

**ODISHA ELECTRICITY REGULATORY COMMISSION  
BIDYUT NIYAMAK BHAWAN  
PLOT NO.4, CHUNOKOLI, SHAILASHREE VIHAR,  
BHUBANESWAR - 751021**

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**Present: Shri S. C. Mahapatra, Chairperson  
Shri G. Mohapatra, Member  
Shri S. K. Ray Mohapatra, Member**

**Case No. 63/2022**

OPTCL	.....	Petitioner
Vrs.		
TPCODL & others	.....	Respondents

**In the matter of:** Application under condition 10 of its License Conditions for approval of Investment proposal for construction of 220/33kV and 132/33kV Sub-stations along with associated transmission lines and 220kV transmission lines on availing loan assistance from suitable funding agency and Govt. grants/Equity.

**For the Petitioner:** Shri Upendra Kumar Pati, Director (Operation) and Shri Sukanta Panda, Sr.GM (RT&C) of OPTCL,

**For the Respondents:** Shri K. C. Nanda, GM (RA & Strategy), TPWODL, Ms. Malancha Ghose, DGM (RA), TPNODL, Shri V. Wagle, (Head Regulatory Affairs), TPSODL and Shri Bijay Kumar Das, Sr, GM (PP), GRIDCO Ltd.  
None appears on behalf of TPCODL and DoE, GoO.

**Date of hearing: 11.04.2023**

**Date of Order: 29.04.2023**

**ORDER**

1. The petitioner, OPTCL, the State Transmission Utility in this case has submitted an application for approval of investment proposal for construction of 220/33 kV and 132/33 kV substations with associated lines and 220 kV transmission lines on availing loan assistance from suitable funding agency and Govt. grants/equity.
2. The investment proposal of OPTCL includes 220/33 kV Grid substations at Madanpur Rampur, and 132/33 kV substation at Athamallik & Agalpur Rampur with associated lines and LILO of one circuit of TTPS- Joda 220 kV D/C line at 220/33kV GIS Substation at Keonjhar along with 2 Nos. of line bays at Keonjhar.
3. As per OPTCL's Licence Condition 7.1 and provision under Section 40 of the Electricity Act, OPTCL, as a Transmission Licensee, is duty bound to make investment to build, maintain & operate an efficient co-ordinated & economic intra-state transmission system. As per OPTCL's Licence Condition 10 read with Condition 23.1, the Petitioner-OPTCL is required to obtain prior approval of the Commission for

investment proposal of Rs.10.00 Cr. and above. Accordingly, OPTCL has submitted this investment proposal of Rs.163.96 cr. for execution of said transmission projects, since it exceeds the limit of Rs 10.00 Cr. as mentioned in Licence Condition. As per the Licence Condition, the Commission is to be satisfied about need of such investment and is also to examine the economic, techno-commercial & environmental issues attached to such investment proposals. In compliance to the requirements under the License Condition 10.4, OPTCL has submitted the Detailed Project Reports (DPRs) for total investment of Rs.163.96 Cr. along with relevant information and justification pertaining to the above projects. The details of investments proposal based on load flow study are as follows:

- a) OPTCL has proposed the construction of a new 2X20 MVA, 220/33kV Grid Sub-station at Madanpur Rampur (in the district of Kalahandi) alongwith associated 220 kV line of about 17 kms by LILO of the existing Kesinga-Baliguda 220 kV D/C line at Madanpur Rampur s/s at an estimated cost of Rs.57.56 crores with funding either from Government /own resources or from other funding agencies depending upon the feasibility of loan. OPTCL has submitted that the substation at Madanpur Rampur is required to address low voltage issue and frequent power interruption in Kalahandi area. Further, the proposed substation will cater to the load demand (2.5 MVA) of two mega lift projects at Salebhata and Champadeipur as proposed by Water Resource Department of GoO and also feed 5 nos of 33/11 kV substations in that area. The proposed substation was approved by the Commission in the five-year Business Plan of OPTCL in Case No.63 /2020 and 14<sup>th</sup> Intra State Transmission Plan of OPTCL for the period from FY 2022-23 to 2026-27 in Case No.49 /2021. OPTCL has projected reduction of average annual technical loss to the extent of 0.46 MW, which is equivalent to gain of Rs.47.07 lakh in monetary term (considering Rs.2.98/kWh). With 70% utilization of 2x20 MVA capacity at the proposed grid S/S and with 3% transmission loss, the additional energy available would be 1284.78 LU/annum, which will bring additional annual revenue of Rs 359.74 lakhs to OPTCL at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.406.81 lakhs from this investment. The average rate of return and Internal Rate of Return (IRR) has thus been found to be 7.07% and (-) 0.19% respectively. OPTCL has further submitted that this project is with negative Net Present Value (NPV) and is financially unviable. However, this project is very much

necessary for DISCOM to provide reliable & uninterruptible power supply to the consumers of the areas like Barabandha, Madanpur Rampur, Madanpur & Manikara.

- b) OPTCL has proposed the construction of LILO (about 14 KMs) of one circuit of existing TTPS-Joda 220 kV D/C line at 220/33 kV GIS substation at Keonjhar alongwith 2 nos. of 220 kV line Bays at the said s/s at an estimated cost of 29.97 Cr. from own resources/funding. The proposed line was part of the 5 years Business Plan of OPTCL approved by the Commission, vide order dated 03.11.2021 in Case No. 63 /2020 and 14<sup>th</sup> plan of OPTCL for the period from FY 2022-23 to 2026-27 in Case No.49 /2021. OPTCL has projected reduction in average annual loss to the extent of 0.54 MW, which is equivalent to the gain of Rs.55.61 lakh in monetary term (considering Rs.2.98/ kWh). The expectation of additional 1770.85 LU (considering 3% transmission loss) shall bring additional annual revenue of Rs.495.84 lakhs to OPTCL at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.551.44 lakhs from this investment. The average annual rate of return and IRR has thus been found to be 18.40% and 40.13% respectively. OPTCL has further submitted that this project is with positive NPV and is financially viable. The 220 kV connectivity from Keonjhar grid s/s to Joda grid s/s would act as an alternative power source in the intra state system. This will improve voltage profile in Keonjhar, Joda, Barbil & Turumunga areas and will increase the stability and reliability of 220 kV network in northern part of Odisha by improving voltage profile and consumer will get uninterrupted power supply.
- c) OPTCL has proposed the construction of a new 2X20 MVA, 132/33kV Grid Sub-station at Athamallik (in the district of Angul) alongwith associated 132 kV line of about 21 kms by LILO of the proposed Boudh-Kiakata 132 kV D/C line at the said substation at an estimated cost of Rs.43.95 crores with funding either from Government /own resources or from other funding agencies depending upon the availability of loan with acceptable interest rate. OPTCL has submitted that at present, Athamallik NAC area is being fed only from Boinda s/s and experiencing low voltage problem. Further, other Government schemes like Jananidhi scheme, power supply to the borewell points etc. under lift irrigation projects are coming up in this district. Therefore, stable power supply and requirement of additional power due to load growth are needed in this area. The proposed substation at Athamallik will reduce the load on Boinda grid

substation and will feed about 5 nos. of 33/11 kV substations namely, Athamalik, Anandpur, Madhapur, Himitira, Dhaurapalli. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL in Case No.63 /2020 and 14<sup>th</sup> Intra State Transmission Plan of OPTCL for the period from FY 2022-23 to 2026-27 in Case No.49 /2021. OPTCL has projected reduction in average annual loss to the extent of 0.56 MW which is equivalent to gain of Rs.57.49 lakh in monetary term (considering Rs.2.98/ kWh). With 70% utilization of 2X20 MVA capacity at the proposed grid S/S and with 3% transmission loss, the additional energy available would be 1284.78 LU/annum, which will bring additional annual revenue of Rs 359.74 lakhs to OPTCL at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.417.23 lakhs. The average rate of return and IRR has thus been found to be 9.49% and 5.82% respectively. OPTCL has submitted that this project is with negative NPV and is not financially viable. However, this 132 kV expansion project is required for stable power supply in above area and also for seamless integration of renewable energy projects coming up in Athamallick area.

- d) OPTCL has proposed the construction of a new 2X20 MVA, 132/33kV Grid Sub-station at Agalpur Rampur (in the district of Bolangir) alongwith associated 132 kV line of about 1.5 kms by LILO of Bolangir-Barpali 132 kV S/C line at the proposed sub-station at an estimated expenditure of Rs.32.47 crores with support from Government of Odisha (GoO) under Low Voltage Mitigation Scheme (LVMS) (70% loan from GoO and equity of 30% of the estimated cost). OPTCL has submitted that the consumers of this area are facing low voltage problem and frequent break downs due to snapping of conductors. The construction of the proposed 132/33 kV digital substation with SAS at Agalpur Rampur would strengthen 132 kV network by sharing load with Bolangir and Barpali grid substation which is essential for stable power supply to this area and to avoid transformer overloading. OPTCL has projected reduction in average annual loss to the extent of 0.18 MW, which works out to gain of Rs.18.26 lakh in monetary term (considering Rs.2.98/ kWh). With 70% utilization of 2x20 MVA capacity at the proposed grid S/S and with 3% transmission loss, the additional energy available would be 1284.78 LU/annum, which shall bring additional annual revenue of Rs 359.74 lakhs to OPTCL at transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual

revenue from this investment to the tune of Rs.378 lakhs. The average rate of return and IRR has thus been found to be 11.64% and 10.59% respectively. OPTCL has submitted that the project is with positive NPV and is financially viable.

4. In this way, the total investment has been estimated to be Rs.163.96 cr. The investment proposal in brief, with source of funding as submitted by OPTCL is given in the Table below:

Sl. No.	<u>DESCRIPTION</u>	CAPITAL EXPENDITURE (Rs. Cr.)	NAME OF THE SCHEME & SOURCE OF FUNDING
1	2X20MVA, 220/33 kV Grid Sub-Station at <b>Madanpur Rampur</b> along with LILO of existing Kesinga-Baliguda 220 kV D/C lines. (17 KMs) at the said sub-station	57.56	LVMS Loan – 70% Equity – 30%
2	LILO of 220 kV Joda-TTPS circuit-II at 220/33 kV grid s/s, Keonjhar (Line Length 14.21 kms apprx)	29.97	Loan – 70% Equity – 30%
3	2X20 MVA, 132/33 kV grid s/s at Athamallik with associated line	43.95	LVMS Loan – 70% Equity – 30%
4	2X20 MVA, 132/33 kV s/s with SAS at Agalpur, Rampur & associated 132 kV line	32.47	LVMS Loan – 70% Equity – 30%
<b>TOTAL</b>		<b>163.96</b>	

5. OPTCL has submitted that the System Studies have been conducted in line with the planning criteria considering different load generation scenario under the normal steady state conditions. The implementation of the aforesaid additional proposed sub-stations as well as transmission lines would improve the system voltage profile, reduce the loading on certain important sections of the transmission network and also reduce the overall transmission system loss. Further, under single contingency scenario, the study indicates potential problems related to overloading of remaining lines and collapse of system voltages at locations close to the tripped line. Therefore, OPTCL has submitted the above investment proposal for construction of above mentioned substations and transmission lines for reinforcement of its existing transmission network to meet the system needs in future years. OPTCL envisages the reduction of average annual loss of 1.74 MW after executing of the above projects.
6. OPTCL has submitted that the projects have been proposed after detailed discussion with the concerned DISCOMs. OPTCL has also submitted the Environmental Impact Assessment (EIA) Study for the projects. As per the EIA study, the projects are not

having any adverse environmental impact or resettlement issue and the overall impact of the projects are highly positive. OPTCL has also stated that the projects shall be executed on turnkey basis through a Competitive Bidding process.

7. All DISCOMs have agreed with the submission of OPTCL and have requested for early execution of these projects as these projects are required to extend reliable power supply and to meet the expected load growth in those areas. Further, these projects will support implementation of various developmental programmes of the State Government resulting in socio-economic development in remote areas of Kalahandi, Athmallick, Angul District.
8. Respondent, Sri R. P. Mohapatra has submitted that the request for approval of investment proposals by the Commission after initiating the execution of project(s) is a clear violation of the Licence Condition. The approval of BoD of OPTCL should not by-pass the statutory requirement of the approval of the Commission. Mr. Mohapatra has requested the Commission to issue an appropriate direction on this matter to OPTCL.
9. OPTCL has submitted that the proposal with Detailed Project Report (DPR) was submitted for approval of the Commission on 10.11.2022. OPTCL has started the process for execution of these projects as the projects are urgently required for implementation of some developmental programmes of the State Government and to ensure reliable & quality power supply to the inhabitants of remote areas, which is essential for socio-economic development. OPTCL, therefore, has prayed for approval of these investment proposals in the overall interest of the people of the state.
10. Heard the parties at length through hybrid mode (physical & virtual) and considered their written submissions & argument during hearing. It is observed that:
  - a) The Commission had accorded in-principle approval earlier for the proposed substations and transmission lines. OPTCL has now approached the Commission with the DPR along with the cost benefit analysis for approval of their investment proposals for the proposed projects.
  - b) OPTCL has carried out the system study with the existing network and with the proposed network expansion & strengthening to meet future need.
  - c) The petitioner-OPTCL has justified that the investments would strengthen power transmission system, reduce loading on certain section of OPTCL's

transmission network, reduce the overall transmission losses, improve voltage profile, ensure better quality of power supply, minimize interruption of power supply, enhance security/reliability of power system for smooth flow of power without any constraint/congestion in the system and would enable OPTCL to receive economic return.

- d) The Board of Directors (BoD) of OPTCL has accorded administrative approval for the aforesaid projects.
- e) OPTCL has submitted that the execution of some of the projects was started on urgent basis without prior approval of the investment proposal by the Commission in order to support implementation of developmental projects of GoO for the benefit of people of remote area.

11. The Commission has studied the technical and commercial viability of the projects as submitted by OPTCL which are summarized below:

Sl No	Name of the Project	Project Cost (Rs. Cr)	Net Cash flow (Rs. Cr)	Period of Benefits (in Yrs)	Avg. Return estimated by OPTCL (%)	Payback period (in Yrs)	NPV estimated by OPTCL @ 9.86% Dis. Factor (Rs. Cr)	IRR estimated by OPTCL (%)	Viability
1	2X20MVA, 220/33 kV Grid Sub-Station at <b>Madanpur Rampur</b> along with LILO of existing Kesinga-Baliguda 220 kV D/C lines at said sub-station.	57.56	(1.14)	25	7.07	14.15	(18.00)	(0.19)	Not Viable
2	LILO of 220 kV Joda-TTPS circuit-II line at 220/33 kV grid s/s, Keonjhar (Approx: 14.21 kms)	29.97	130.38	25	18.4	5.44	19.00	40.13	Viable
3	2X20 MVA, 132/33 kV grid s/s at Athamallik with associated line	43.95	26.39	25	9.49	10.53	(5.22)	(5.82)	Not Viable
4	2X20 MVA, 132/33 kV s/s with SAS at Agalpur, Rampur & associated line	32.47	35.89	25	11.64	8.59	69.30	10.59	Viable

- a) The above table shows that out of four (4) projects, two (2) projects i.e. 2X20 MVA, 220/33 kV s/s at Madanpur Rampur and 2X20MVA, 132/33kV S/S at Athamallik alongwith associated transmission lines are not economically viable.

- b) The petitioner, OPTCL has submitted that most of the projects proposed are required for extending reliable power supply to the upcoming industries/ mega-lift irrigation point and is in the interest of the society for socio-economic development of the people of that area.
- c) The stake holders including DISCOMs have also agreed for implementation of these projects, in order to maintain reliable power supply in the areas of operation of the concerned Distribution licensee.
12. In view of above considerations, the Commission is inclined to approve the investment proposal of OPTCL for Rs.163.96 crores for construction of above sub-stations and associated transmission lines for development of adequate transmission system to facilitate smooth flow of power which will improve voltage profile & reduce transmission system loss and ultimately would provide reliable and uninterrupted (24x7) power supply to remote area of the State.
13. Since, the projects of OPTCL are linked to stable electricity supply like power supply to hospitals, energisation of deep bore well for agriculture, running of pipe water supply schemes etc., the Government of Odisha may consider to provide financial support in form of grant to OPTCL for taking up unviable projects in the larger interest of the state. Therefore, OPTCL is directed to take up the matter with Government of Odisha for funding the economically unviable projects.
14. OPTCL shall ensure that the projects are completed in time to avoid cost and time overrun and 33 kV outlets are utilised by the respective DISCOMs to avoid creation of stranded assets and optimum utilization of assets created by OPTCL. Accordingly, respective DISCOMs shall be communicated to develop downstream distribution system within matching time frame.
15. The petitioner, OPTCL is directed to avoid execution of transmission project in future without prior approval of investment proposal by the Commission.
16. With the above directions and observations, the case is disposed of.

**Sd/-**  
**(S. K. Ray Mohapatra)**  
**Member**

**Sd/-**  
**(G. Mohapatra)**  
**Member**

**Sd/-**  
**(S. C. Mahapatra)**  
**Chairperson**