connection, MoP document on reduction in RoW in urban and forest area which is available in the public domain may be referred. The Commission has observed that the execution of a number of lines is being delayed by 3 to 4 years due to various reasons. It is a fact that there will be time and cost overrun due to delayed execution of projects. It is to be noted that the Government is now planning to execute the transmission projects under TBCB mode for timely completion of transmission projects and reduce the burden on the consumers.

- (xviii) It was observed from the cash flow statement that loan have not been availed from REC and PFC for Capex, whereas loan for CAPEX to the tune of Rs.572.68 Cr. has been availed from the banks during the financial year. OPTCL may clarify whether competitive rate of interest was discovered for the loan from other sources i.e. banks in comparison to the Institutional lending agency.
- (xix) OPTCL may also clarify the purpose and status of the industry loan for Rs. 101.05 Cr. as shown in the provisional loan position statement.
- (xx) OPTCL may provide the status regarding the corpus of various trusts, interest earned, opening balance, payment made during the financial year and the closing balance.
- (xxi) OPTCL has shown equity infusion of Rs. 315.65 Cr. during the FY 2021-22 and availed loan amounting to Rs. 679.43 Cr. OPTCL may clarify the same with respect to cash flow statement.
- (xxii) OPTCL should finalize the annual accounts of FY 2021-22 and submit the same immediately to the Commission. Adoption of accounts should be

completed by 30th September, 2022 for the previous financial year, i.e., FY 2021-22.

- (xxiii) The Commission had earlier requested OPTCL to have monthly meetings with CEOs of the DISCOMs and CLD, SLDC for resolution of the issues for efficient functioning of the power sector in the state. OPTCL is therefore directed to furnish the copies of minutes of such meeting for perusal of the Commission.
- (xxiv) Odisha is a cyclone prone area and the transmission assets along coastline are being affected very frequently because of cyclone. The frequency of occurrence and intensity of cyclonic wind has increased over the years causing large scale damage to the transmission and distribution system infrastructure. OPTCL should therefore plan for cyclone resilient transmission infrastructure for the State. A document prepared by the task force constituted by the MoP, GoI on "*Cyclone Resilient Robust Electricity Transmission & Distribution Infrastructure in Coastal Areas*" is available in the public domain for reference. The said document has clearly elaborated about the design aspects and various measures etc. to be considered to reduce the impact of cyclone in coastal areas. OPTCL should submit a report on the status & details of provision of adequate spares at strategic location, availability of Emergency Restoration System (ERS) and mobile sub-station in line with CEA guidelines/Regulations for early restoration of power supply to meet the contingency situation during cyclone.
- (xxv) A report on the Protection Audit carried out by OPTCL should also be submitted for perusal of the Commission.

Representatives of OPTCL

1. Sri S.K. Mishra, Managing Director
2. Sri U.K. Pati, Director (Operation)
3. Sri R.N. Pratihari, Director (HRD)
4. Sri B.B. Meheta, CLD(SLDC)

Annexure-2

Basic Information of existing Sub-stations

Sl. No.	Name & type of Sub-station (AIS/ GIS/ Hybrid)	Highest system voltage (765 kV/400 kV/220 kV/ 132 kV) and switching schemes at differed voltage levels	Present load (MW)	No. of Bays [line bays, transformer bay(s), rector bay(s)]	Transformation capacity (MVA) with voltage ratio & compensation in MVAR (Reactive/ Capacitive).	Augmentation of Transformation capacity required or not (Y/N) (Based on load flow study/based on operation feedback)	Switchgear rating (Normal-A & short time rating with duration-A, kA & sec.) adequate or not (Y/N)	Protection system (as per CEA Regulation) in place or not for lines, cables, transformers, bus bar (Y/N)	Status of implementation of Sub-station Automation system (SAS) with/without process bus (Existing/to be implemented)	Adequate battery Capacity (AH) & associated chargers available with standby battery (Y/N)	Earthing system is healthy or not (Y/N) & Required gravel thickness (if provided) maintained or not (Y/N)	Required Fire Fighting System(FF S) provided or not including soak pit and / oil collecting pit for transformer (s) (Y/N)	Action Required/ Action being taken
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	<i>A, AIS</i>	<i>220 kV 220 kV: DMT 132 kV: MT 33 kV: DB</i>	<i>100 MW</i>	<i>220 kV: Line bay- 4 T/F bay -2 132 kV : Line bay -4 T/F bay -2 33 kV: Line bay - 6 T/F bay -2</i>	<i>Reactive compensation: Nil. Transformation capacity: (2x315 MVA, 400?220/132 kV + 2x100 MVA, 220/132 kV)</i>	<i>N</i>	<i>Y</i>	<i>Line : Y T/F HV side : Y T/F LV side : Y Bus bar : N</i>	<i>To be implemented</i>	<i>Y</i>	<i>Y/N</i>	<i>N</i>	

Note: DMT: Double Main & Transfer, MT: Main & Transfer, DB: Double bus, BH: Breaker & Half.

Annexure-3

Basic information of proposed new substation (based on load flow study of Transmission network)

Sl.No.	Name & type of Sub-station (AIS/ GIS/ Hybrid)	Highest system voltage (765 kV/400 kV/220 kV/ 132 kV) and switching schemes at differed voltage levels	Expected load (MW) by 2026-27	No. of Bays [line bays, transformer bay(s), rector bay(s)]	Transformation capacity (MVA) with voltage ratio & compensation in MVAR (Reactive/ Capacitive).	Protection system (as per CEA Regulation) in place or not for lines, cables, transformers, bus bar (Y/N) and SAS with/without process bus implemented/or not.	Switchgear Rating (Normal current, Short time current with duration (A, kA with duration)	Required Battery Capacity (AH) and associated charger provided with standby battery (Y/N)	Required Fire Fighting System(FFS) provided or not including soak pit and / oil collecting pit for transformer(s) (Y/N)	Target for completion				
										2022-23	2023-24	2024-25	2025-26	2026-27
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)				
	<i>A, AIS</i>	<i>220 kV: DMT 220 kV: DMT 132 kV: MT 33 kV: DB</i>		<i>220 kV: Line bay- 4 T/F bay - 2 132 kV: Line bay- 4 T/F bay - 2 33 kV: Line bay - 6 T/F bay - 2</i>	<i>Reactive compensation: Nil. Transformation capacity:(2x315 MVA, 400?220/132 kV + 2x100 MVA, 220/132 kV)</i>	<i>Line : Y T/F HV side : Y T/F LV side : Y Bus bar : N SAS with process bus implemented</i>	<i>220 kV: 1600A, 50 kA (for 1 sec) 132 kV: 1250 A, 40kA (for 1 sec) 33 kV: 800A, 25 kA (for 3 sec)</i>	<i>Y</i>	<i>N</i>					
			<i>300MW</i>											

Note: DMT: Double Main & Transfer, MT: Main & Transfer, DB: Double bus, BH: Breaker & Half.

Annexure- 4

Basic information of existing overhead lines (765 kV/ 400 kV/ 220 kV/ 132 kV)

Sl.No.	Name of Line	From	To	Voltage level (kV)	Single circuit or Double circuit or more no. of circuit & Length of line (KM)	Type (ACSR/AAAC/ AL59/High Tempt & Low Sag/ any other type) & size (dia& area) of conductor and no. of conductor per phase	Line over loaded or not (based on load flow study/based on operation feedback) in case of existing line and power flow (in MW) (Y/N)	Design span (m)	Type of support structure (Lattice/Steel pole/ other type)	Wind zone & whether line is within 60 KM of coastal area or not	No. of Ground wires & OPGW	Designed for cyclone resilience or not, if applicable (Y/N)	Status of mapping of line Asset [completed/in progress(% of progress)/to be taken up]	Action Required/A ction being taken
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<i>1</i>	<i>A-B</i>	<i>A</i>	<i>B</i>	<i>220 kV</i>	<i>Double circuit, 100 KM</i>	<i>ACSR (Zebra), Dia: 28.6 mm, Area: 484.5 sq. mm. Conductor per Phase: One</i>	<i>Yes, Based on load flow study & operation feedback Power flow: 160 MW</i>	<i>350 M</i>	<i>Lattice structure</i>	<i>Wind Zone:5, Line within 2 KM of coastal area</i>	<i>One OPGW</i>	<i>N</i>	<i>To be taken up</i>	

Annexure- 5

Basic information of proposed new lines (765 kV/ 400 kV/ 220 kV/ 132 kV) (based on load flow study of Transmission network)

Sl. No.	Name of Line	From	To	Voltage level (kV)	Single circuit or Double circuit or more no. of circuits & Length of line (kM)	Type (ACSR/AA AC/AL59/ High Tempt & Low Sag) & size (dia& area) of conductor and no. of conductor per phase	Design span (m)	Type of support structure (Steel pole/ other types, etc.)	Type of support structure (Lattice/Steel pole/ other type)	Wind zone & whether line is within 60 KM of coastal area or not	No. of Ground wires & OPGW	Designed for cyclone resilience or not, if applicable (Y/N)	Status of mapping of line Asset [completed/in progress(% of progress)/to be taken up]	Action Required/ Action being taken	Target for completion					
															22-23	23-24	24-25	25-26	26-27	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)					
1	Name : A-B	A	B	400 kV	D/C, 250 KM	ACSR (Moose), Dia: 31.77 mm, Area: 597 sqmm. Conductor/ Phase: Two	400 m.	Lattice Structure	Lattice	Wind Zone:5, Line within 2 KM of coastal area	One OPGW& One Ground wire	N	In progress (10% completed)							