

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

*** **

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

Case No. 58/2022

OPTCL	Petitioner
Vrs.		
DISCOMs & Others	Respondents

In the matter of: Application under Condition 10 of OPTCL's License Conditions for approval of Investment Proposal for construction of 220/132/33kV, 220/33kV & 132/33kV Sub-stations along with associated transmission lines and 220kV and 132kV transmission lines on availing loan assistance from suitable funding agency and Govt. grants/Equity.

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

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

Date of hearing: 11.04.2023

Date of Order: 22.05.2023

ORDER

1. The petitioner, OPTCL, the State Transmission Utility in this case has submitted an application for approval of investment proposal for construction of 220/132/33 kV, 220/33 kV & 132/33 kV substations with associated lines and 220 kV & 132 kV transmission lines on availing loan assistance from suitable funding agency and Government grants/equity.
2. The investment proposal of OPTCL includes 220/132/33 kV Grid substations at Gunupur, 220/33 kV substation at Govindpalli, Lephripada, Deogarh, Godisahi, 132/33 kV substations at Rajnagar, Thuapalli, Mancheswar-B, Unit-8 (Bhubaneswar), with associated lines. OPTCL has also submitted its proposal for approval of 220 kV D/C line from Pandiabil(PGCIL) to Pratapsasan, 132 kV S/C line from Padmapur to Nuapada, Podagada to Pottangi, Kuchei (PGCIL) to Bangripasi. OPTCL has estimated Rs.705.75 Cr. of investment proposal for execution of the aforesaid projects.

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.705.75 Cr. for execution of the aforesaid transmission projects, as per the Licence Condition. As per the Licence Condition, the Commission is to be satisfied about need of such investment and 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) of 13 nos. of the projects for total investment of Rs.705.75 Cr., along with relevant information and justification pertaining to the above projects. OPTCL has proposed the investments primarily to ensure extension of quality power supply to the consumers, simultaneously to get reasonable economic return on such investment. The details of investment proposals based on load flow study are as follows:

- a) OPTCL has proposed the construction of a new 2X160 MVA and 2X20 MVA, 220/132/33kV Grid Sub-station at Gunupur (in the district of Rayagada) alongwith associated transmission lines [220 kV LILO from existing Therubali-Narendrapur line (about 13 km) and 132 kV LILO from Akhusingh-Paralakhemundi line (about 3 kms)]. OPTCL has estimated an expenditure of Rs.94.41 crores for execution of this project with funding from Japan International Co-operation Agency (JICA). OPTCL submitted that the substation at Gunupur is very much required to make 132 kV system voltage stable and also to share the load of Rayagada and will improve the voltage profile of that area. This project will be helpful for improvement of the socio-economic condition of people of the Rayagada district. Further, Rayagada has a great mineral source with full of bauxite and silicon, the availability of reliable power will boost industrial growth in that area. Government of Odisha have also prioritized 3 major sectors Bijli (village electrification and street lighting), Sadak (construction culverts, bridges, roads etc. and Pani (creation of irrigation and drinking water sources) for that area. This project is highly essential for creation of opportunity for economic, social development, poverty reduction and improvement of the quality of life of the rural people of the Rayagada district. Further, the proposed substation at Gunupur will feed 4 nos of 33/11 kV

substations at Gunupur, Rigeda, Bikrampur, Jalatari and 4 nos. of Mega Lift Projects at Bhimpur, Sampini, Gadiakhala-I & II. The proposed project has been approved by the Commission in the five-year Business Plan for the 2nd control period from FY 2019-20 to 2023-24 of OPTCL in Case No.63 /2020 and 13th Intra State Transmission Plan of OPTCL in Case No.18/2017. OPTCL has projected reduction of average annual loss to the extent of 1.11 MW, which is equivalent to gain of Rs.114.7 lakh in monetary term (considering Rs.2.98/ kWh). With 70% utilization of 2x160 MVA and 2X20 MVA transformation capacity at the proposed grid S/S and with 3% transmission loss, the additional energy available would be 11562.99 LU/annum, which will bring additional annual revenue of Rs.3237.64 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.3352.34 lakhs from this investment. The average annual rate of return and IRR has thus been found to be 35.51% and 135.45% respectively. OPTCL submitted that this project is with positive NPV and is financially viable.

- b) OPTCL has proposed construction of 2X20 MVA, 220/33 kV Grid Sub-station at Govindpalli (in the district of Malkangiri) along with associated LILO of existing Balimela-Malkangiri 220 kV line (about 38 kms) at Govindpalli sub-station. OPTCL has estimated an expenditure of Rs.73.40 crores for execution of this project with funding from Japan International Co-operation Agency (JICA). The construction of this project is required to have stable 220 kV systems in that area. The electricity demand of that area is expected to increase because of implementation of various ongoing schemes like provision of deep bore well point, Jananidhi scheme, etc by the State Government. OPTCL has submitted that one Small Hydro Electric Project (SHEP) with installed capacity of 18 MW will be connected to the substation at Govindpalli. This substation will feed the existing distribution substations at Mathili, Khairiput and proposed distribution substations at K.Gumma under RGGVY Scheme, Mululiguda & Govindpalli under ODSSP Scheme. This project will ultimately feed power to the consumers of remote areas of KBK district. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24 in Case No.63 /2020 and 13th Intra State Transmission Plan of OPTCL in Case No.18/2017. OPTCL has projected reduction of average annual loss to the extent of 0.50 MW, which is equivalent to gain of Rs.51.43 lakhs in monetary term (considering Rs.2.98/ kWh). With 70%

utilization of 2x20 MVA transformation 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 at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.411.17 lakhs from this investment. The average annual rate of return and IRR has thus been found to be 5.6% and (-)4.08% respectively. OPTCL has submitted that this project is not financially viable. However, this project is required in the interest of the people and implementation of various developmental schemes of Government.

- c) OPTCL has proposed 2X20 MVA, 220/33 kV Grid Sub-station at Lephripada (in the district of Sundergarh) along with LILO (about 5 kms) of existing Budhipadar-Basundhara 220 kV S/C line at Lephripada sub-station. OPTCL has estimated an expenditure of Rs.42.15 crores for execution of this project with funding from Japan International Co-operation Agency (JICA). The completion of the project will be helpful to extend power supply to some un-electrified villages and also to meet the future load growth. OPTCL further expects increase of demand of around 10-15 MW in this area because of ongoing Government Schemes like Mega Lift Irrigation Project, deep bore well point, Jananidhi Scheme, BGJY Scheme etc. OPTCL has submitted that the existing 33/11 kV substations at Sargipali, Garjanbahal & Lephripada will be connected to the proposed GSS at Lephripada. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24. in Case No.63 /2020 and Business Plan for the period from FY 2014-15 to 2018-19 in Case No.05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.58 MW, which is equivalent to gain of Rs.60.20 lakhs in monetary term (considering Rs.2.98/ kWh). With 70% utilization of the capacity of 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 at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.419.94 lakhs from this investment. The average rate of return and IRR has thus been found to be 9.96% and 4.99% respectively. OPTCL submitted that this project with negative NPV and is not financially viable. However, the project is essential for eradication of low voltage profile and implementation of various schemes by the State Governments in the Sundergarh district.

- d) OPTCL has proposed the construction of 2X20 MVA, 220/33 Grid Sub-station at Deogarh (in the district of Deogarh) alongwith associated LILO (about 12 kms) of existing Rengali-Barkote 220 kV line at Deogarh sub-station. OPTCL has estimated an expenditure of Rs.44.33 crores for execution of this project with funding from Japan International Co-operation Agency (JICA). The construction of the substation is required to share the load of Rengali and Barkote which in turn will improve voltage profile of that area. The proposed project is required to provide and uninterrupted power supply to the consumers of Deogarh and nearby areas. The proposed 22/33 kV GSS at Deogarh will feed the 33/11 kV substations at Deogarh, Tileibani, Riamal, Chatabar and proposed 33/0.415 kV substation at District Headquarter Hospital, Deogarh. The proposed project has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24 in Case No.63 /2020 and revised Business Plan of OPTCL for the period from FY 2014-15 to 2018-19 in Case No.05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.36 MW, which is equivalent to gain of Rs.37.46 lakhs in monetary term (considering Rs.2.98/ kWh). With 70% utilization of the transformation capacity of 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 at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.397.2 lakhs from this investment. The average rate of return and IRR has thus been found to be 8.96% and 2.82% respectively. OPTCL has submitted that this project is with negative NPV and financially unviable. However, this project is required in the interest of the public specifically for implementation of different Government schemes to help the inhabitants of that area.
- e) OPTCL has proposed the construction of 2X40 MVA, 220/33 kV GIS Sub-station at Godisahi (in the district of Khurda) alongwith LILO (about 1 km) of existing Bidanasi-Mendhasal 220 kV line at an estimated expenditure of Rs.68.40 crores with funding arrangement through State Capital Region Improvement of Power System (SCRIPS) scheme. OPTCL has submitted that the construction of this substation is required to maintain permissible voltage limits and uninterrupted power supply to some prestigious institutions like Sri Sri University and National Level Organizations like CRPF and NDRF. Further, this grid substation will be helpful to supply quality power to industrial area

Ramdaspur developed by IDCO. The proposed GSS at Godisahi will be connected to the existing 33/11 kV substations at Godisahi and Naraj. Further, industrial feeders like IDCO, Ramdaspur, PAGE Industry, ASTEL Pipe and Bharat Masala will be connected to this GSS. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24 in Case No.63 /2020 and 13th Intrastate Transmission Plan in Case No.18/2017. OPTCL has projected reduction of average annual loss to the extent of 0.66 MW, which is equivalent to gain of Rs.68.38 lakhs in monetary term (considering Rs.2.98/ kWh). With 70% utilization of the transformation capacity of the proposed grid S/S and with 3% transmission loss, the additional energy available would be 4047.05 LU/annum, which will bring additional annual revenue of Rs.1133.17 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.1201.55 lakhs from this investment. This project is being funded by Government through grant under SCRIPS scheme. The project with positive NPV and is financially viable.

- f) OPTCL has proposed the construction of 220 kV D/C line (about 29 kms) on D/C Tower from 400/220 kV GSS at Pandiabil (Benapanjari, PGCIL) to 220/33 kV GSS at Pratapsasan at an estimated expenditure of Rs.26.76 crores with funding arrangement from Government under DRPS-1 Scheme. OPTCL has submitted that the construction of this line will increase the reliability of power system, decrease loading on the existing substation, increase system availability, reduce power interruption. This project will increase the stability and reliability of the 220 and 132 kV network in central part of Odisha. The proposed project has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24 in Case No.63 /2020 and Business Plan of OPTCL for the period from FY 2014-15 to 2018-19 in Case No. 5/2016. OPTCL has projected reduction of average annual loss to the extent of 3.16 MW, which is equivalent to gain of Rs.326.13 lakhs in monetary term (considering Rs.2.98/ kWh). Considering a transmission loss of 3%, OPTCL expects the availability of additional energy to the tune of 1873.63 LU/annum, which will bring additional annual revenue of Rs.524.62 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.850.74 lakhs from this investment. This project is being funded

by Government through grant under DRPS scheme. This project is with positive NPV and financially viable.

- g) OPTCL has proposed the construction of 2X20 MVA, 132/33 kV Grid Substation at Rajnagar (in the district of Kendrapara) alongwith associated transmission line of about 22 kms at an estimated cost of Rs.48.17 crores with funding arrangement from JICA. OPTCL has submitted that the construction of this substation is required to extend stable power supply to Rajnagar area since electrical restoration takes more time due to long 33 kV and 11 kV feeders. The importance of substation increases with the presence of Bhitarkanika sanctuary near to Rajnagar. Further, the proposed substation will feed existing 33/11 kV substations at Adhajori, Rajnagar and proposed distribution substations at Babar, Kandira and Madhuban under ODSSP to eradicate low voltage issues in that area. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24 in Case No.63/2020 and Business Plan of OPTCL for the period FY 2014-15 to 2018-19 in Case No. 05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.67 MW, which is equivalent to gain of Rs.68.78 lakhs in monetary term (considering Rs.2.98/ kWh). With 70% utilization of the transformation capacity of 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 at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.428.52 lakhs from this investment. The average annual rate of return and IRR has thus been found to be 8.9% and 4.52% respectively. OPTCL submitted that this project with negative NPV and is not financially viable. However, this project is required to provide uninterrupted quality power to the consumers of that area including Bhitarkanika sanctuary & also to meet the future load growth.
- h) OPTCL has proposed the construction of 2X20 MVA, 132/33 kV Grid Substation at Thuapalli (in the district of Bargarh) along with LILO line (about 23 kms) at an estimated expenditure of Rs.35.10 crores with funding arrangement from JICA. OPTCL has submitted that the construction of this substation is required to make 132/33 kV system voltage stable in the network connecting to Katapalli-Bargarh-Barpali substation. This substation is also required to share the load of Katapali to avoid transformer overloading during normal and N-1

contingency condition. The proposed 132/33 kV GSS at Thuapalli will feed the existing 33/11 kV distribution substations at Thuapalli, Bheten, Attabira, Godbhaga, Goru and proposed substations at Patrapali & Tota. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24. In Case No.63/2020 and revised Business Plan in Case No.05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.42 MW, which is equivalent to gain of Rs.43.38 lakhs in monetary term (considering Rs.2.98/kWh). With 70% utilization of the transformation capacity of 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 at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.403.12 lakhs from this investment. The average annual rate of return and IRR has thus been found to be 11.48% and 8.20% respectively. OPTCL has submitted that the project is with negative NPV and not financially viable. However, this project is required for creation of ring network and to meet N-1 contingency condition.

- i) OPTCL has proposed the construction of 2X40 MVA, 132/33 kV GIS Substation at Mancheswar-B (Bhubaneswar in the district of Khurda) alongwith associated UG cabling of about 17 kms at an estimated expenditure of Rs.104.77 crores with funding arrangement as grant through State Capital Region Improvement of Power System (SCRIPS) scheme. OPTCL has submitted that the construction of this substation will act as an alternate source to the major distribution substations of Bhubaneswar. This substation is needed to bring stability of 132 kV system of Bhubaneswar city by connecting Chandaka-B, Mancheswar-A and upcoming substations at Satyanagar and Baliana. This substation is required to share the load of Mancheswar-A substation to avoid transformer overloading. The proposed GIS sub-station at Mancheswar-B will feed 33/11 kV substation at Rasulgarh, Mancheswar-I industrial feeder and NBCC Imperia Apartment & Shopping Mall Complex. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24, in Case No.63/2020 and revised Business Plan of OPTCL in Case No.05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.67 MW, which is equivalent to gain of Rs.68.78 lakhs in monetary term (considering Rs.2.98/kWh). With 70%

utilization of the transformation capacity of the proposed grid S/S and with 3% transmission loss, the additional energy available would be 2569.55 LU/annum, which will bring additional annual revenue of Rs.719.47 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.788.25 lakhs from this investment. This project is being funded by Government through grant under SCRIPS scheme and is with positive NPV & financially viable.

- j) OPTCL has proposed the construction of 2X40 MVA, 132/33 kV GIS Sub-station at Unit-8 (Bhubaneswar in the district of Khurda) alongwith associated UG cabling of about 11 kms at an estimated expenditure of Rs.99.64 crores with funding arrangement as grant through State Capital Region Improvement of Power System (SCRIPS) scheme. OPTCL submitted that the substation will act as an alternative supply to the important distribution substations of Bhubaneswar city. This substation is needed for stable 132 kV system in Bhubaneswar city by voltage level stable by connecting Chandaka-B, Mancheswar-A and upcoming substations at Satyanagar, Balianata and Nayapalli. This substation is required to meet the growth in demand as well as to share the load of Chandaka substation to avoid transformer overloading. The proposed 132/33 kV GIS substation will feed 33/11 kV Distribution substations at Unit-VIII- 1 & 2 and Unit-VI – 1 & 2. The proposed substation has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24.in Case No.63/2020 and revised Business Plan in Case No.05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.51 MW, which is equivalent to gain of Rs.52.74 lakhs in monetary term (considering Rs.2.98/ kWh). With 70% utilization of the transformation capacity of the proposed grid S/S and with 3% transmission loss, the additional energy available would be 2569.55 LU/annum, which will bring additional annual revenue of Rs.719.47 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.772.22 lakhs from this investment. This project is being funded by the Government as grant under SCRIPS scheme and is with positive NPV and financially viable.
- k) OPTCL has proposed the construction of 132 kV S/C line on D/C tower from 132/33 kV GSS Sub-station at Padmapur to Nuapada of about 66 Kms with an estimated expenditure of Rs.25.08 crores with funding arrangement through RRCP-1 scheme. OPTCL has submitted that the proposed S/C line will act as an

interconnection between the existing 132/33 kV substation at Padmapur and Nuapada creating a ring. This connectivity will increase the stability and reliability of the network in western part of Odisha with a primary aim for improvement of voltage profile and provision of uninterrupted power supply and to avoid future ROW issues & to meet load of nearby areas. The proposed project has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24.in Case No.63 /2020 and Business Plan of OPTCL for the period from FY 2014-15 to 2018-19 in Case No. 5/2016. OPTCL has projected reduction of average annual loss to the extent of 0.58 MW, which is equivalent to gain of Rs.59.73 lakhs in monetary term (considering Rs.2.98/ kWh). Considering a transmission loss of 3%, OPTCL expects the availability of additional energy to the tune of 379.72 LU/annum, which will bring additional annual revenue of Rs.106.32 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.166.05 lakhs from this investment. This project is being funded by Government as grant under RRCP-1 scheme and is with positive NPV and financially viable.

- 1) OPTCL has proposed the construction of 132 kV S/C line on D/C tower (50 kms) from 132/33 kV GSS Sub-station at Podagada to Pottangi at an estimated expenditure of Rs.24.80 crores with funding arrangement through RRCP-1 scheme. OPTCL submitted that this line will create a ring transmission system between Sunabeda, Jaynagar, Podagada and Pottangi. This will also increase the overall stability and reliability of 132 kV system available in southern part of Odisha and will be helpful to draw the Machhkund generation on continuous basis. The proposed project has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24.in Case No.63 /2020 and Business Plan of OPTCL for the period from FY 2014-15 to 2018-19 in Case No. 05/2016. OPTCL has projected reduction of average annual loss to the extent of 0.20 MW, which is equivalent to gain of Rs.20.16 lakhs in monetary term (considering Rs.2.98/ kWh). Considering a transmission loss of 3%, OPTCL expects the availability of additional energy to the tune of 387.57 LU/annum, which will bring additional annual revenue of Rs.108.52 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.128.68 lakhs from this investment.

This project is being funded by Government through grant under RRCP-1 scheme and is with positive NPV and financially viable.

- m) OPTCL has proposed the construction of 132 kV S/C line on D/C tower from 400/220/132 kV Grid Sub-station at Kuchei (PGCIL) to 132/33 kV Bangiriposi of about 31 Kms at an estimated expenditure of Rs.18.74 crores with funding arrangement from own resources/other funding agencies. OPTCL submitted that this proposed 132 kV line will be helpful for reduction in interruption to Udala, Bangiriposi, Baripada, Rairangpur, Karanjia & Betanoti etc. The proposed project has been approved by the Commission in the five-year Business Plan of OPTCL for 2nd control period i.e. from FY 2019-20 to FY 2023-24. in Case No.63 /2020 and 14th Intrastate Transmission Plan in Case No. 49/2021. OPTCL has projected reduction of average annual loss to the extent of 0.34 MW, which is equivalent to gain of Rs.35.47 lakhs in monetary term (considering Rs.2.98/kWh). Considering a transmission loss of 3%, OPTCL expects the availability of additional energy to the tune of 239.82 LU/annum, which will bring additional annual revenue of Rs.67.15 lakhs at the transmission charge of 28 paise/kWh. Thus, OPTCL expects total annual revenue to the tune of Rs.102.62 lakhs from this investment. The annual average rate of return and IRR has been 5.48% and (-)1.52% respectively. This project is with negative NPV and financially unviable. However, this line is required to enhance security/reliability of power system in northern part of Odisha and will be helpful for improvement of economic condition of rural people of Udala, Bangiriposi & Rairangpur area & also attract new industrial investment.

4. The total investment has been estimated to be Rs.705.75 cr. The investment proposal in brief, name of the scheme and source of funding as submitted by OPTCL is mentioned below:

Sl. No.	<u>DESCRIPTION</u>	CAPITAL EXPENDITURE "CAPEX" (Rs. Cr.)	NAME OF THE SCHEME & SOURCE OF FUNDING
1	2x160MVA (Auto) and 2x20MVA, 220/132/33Kv Grid Sub-Station at Gunupur along with associated line.	94.41	JICA Loan- 70% Equity- 30%
2	2X20MVA, 220/33kV Grid Sub-Station at Govindpalli along with associated line.	73.40	JICA Loan- 70% Equity- 30%
3	2X20MVA, 220/33kV Grid Sub-Station at Lephripada along with associated line.	42.15	JICA Loan- 70% Equity- 30%
4	2X20MVA, 220/33kV Grid Sub-Station at Deogarh along with associated line.	44.33	JICA Loan- 70% Equity- 30%
5	2x40MVA, 220/33kV Gas Insulated Sub-Station (GIS) at Godisahi along with associated line.	68.40	SCRIPS (100% Grant)
6	220kV D/C line on D/C tower from 400/220kV	26.76	DRPS-1

	GSS at Pandiabil (PGCIL) to 220/132/33kV GSS at Pratapsasan (OPTCL) .		(100% Grant)
7	2x20MVA, 132/33kV Grid Sub-station at Rajnagar along with associated line.	48.17	JICA Loan- 70% Equity- 30%
8	2X20MVA, 132/33kV Grid Sub-Station at Thuapali along with associated line.	35.10	JICA Loan- 70% Equity- 30%
9	2x40 MVA 132/33kV Gas Insulated Sub-Station (GIS) at Mancheswar-B along with associated line (UG cabling).	104.77	SCRIPS (100% Grant)
10	2X40MVA, 132/33kV Gas Insulated Sub-Station (GIS) at Unit-8 along with associated line (UG cabling).	99.64	SCRIPS (100% Grant)
11	132kV SC Line on DC Tower from 132/33kV Padampur GSS to 132/33 kV Nuapada GSS along with one line bay extension at each end.	25.08	RRCP-1 (100% Grant)
12	132kV S/C line on D/C tower from 132/33kV GSS at Podagada to 132/33kV GSS at Pottangi along with one line bay extension at each end.	24.80	RRCP-1 (100% Grant)
13	132kV S/C line on D/C tower from 400/220/132kV GSS at Kuchei (PGCIL) to 132/33kV GSS at Bangiriposi along with one no. of feeder bay extension at each end.	18.74	Loan- 70% Equity- 30%
<u>TOTAL</u>		705.75	

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 and contingency 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, strengthen 220 kV & 132 kV network and will 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 9.76 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 will be executed on turnkey basis through Competitive Bidding process.

7. Respondent, Shri R. P. Mahapatra 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. Shri Mahapatra has requested the Commission to issue an appropriate direction for imposition of heavy penalty in case of execution of projects prior to the approval by the Commission. Some of the EHT substations are constructed not due to actual requirement, therefore remains unutilised/under loaded for long period of time, which is unnecessary burden on the consumers. Further, both OPTCL and DISCOMs should be directed to enter into an agreement specifying the time frame for construction of EHT substations and the outgoing HV lines so that project is completed within the scheduled time and useful for the consumers of the State. The cost incurred by OPTCL or DISCOM shall be payable by the defaulting utility for non-adherence to the time frame.
8. OPTCL has submitted that joint meeting were conducted between the stakeholders and DISCOMs have never objected for the construction of proposed projects by OPTCL. DISCOMs on the other hand had agreed to the proposals and has proposed for some additional projects over and above the aforesaid projects for extension of reliable power and to meet the future load growth. OPTCL has engaged the consultant M/s. PRDC to have a comprehensive system study considering the proposals submitted by DISCOMs and submit a report. OPTCL, after receipt of such report will approach the Commission for approval of the justified projects after getting the analysis/report from M/s.PRDC. OPTCL in response to one of the objector has submitted that since the proposed projects are under different stages of execution, there is no scope now to implement these projects through TBCB mode.
9. All DISCOMs have agreed with the proposal of OPTCL but submitted that most of the projects are either commissioned or under commissioning stage. Hence, the filings of this petition by OPTCL for obtaining post facto approval. Since the executions of these projects are required to extend reliable power supply and to meet the expected load growth, the Commission may accord approval but seek implementation status. Further, these projects will support implementation of various developmental programmes of the State Government resulting in socio-economic development in remote areas of KBK districts. OPTCL should ideally follow the TBCB route by clubbing up some projects to attract more competent and credit worthy bidders, OPTCL may be directed to take approval of DPRs prior to its implementation and ensure to address all concerns of DISCOM. TPNODL supported the proposal and stressed for early implementation of the projects proposed in their area of operation. TPNODL while agreeing for the proposed

projects has also submitted proposals for construction of additional 9 nos. of substations in their area to extend quality and reliable power to the consumers.

10. OPTCL has submitted the proposal with Detailed Project Report (DPR) was submitted for approval of the Commission on 23.09.2022. Each of the proposed 13 nos of projects were either the part of the Business Plan or Intra state Transmission Plan, approved earlier by the Commission. OPTCL has started the process for execution of some of these projects and commissioned a few of them 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.
11. 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 in the five year Business Plan of OPTCL for 2nd Control Period (2019-20 to 2023-24) in Case No.63 of 2020 and most of the projects were covered in 13th/14th Intra-state transmission plan of OPTCL in Case No.18 of 2017 or in Case No.49 of 2021. OPTCL has now approached the Commission with the DPR enclosing the relevant information/document along with justification & 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 to industrial area (covering PAGE industry, ASTEL pipe, Bharat Masala, IDCO etc.), CRPF & NDRF; minimize interruption of power supply; feed consumers of remote KBK districts; help implementation of various development schemes of Govt. of Odisha (GoO) like mega lift irrigation projects, Jalandidhi Scheme etc; enhance security/reliability of power system by formation of ring network in Central, Southern & Northern part of the

State 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. Most of the projects (12 nos. out of 13 nos. of projects) covered in the investment proposal are being funded through Govt. grant (under SCRIPS/DRPS/RRCP Scheme-6 nos.) or JICA (6 nos.).
- e) The projects do not have 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. OPTCL has submitted that the execution of some of the projects was started and commissioned 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 and also to ensure availability of quality and reliable power to the consumers of the State.
- f) OPTCL has submitted that since the proposed projects are under different stages of execution, there is no scope now to implement the projects through TBCB mode and loan availed from JICA is at a concessional rate of 5%.

12. The Commission has studied the technical and commercial viability of the projects as submitted by OPTCL. These 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	2x160MVA (Auto) and 2x20MVA, 220/132/33 Kv Grid Sub-Station at Gunupur along with associated line (under JICA fund)	94.41	672.69	25	35.51	2.82	176.88	135.45	Viable
2	2X20MVA, 220/33kV Grid Sub-Station at Govindpalli along with associated line (under JICA fund)	73.40	(30.79)	25	5.60	17.85	(32.94)	(12.68)	Not viable
3	2X20MVA, 220/33kV Grid Sub-Station at Lephripada along with associated line (under JICA fund)	42.15	25.03	25	9.96	10.04	(6.22)	4.99	Not viable
4	2X20MVA, 220/33kV Grid Sub-Station at Deogarh along with	44.33	14.88	25	8.96	11.16	(9.59)	2.82	Not viable

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
	associated line (under JICA fund)								
5	2x40MVA, 220/33kV Gas Insulated Sub-Station (GIS) at Godisahi along with associated line	68.40	255.93	25	17.57	5.69	100% Government grant (under SCRIPS scheme)		Viable
6	220kV D/C line on D/C tower from 400/220kV GSS at Pandiabil (PGCIL) to 220/132/33 kV GSS at Pratapsasan (OPTCL)	26.76	271.54	35	31.79	3.15	100% Government grant (under DRPS+Scheme)		Viable
7	2x20MVA, 132/33kV Grid Sub-station at Rajnagar along with associated line (under JICA fund)	48.17	24.19	25	8.90	11.24	(7.90)	4.52	Not viable
8	2X20MVA, 132/33kV Grid Sub-Station at Thuapali along with associated line (under JICA fund)	35.10	34.30	25	11.48	8.71	(1.74)	8.20	Not viable
9	2x40 MVA, 132/33kV Gas Insulated Sub-Station (GIS) at Mancheswar-B along with associated line (UG cabling)	104.77	128.96	25	7.52	13.29	100% Government grant (under SCRIPS scheme)		Viable
10	2X40MVA, 132/33kV Gas Insulated Sub-Station (GIS) at Unit-8 along with associated line (UG cabling)	99.64	128.29	25	7.75	12.90	100% Government grant (under SCRIPS scheme)		Viable
11	132kV S/C Line on D/C Tower from 132/33kV Padampur GSS to 132/33 kV Nuapada GSS along with one no. of line bay extension at each end	25.08	39.41	35	6.62	15.10	100% Government grant (under RRCP-1 Scheme)		Viable
12	132kV S/C line on D/C tower from 132/33kV GSS at Podagada to 132/33kV GSS at Pottangi along with one no. of line bay extension at each end.	24.80	21.48	35	5.19	19.27	100% Government grant (under RRCP-1 Scheme)		Viable
13	132kV S/C line on D/C tower from 400/220/132 kV GSS at Kuchei (PGCIL) to 132/33 kV GSS at Bangiriposi along with one no. of line bay extension at each end.	18.74	(15.54)	35	5.48	18.26	(7.94)	(1.52)	Not Viable

- (a) The above table shows that 7 nos. of projects are economically viable and except one non-viable project, all other non-viable projects (6 nos.) are being funded by JICA.
 - (b) OPTCL has started the execution of the projects and even some of the projects have been commissioned prior to approval of the investment proposal by the Commission. This is against the provisions of Licence Condition. However, most of the projects are required for implementation of various development schemes of Govt. of Odisha in larger interest of the society for improvement of socio-economic conditions of the people,
 - (c) The stakeholders including all DISCOMs have agreed for implementation of projects in order to maintain reliable power supply in their area of operation.
13. In view of the above considerations, the Commission is inclined to approve the investment proposal of OPTCL for Rs.705.75 crores for construction of above sub-stations alongwith its associated transmission lines for development of adequate transmission system to facilitate smooth flow of power and to improve voltage profile, reduce transmission system loss and would support industrial & agriculture growth, various development schemes of GoO and ultimately provide reliable and uninterrupted (24x7) power supply to remote areas of the State.
14. Since, the 132 kV transmission line projects of OPTCL linking Kuchei & Bangiriposi (nonviable project) is necessary for stable power supply, reduction in interruption of power supply, improvement in economic condition of rural people of Udala, Bangiriposi & Rairangpur area and to attract new industrial investment, Government of Odisha may consider to provide financial support in form of grant to OPTCL for taking up above unviable projects. Therefore, OPTCL is directed to approach Government of Odisha for allocation of adequate funds for execution of above economically unviable project in order to reduce the financial burden on the consumers since the projects are essential to provide stable electricity supply, and improvement of economic condition of rural people of Udala, Bangiriposi and Rairangpur area and to bring new industrial investment. Further, OPTCL should take the help of the Government to resolve the issues on forest clearance, RoW etc., if any, for timely execution of the projects and to avoid cost & time overrun.
15. 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.

16. The petitioner, OPTCL is directed to avoid execution of transmission project in future without prior approval of investment proposal by the Commission.
17. 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