

**ODISHA ELECTRICITY REGULATORY COMMISSION  
BIDYUT NIYAMAK BHAWAN,  
UNIT – VIII, BHUBANESWAR – 751 012**

\*\*\* \*\*

**Present : Shri S. P Nanda, Chairperson  
Shri S. P. Swain, Member  
Shri A. K. Das, Member**

**Case No.8 of 2013**

**OPTCL**

**..... Petitioner**

**Vrs.**

**CEO CESU, M.D., NESCO, WESCO, SOUTHCO**

**..... Respondent**

**In the matter of: Investment proposal for setting up of substations at Pratapsasan, Chendipada, Maneswar and transmission line from Cuttack to Pratapsasan, Kuchei to Jaleswar & Baripada, Jayanagar to Sunabeda, Bhadrak to Anandpur alongwith capacity up-gradation of Mendhasal 400 kV s/s.**

**For the Petitioner: Shri. S. K. Hota Sr. G.M (TP&C) & Shri L. R. Das AGM(TP&C), OPTCL.**

**For the Respondent: Shri. P. S. Sahu, G.M., OPTCL, Shri B.N. Nayak, D.G.M., OPTCL, Shri S. K. Sahoo, Sr. G.M. (T), CESU, Smt. Niharika Pattnaik, ALO Govt. Of Odisha, and Shri Niladri Khadanga DM (RA) CSO, Bhubaneswar.**

**Date of hearing: 02.05.2014**

**Date of Order:04.06.2014**

**ORDER**

1. OPTCL, the petitioner has submitted an application for approval for setting up of substations at Pratapsasan, Chendipada, Maneswar and line from Cuttack to Pratapsasan, Kuchei to Jaleswar & Baripada, Jayanagar to Sunabeda, Bhadrak to Anandpur alongwith capacity up-gradation of Mendhasal 400 kV s/s. As per License Condition 10 read with Condition 23.1 of OPTCL, the petitioner is required to take approval of the Commission if the proposed investment is Rs.10.00 Cr. or beyond that level. The present investment proposal exceeds the said limit. Therefore, as per the License Condition, the Commission is to be satisfied about need of such investment and is also required to examine the economic, technical and environmental issues involved in such investment.

2. The details of investments are as follows:

- (a) OPTCL has proposed to add 1x315 MVA power transformer in the existing 400/200 KV sub-station at Mendhasal in the Khurda District with an estimated cost of 22.35 Cr. The funding for the same shall be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that the existing 2 nos of 315 MVA transformers commissioned at Mendhasal are feeding to the consumers of Bhubaneswar and its surrounding areas. The present load in Bhubaneswar City is around 400 MW and will further increase due to faster developments in its peripheral areas. Considering the future requirement and reliability, OPTCL proposed to add one more 315 MVA transformer in its Mendhasal 400/220/132 KV s/s to augment the existing capacity. With this project, OPTCL has projected the reduction of average loss to the extent of 4.54 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.338.73 lakh per annum in monetary term. Expecting 60% utilization of 1x315 MVA capacity and with 3.8% transmission loss shall make available additional 10034.17 Lakh units (LU), which shall cause OPTCL to earn additional annual revenue of Rs 2508.54 lakhs at the wheeling cost of 25 paise/unit at present. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.2847.30 lakhs. The average rate of return has thus been found to be 127.337%.
- (b) OPTCL has proposed construction of new 2X100 MVA, 2X40 MVA 220/132/33 kV S/S at Pratapsasan (Khurda District) along with associated 10 Kms. of 220 kV D/C LILO line from the 220 kV Cuttack-Uttara (PGCIL) and 132 KV line from Phulnakhara to Pratapsasan with an estimated cost of Rs.69.35 crores with funding which can be from Govt. grant/own resources and from financial institutions. Giving justification of the proposal, OPTCL submitted that at present, Pratapsasan and its adjoining areas are getting power supply at 33 KV level from existing 132/33 KV s/s at Kesura with a line length of 15 Kms having peak load of 17 MW. Since, Kesura grid has already reached a peak load of around 40 MW and further increase of load is expected due to rapid urbanization, the proposed Pratapsasan s/s is highly essential. Further, for power system reliability and to eradicate low voltage problem in

Bhubaneswar & its command area, a 220 KV Ring can be established by connecting the Pratapsasan s/s with ongoing 220 KV s/s at Cuttack and proposed 400/220 KV s/s of PGCIL at Uttara. In addition to the 220 KV & 132 KV system improvements, it will also feed power at 33 KV level to the areas like Bhingarpur, Balakati, Adaspur, Balipatna & Uttara under CESU. With this project, OPTCL has projected the reduction of average loss to the extent of 2.01MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.149.97 lakh per annum in monetary term. Expecting 60% utilization of 2x100 MVA capacity at the proposed grid S/S and with 3.8% transmission loss shall make available additional 6370.90 LU, which shall cause OPTCL to earn additional annual revenue of Rs.1592.73 lakhs at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.1742.70 lakhs. The average rate of annual return has thus been found to be 25.13%.

- (c) OPTCL has proposed construction of new 2X100 MVA, 3X40 MVA 220/132/33 kV S/S at Chendipada (Angul District) with associated 18.32 Kms 220 KV LILO line from existing Rengali-TTPS line with an estimated cost of Rs.64.70 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that now Chendipada area is getting power of around 13 MW from existing Boinda s/s through 33 KV Jarapada feeder with line length of 38 Kms. Various mining loads are experiencing low voltage due to their location at the tail end of the supply. OPTCL submitted that around 200 MW of mining load is anticipated in the mineral rich area of Chendipada in near future and also the mining corridor including a special railway line is in the proposal stage for point to point transportation. The existing s/s at Boinda cannot be able to meet the future demand as well as the additional distribution load of areas like Jarapada, chendipada, Koshalal, Tikarpada and its peripheral areas. With this project, OPTCL has projected the reduction of average loss to the extent of 1.22 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.90.88 lakh per annum in monetary term. Expecting 60% utilization of 2x100 MVA capacity at the proposed grid S/S and with 3.8% transmission loss shall make available additional 6370.90 LU, which shall cause OPTCL to earn additional annual revenue of Rs 1592.735 lakhs per annum at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from

this investment to the tune of Rs.1683.60 lakhs. The average rate of annual return has thus been found to be 26.02%.

- (d) OPTCL has proposed construction of 32.26 Kms, 220 KV D/C line from Cuttack to Pratapsasan alongwith 2 nos of 220 KV feeder bay at Cuttack with PLCC with an estimated cost of Rs. 39.81 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that 132 KV substations in Bhubaneswar and its nearby areas need back-up 220 KV interconnectivity. In order to establish 220 KV Ring system and to meet the present peak demand of around 400 MW in Bhubaneswar and also to meet future demand growth, 220 KV D/C line from the proposed 220 KV s/s at Cuttack to 220 KV s/s at Pratapsasan is required. OPTCL submitted that this will help in minimizing power interruption, improvement of the voltage profile, meeting the future demand growth and minimizing the loss. With this project, OPTCL has projected the reduction of average loss to the extent of 0.71MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.52.97 lakh per annum in monetary term. Expecting additional power available for sale considering load growth of around 100 MW with 60% utilisation and with 3.8% transmission loss shall make available additional 3539.39 LU, which shall cause OPTCL to earn additional annual revenue of Rs.884.85 lakhs at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs. 937.82 lakhs per annum. The average rate of annual return has thus been found to be 23.56%.
- (e) OPTCL has proposed construction of new 2X20 MVA, 132/33 kV S/S at Maneswar (Sambalpur District) along with associated 3 Kms 132 KV LILO line from existing 132 KV Katapalli to Rairakhole line with an estimated cost of Rs.19.47 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that Maneswar area, at present, is getting power supply at 33 KV from 132/33 KV s/s at Sambalpur through Putibandh feeder. Out of total 70 MW peak load on Sambalpur Grid, Puttibandh feeder is drawing around 24 MW. The consumers of Chiplitima area are getting power supply directly from Chiplitima switchyard as there is no independent distribution network of consumers of Chiplitima area. The faults in the distribution system is transmitted

directly to Generators causing frequent outages. Further, the independent expert team of OERC have suggested for establishment of a s/s at Maneswar to eradicate the low voltage problem in that area with concomitant reduction of loading of Sambalpur sub-station. With this project, OPTCL has projected the reduction of average loss to the extent of 0.40 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.29.84 lakh in monetary term per annum. Expecting 60% utilization of 2x20 MVA capacity at the proposed grid S/S and with 3.8% transmission loss shall make available additional 1274.18 LU, which shall cause OPTCL to earn additional annual revenue of Rs 318.55 lakhs at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.348.39 lakhs. The average rate of annual return has thus been found to be 17.89%.

- (f) OPTCL has proposed construction of 79 Kms 132 kV D/C line on D/C Tower from 400/220/132 KV s/s Kuchei (PGCIL) to 132/33 kV Jaleswar Grid s/s alongwith 4 nos of 132 KV feeder bay at Kuchei & Jaleswar grid with an estimated cost of Rs.34.69 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that, during peak hours, the load on 132 KV S/C Balasore-Jaleswar line is around 60 to 70 MW and is further increasing during the time of Rabi Crops. Due to this most of the time, low voltage is being experienced in the areas fed through Jaleswar and Basta grid s/s. OPTCL submitted that for an alternate, quality and stable power supply, the proposed 132 KV D/C line from Kuchei (PGCIL) to Jaleswar grid s/s is required. Also, the proposed 132/33 KV grid s/s at Bhograi will avail power supply from this proposed line by LILO arrangement. With this project, OPTCL has projected the reduction of average loss to the extent of 1.35 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.100.72 lakh in monetary term per annum. Expecting additional 35 MW load growth with 60% utilization and with 3.8% transmission loss shall make available additional 1769.70 LU, which shall cause OPTCL to earn additional annual revenue of Rs.442.42 lakhs per annum at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs. 543.15 lakhs per annum. The average rate of annual return has thus been found to be 15.66%.

- (g) OPTCL has proposed construction of 28 Kms 132 kV S/C line on D/C tower from 400/220/132 KV grid s/s at Kuchei (PGCIL) to 132/33 KV s/s Baripada along with 4 nos of 132 KV bays at Kuchei & Baripada grid with an estimated cost of Rs.13.81 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that Baripada grid s/s is availing power supply through one no of 132 KV S/C line from 400/220/132 KV Kuchei (PGCIL) S/C and another 132 KV S/C line from 220/132/33 KV Balasore grid s/s. Due to overloading of Auto Transformer at Balasore, sometimes Balasore grid s/s is not capable to feed the total load of Baripada. Further, the load on 132 KV Kuchei (PGCIL) – Baripada line is almost to the tune of 70 MW during peak hours. As the grid s/s is feeding to a large command area & border areas of Jharkhand & West Bengal including some of the backward areas where Govt. is implementing RGGVY, BGJY schemes, the construction of D/C line on D/C tower from Kuchei (PGCIL) grid s/s to Baripada s/s is required. OPTCL has projected the reduction of average annual loss to the extent of 0.35 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.26.11 lakh in monetary term. Expectation of additional 30 MW of load growth with 60% utilization and with 3.8% transmission loss shall make available additional 1516.88 LU, which shall cause OPTCL to earn additional annual revenue of Rs.379.22 lakhs at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.405.33 lakhs per annum. The average rate of annual return has thus been found to be 29.33%.
- (h) OPTCL has proposed construction of 39 Kms 132 kV D/C line on D/C tower from 220/132 kV grid s/s at Jayanagar to 132/33 kV grid s/s at Sunabeda along with 2 nos of 132 kV feeder bay at Jayanagar & Sunabeda with an estimated cost of Rs.26.83 crore with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that at present, Sunabeda grid is getting power supply through one 132 KV S/C line on S/C tower from existing 220 KV Jayanagar grid s/s. Total load on the line is around 50 MW, which includes a load of 13 MW by HAL. Sunabeda s/s remains without power during the time of breakdown of the existing S/C line. In order to maintain uninterrupted power supply to HAL & around Sunabeda area and to meet contingency conditions, OPTCL proposed to construct S/C line on D/C tower from Jaynagar to Sunabeda. With this project, OPTCL projected

reduction of average loss to the extent of 0.93 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.69.39 lakhs in monetary term per annum. Expecting additional 30 MW of load growth with 60% utilisation and with 3.8% transmission loss shall make available additional 1061.82 LU, which shall cause OPTCL to earn additional revenue of Rs.265.45 lakhs per annum at the wheeling cost of 25 paise per unit. Thus, OPTCL expects, total annual revenue from this investment to the tune of Rs.334.84 lakh per annum. The average rate of annual return has thus been found to be 12.48%.

- (i) OPTCL has proposed construction of 45.856 Kms of 132 KV S/C line from on D/C tower from 220 /132 KV Bhadrak s/s to Anandpur s/s alongwith 2 nos of 132 KV feeder bay extension at Bhadrak & Anandpur with an estimated cost of Rs.19.94 crores with funding which can be arranged from Govt. grant/own resources and from suitable financial institutions. OPTCL submitted that now 132 KV Anandpur s/s is having a load of 20 MW with 132 KV connectivity from Jajpur Road grid s/s. In future, there is a proposal of establishing one more 132 KV s/s at Ghatagaon. Since, both the s/s will be radially connected to Jajpur Road, to meet contingency condition construction of 132 KV S/C line from Bhadrak 220/132/33 KV grid s/s to Anandpur 132/33 KV grid s/s is required. OPTCL has projected the reduction of average loss to the extent of 1.70 MW, which with consideration of Rs.2.17/ Kwh, comes to Rs.126.84 lakhs in monetary term per annum. Expecting additional 25 MW of load growth of Anandpur and Ghatagaon area with 60% utilization and with 3.8% transmission loss shall make available additional 884.85 LU, which shall cause OPTCL to earn additional revenue of Rs.221.21 lakhs per annum at the wheeling cost of 25 paise per unit. Thus, OPTCL expects total annual revenue from this investment to the tune of Rs.348.05 lakh per annum. The average rate of annual return has thus been found to be 17.45%.
3. Therefore, the total investment on the above projects has been estimated to be Rs. 310.95 cr. As stated by OPTCL, environment and forest clearance are not required for these projects. OPTCL has also submitted the Environmental Impact Assessment (EIA) Study for these projects. OPTCL stated that the procurement of materials and services shall be taken up through National Competitive Bidding. The entire work for these proposed projects shall be

treated as single packages separately and the award would be made on Turn-key basis for the individual proposals. The present status of the projects as given by OPTCL is as follows:

<b>Name of the Project</b>	<b>Present status</b>	<b>Expected Year completion</b>
1x315 MVA power transformer in Mendhasal S/S.	Tender floated	FY 2014-15
220/132/33 KV S/S at Pratapsasan	On going	FY 2016-17
220/132/33 KV S/S Chendipada	Administrative/in-principle approval accorded	FY 2017-18
220 KV D/C line from Cuttack to Pratapsasan	On going	FY 2016-17
132/33 KV S/S at Maneswar	Tender floated	FY 2017-18
132 KV D/C line from Kuchei to Jaleswar	On going	FY 2016-17
132 KV S/C line from Kuchei to Baripada	Administrative/in-principle approval accorded	FY 2015-16
132 KV D/C line from Jayanagar to Sunabeda	On going	FY 2016-17
132 KV S/C line from Bhadrak to Anandpur	Tender floated	FY 2017-18

4. In compliance to the Interim Order dt.05.05.14 of the Commission, OPTCL has submitted that it will avail loan for 70% of the project cost and balance 30% from internal accruals. OPTCL, for the projects mentioned at (a), (b) & (f) has already proposed for loan financing by Canara Bank. OPTCL further submitted that the projects are envisaged mainly for the purpose of loss reduction, improving voltage level and reduction of overloading.
5. The respondents in this case all the four DISCOMs of the state as well as representatives of Govt. of Odisha supported the views and submission of OPTCL and prayed for speedy execution of the projects. The Commission studied the technical and commercial viability of the projects as submitted by OPTCL. These are summarized below:

<b>Sl. No</b>	<b>Name of the Project</b>	<b>Investment Rs. Cr.</b>	<b>Period of Benefit</b>	<b>Avg Return(%)</b>	<b>Year of Breakeven</b>	<b>NPV Calculated</b>	<b>Proposed IRR(%)</b>	<b>Viability</b>
1	1x315 MVA Power Tr. in Mendhasal S/S.	22.35	25	127.38	1 <sup>st</sup> year	19,251.79	15	Viable
2	220/132/33 KV S/S at Pratapsasan	69.35	25	25.13	1 <sup>st</sup> year	3766.34	97	Viable
3	220/132/33 KV S/S Chendipada	64.70	25	26.02	1 <sup>st</sup> Year	3798.18	10.57	Viable
4	220 KV D/C line from Cuttack to Pratapsasan	39.81	25	23.56	2nd year	1986.42	8.95	Viable

Sl. No	Name of the Project	Investment Rs. Cr.	Period of Benefit	Avg Return(%)	Year of Breakeven	NPV Calculated	Proposed IRR(%)	Viability
5	132/33 KV S/S at Maneswar	19.47	25	17.89	5 <sup>th</sup> year	335.03	6.35	Viable
6	132 KV D/C line from Kuchei to Jaleswar	34.69	25	15.66	9 <sup>th</sup> year	-572.86		Negative and non-viable
7	132 KV S/C line from Kuchei to Baripada	13.81	25	29.33	1 <sup>st</sup> Year	1229.55	13.04	Viable
8	132 KV D/C line from Jayanagar to Sunabeda	26.83	25	12.48	11 <sup>th</sup> year	-1106.93		Negative and non-viable
9	132 KV S/C line from Bhadrak to Anandpur	19.94	25	17.45	9 <sup>th</sup> Year	-704.35		Negative and non-viable

6. The above table shows that apart from 132 KV DC line from Kuchei to Jaleswar, 132 KV D/C line from Jayanagar to Sunabeda and 132 KV S/C line from Bhadrak to Anandpur, all other projects are viable. Since, most of the projects are required in the larger interest of the society and the stake holders have given their consent to it, the Commission give in principle approval of the projects except projects specified in Sl. No. 6, 8 & 9 in the above table as per the prayers made by OPTCL with following terms and conditions.
7. OPTCL should ensure that the projects are completed in time. In case the projects go beyond their schedule as given by them the Commission may not allow the cost overrun of the same in the ARR of the Petitioner. OPTCL is also directed to delegate adequate technical, administrative and financial power to those officers entrusted with timely completion of the proposed projects. OPTCL is required to submit a report on financial closure and progress of the execution of the above projects to the DISCOMs with a copy to the Commission so that adequate downstream infrastructure can be built up for evacuation of power by DISCOMs.
8. With the above directions, the case is disposed of.

**Sd/-**  
**(A. K. Das)**  
**Member**

**Sd/-**  
**(S. P. Swain)**  
**Member**

**Sd/-**  
**(S. P. Nanda)**  
**Chairperson**