

**ORISSA ELECTRICITY REGULATORY COMMISSION**  
**BIDYUT NIYAMAK BHAWAN**  
**UNIT-VIII, BHUBANESWAR - 751 012**  
\*\*\*\*\*

**Present :**       **Shri B.K.Das, Chairperson**  
                              **Shri K.C. Badu, Member**  
                              **Shri B.K.Misra, Member**

**Case No. 51 of 2007**

**Date of argument :**       **26.11.2007, 15.01.2008, 24.05.2008 , 30.05.2009, 19.06.2009**  
  **& 15.07.2009**

**Date of order :**       **19.07.2010**

**In the matter of :**       Approval of Business Plan of Orissa Power Transmission Corporation Limited (OPTCL) for the period from 2008-09 to 2012-13

**And**

**In the matter of :**       Orissa Power Transmission Corporation Limited (OPTCL),  
  Janapath, Bhubaneswar-751022                               **Petitioner**

- Vrs. -

- (1) Government of Orissa, Deptt. of Energy, Bhubaneswar
- (2) GRIDCO Ltd. Janpath, Bhubaneswar
- (3) Western Electricity Supply Company of Orissa Ltd. (WESCO),  
At/P.O. Burla, Dist. Sambalpur
- (4) Southern Electricity Supply Company of Orissa Ltd. (SOUTHCO)  
At/P.O. Courtpetta, Berhampur, Dist. Ganjam
- (5) North-Eastern Electricity Supply Company of Orissa Ltd. (NESCO),  
At/P.O. Januganj, Dist. Balasore
- (6) Central Electricity Supply Utility of Orissa Ltd. (CESU),  
2<sup>nd</sup> Floor, IDCO Towers, Bhubaneswar, Dist. Khurda

.....**Respondents**

For the petitioner	:	Mr. U.K.Panda, Director (Finance) I/C Mr. K.K.Nath, Director (Engg.) & Others
For the respondent No.1	:	Mr. S.C.Mohanty, Law Officer, G.o.O
For the respondent No.2	:	Mr. A.C.Malllick, Director (Com.) & Others
For the respondent No.3	:	Mr. P.K.Pradhan, CEO & Others
For the respondent No.4	:	Mr. A.K.Bhora, CEO & Others
For the respondent No.5	:	Mr. S.K.Singh, CEO & Others
For the respondent No.6	:	Mr. S.K. Dasgupta, CEO & Others

## **ORDER**

### **BACKGROUND**

1. M/s. Orissa Power Transmission Corporation Limited, Bhubaneswar (for short OPTCL) is a wholly owned Govt. Company registered on 29th March, 2004 under the Companies Act, 1956 carrying on business on transmission of electricity within the State of Orissa. After the enactment of Electricity Act, 2003 (hereinafter referred to as the Act) GRIDCO which was the holder of Transmission and Bulk supply license under the Orissa Electricity Reforms Act, 1995 could no longer carry on both supply and transmission businesses by virtue of 1st proviso of section 39 of the said Act. In pursuance of the Transfer Scheme entitled 'Orissa Electricity Reform (Transfer of Transmission and Related Activities) Scheme, 2005' notified by the State Govt. under Section 39, 131, 133 and 134 of the Electricity Act, 2003 read with Schedule 23 and 24 of the Orissa Electricity Reform Act, 1995, the erstwhile transmission business of GRIDCO with all the assets and liabilities of such business was transferred to and vested with OPTCL with effect from 1.4.2005. By Clause 10 of the Govt. Notification No.6892 dated. 09.06.2005, the OPTCL was notified as the State Transmission Utility (STU) under Section 39 of the Act with effect from 01.04.2005 (i.e., the date on which the said notification came into force). By virtue of the 2nd Proviso to Section 14 of the Act, OPTCL has been a deemed Transmission Licensee. OPTCL is now governed by License Conditions set forth in OERC (Conditions of Business) Regulations, 2004, issued under Section 16 of the Act, as modified by Commission's order dated 27th October, 2006.
2. In line with the Long Term Tariff Strategy passed by OERC in Case No. 8/03 vide Order dated 18.06.03 followed by Second Order on dtd. 12.11.03, enunciating the guiding principles for determination of Annual Revenue Requirement, the first Control Period under the Multi-Year Tariff framework of the OERC ended in March 2008. Following this, the Commission, vide its letter no. DD (FA)-297/07/1036 dated 26.06.07, had directed to all the licensees, including the transmission licensee (hereby also referred to as OPTCL) to submit their Business Plans, along with their suggestions on the design of the next Control Period.

3. In compliance with Section 3 of the Act, GoI has notified the National Electricity Policy and National Tariff Policy on 12.02.05 and 06.01.06 respectively. GoI has also notified the Rural Electrification Policy on 30.08.06 under Section 4 & 5 of the Act. The Commission had directed the DISCOMs and OPTCL to prepare the Business Plans for the next Control Period starting FY 2008-09 targeting the objective set out in the said policy guidelines. The Commission had also directed that the said Business Plans should also be in conformity with National Electricity Plan notified by Central Electricity Authority.
4. To attain the aims and objectives of National Electricity Policy as indicated in Para 2 of the Policy, the Commission had directed the DISCOMs and OPTCL that the Business Plan needs to cover the following major heads:
  - (a) Investment: The phases of investment to improve standards of reliability, quality of supply as well as reduction in loss levels shall have to be specified
    - (i) Funding requirements for system improvement
    - (ii) Capex requirements for revamping, renovation, maintenance and modernization
  - (b) Working out the requirements of strengthening the transmission network for massive Rural Electrification under RGGVY, BGJY, GGY & Biju KBK Plan.
  - (c) Commitment for introduction of IT interfaces for facilitation of network information, development of SCADA etc.
  - (d) Ways adopted for encouragement of competition
5. In addition to the above, the Commission had asked OPTCL for views on the duration of the Control Period and details of the Controllable and Un-Controllable items in the ARR.
6. In view of the above, OPTCL had prepared its Business Plan for the next 5 years i.e. from the year FY 2008-09 to FY 2012-13 and submitted before the Commission on dt.16.10.2007. After hearing the matter at length, the Commission at Para 10 of the interim order dt 24.05.2008 had directed OPTCL to submit the revised Business Plan taking into consideration the latest developments in power sector. Further, the Commission vide letter dt.06.05.2009 had also directed OPTCL to incorporate the following items in the revised Business Plan and to submit before the Commission on or before 20.05.2009.

- (a) Capex Plan incorporating the list of new projects in terms of priority year-wise along with source of funding including rate of interest and repayment period.
  - (b) The Transmission Planning Study Report for the 11<sup>th</sup> plan period submitted by PRDC
  - (c) Demand Forecast of the distribution licensees and the reconciled figures of OPTCL
  - (d) Transmission Plan for evacuation of power from IPPs and other new Generating Stations.
  - (e) Master Maintenance Plan and Master Augmentation Plan spelling out in details sub-station-wise requirement for the 5-year Business Plan.
7. Accordingly, OPTCL had submitted the revised Business Plan before the Commission on 09.06.2009. In the revised Business Plan, the provisional figures for financial year 2008-09 have been taken into account while preparing the projected financial and other statements. OPTCL had prepared the Business Plan with an objective of improving the long term financial viability of the power sector in Orissa and also with a view to fulfilling the objectives of National Electricity Policy and Rural Electrification Policy to supply quality and reliable power to all by 2012.

## **LEGAL FRAMEWORK**

8. Functions of STU under the Electricity Act, 2003

The Electricity Act 2003, notified on 10<sup>th</sup> June 2003, provides the basic framework for encouraging reforms and introducing competition in the power sector. The functions of State Transmission Utility as provided in the Act, are being discharged by OPTCL for the state of Orissa. OPTCL undertakes the following functions:

- (a) Transmission of electricity through EHT Intra-State transmission system.
- (b) Discharge of all functions of planning and co-ordination relating to intra-state transmission system with PGCIL, NTPC, and other generating companies supplying power, Regional Power Committee, Authorities, Distribution Licensees namely CESU, NESCO, WESCO, SOUTHCO.
- (c) Supply of emergency power to CGPs and wheeling of CGPs' power to their industries located elsewhere, inside the state.

- (d) Conveyance of power incidental to Inter-State transmission and Inter-State trading.
- (e) Ensures development of an efficient, coordinated and economical system of Intra-State transmission network for smooth flow of electricity from generating stations to the load centres

### **Separation of SLDC**

9. Govt. of Orissa, Department of Energy through Orissa Electricity Reforms (Transfer of Transmission and Related Activities) Scheme, 2005 effective from 01.04.2005 had notified Orissa Power Transmission Corporation Limited (OPTCL) as the State Transmission Utility (STU) and had vested the State Load Despatch functions with OPTCL - the STU till further orders of the State Govt. As per Govt. of Orissa Notification dtd 09.06.2005, OPTCL had been notified as the STU to operate State Load Despatch Centre (SLDC) as per Sec 31(2) of the Act.
10. As per provisions of the Electricity Act, 2003, National Electricity Policy, Indian Electricity Grid Code (IEGC), Orissa Grid Code (OGC), Govt. of Orissa Transfer Scheme 2005, Intra-State Open Access and Intra-ABT Regulation of OERC, Inter-State Open Access Regulations and order for payment of Unified Load Despatch and Communication Scheme (ULDCS) charges by CERC specify that State Load Despatch Centre (SLDC) shall have to function as under:-
  - (a) That SLDC is to function as an Independent System Operator (ISO).
  - (b) That SLDC is to be equipped with state-of-the art communication and data acquisition capability to play the pivotal role of Nodal Agency for monitoring grid operations as well as all Intra-State non-discriminatory Open Access Transactions.
  - (c) That SLDC is to be operated by a Govt. Company or any authority or corporation as may be notified by the State Govt.
  - (d) That SLDC is to establish an Energy Accounting & Settlement System Centre (EASSC) to prepare and issue the monthly State Energy Account for billing and settlement of 'Capacity Charge' and 'Energy Charge' and weekly State 'UI Account' and State Reactive Energy Account.
  - (e) That SLDC may levy and collect such fee and charges from the generating companies and licensees engaged in Intra-State transmission of electricity as

may be specified by the State Commission under Sub-Section 3 of Section 32 of the Act.

- (f) That SLDC may levy and collect scheduling and operation charges from each short-term customer and generator availing short-term open access for each transactions towards these charges as specified by the State Commission as per Regulation - 4 (4) of Orissa Electricity Regulatory Commission (Determination of Open Access Charges) Regulations, 2006 which shall be in addition to the fees and charges specified by the Commission under Sub-Section 3 of Section 32 of the Act.

11. OERC (Terms and Conditions for Open Access) Regulation, 2005 stipulates that the consumers requiring power exceeding 1MW shall be provided with non-discriminatory Open Access to the distribution and/or Intra-State Transmission System from April 1, 2008 onwards. OERC (Intra-State ABT) Regulation, 2007 stipulates that scheduling and despatch are to be made on 15-minute time slot by SLDC. Both the aforesaid Regulations for Intra-State Open Access and Intra-State ABT have empowered SLDC to play a pivotal role as the Nodal Agency for all Intra-State Open Access transactions in post Intra-State ABT regime.
12. Based on the Road Map issued by the Commission vide Lr. No. 1313 dtd. 04.08.2007 as well as based on the recommendations of Mr. Gireesh B. Pradhan Committee of Ministry of Power, Govt. of India for ring-fencing of SLDC to ensure its functional autonomy as well to play the role of Independent System Operator, the Commission vide its order dtd. 20.03.2009 approved the ARR for Rs.9.66 Crore for FY 2009-10 for SLDC to meet the Operating Expenses of Rs.7.66 Crore as well to establish Energy Accounting Settlement System Centre at an expense of Rs.2 Crore. The Commission vide its order 20.03.2010 has approved the Annual Charges for SLDC Operations at Rs.776.85 lakh/annum and Rs.64.74 lakh/month which are to be recovered from the users who use the Intra-State Transmission Network or the associated facilities and services of SLDC during the ensuing year.

**Filing of the Licensee:**

13. OPTCL had requested the Commission to consider a four year control period for OPTCL from FY 2009-10 to FY 2012-13. The projection and trajectory have been made by OPTCL for four year period based on the audited accounts of FY 2007-08 and the provisional figures of FY 2008-09.

14. OPTCL owns Extra High Voltage Transmission system and operates about 10521.973 Ckt kms of transmission lines at 400 kV, 220 kV, 132 kV levels and possesses about 7510 MVA transformation capacity at 87 nos. of EHT Substations as on 01.04.2009.
15. The details of Transmission Lines and Substations are given in table below:

**Table - 1**  
**Transmission Lines and Sub-Stations**

Particulars	Unit of Measurement	As on 01.04.2008	As on 01.04.2009
440kV Line	Ckt. Kms.	442.703	442.703
220kV Line	Ckt. Kms.	4,936.525	5,165.375
132kV Line	Ckt. Kms.	4,879.877	4,913.895
400/220/132kV S/S	Nos.	1	1
220/132/33kV S/S	Nos.	12	12
220 kV S/S	Nos.	2	2
220/132 kV S/S	Nos.	1	1
220/33kV SS	Nos.	4	4
132/33kV SS	Nos.	49	49
132/33/25 kV S/S	Nos.	1	1
132/33/11 kV S/S	Nos.	4	4
132/11 kV S/S	Nos.	2	2
132kV Switching Stations (OPTCL)	Nos.	2	2
132kV LILO Switching Stations of Industries		8	9

16. OPTCL had submitted the following items to be considered as controllable and uncontrollable for the transmission business:

**Table - 2**

Items	Controllable	Uncontrollable
Demand handled by the transmission system	-	Uncontrollable
O&M Expenses	Controllable	-
RoE	Controllable	-
Depreciation	Controllable	-
Taxes on Income	-	Uncontrollable
Non-tariff Income	Controllable	-

17. OPTCL submitted that the gains and losses on account of controllable items should be reviewed and appropriate adjustments may have to be approved for inclusion, wherever required with a portion of the gain may have to be allowed to be retained by the licensee for exceeding the target for meeting the cost for the system improvement and improvement of efficiency parameters.

### Forecast for DISCOMs' Requirements

18. The growth in demand from DISCOMs has been estimated considering the increase in demand due to implementation of RE scheme like RGGVY Scheme, BGJY Scheme etc. growth in large industry and addition of new heavy industries. In this regard a number of meetings were conducted by officials of OERC with the representatives of OPTCL & DISCOMs during December, 2008. The summary of energy requirements of DISCOMs as finalised is shown in the table given below:

**Table - 3**  
**DISCOMs' Energy Requirement (MU)**

<b>Distribution Company</b>	<b>FY 08-09 (Actual)</b>	<b>FY 09-10 (Actual)</b>	<b>FY 10-11 (Appr. In ARR)</b>	<b>FY 11-12 (Projected)</b>	<b>FY 12-13 (Projected)</b>
<b>CESU</b>	5672.61	6232.67	6420.00	7,722	7,868
<b>NESCO</b>	4544.98	4705.25	5122.00	5,465	5,770
<b>WESCO</b>	6378.44	6261.56	6244.00	6,720	6,800
<b>SOUTHCO</b>	2175.78	2285.33	2368.00	2,848	3,083
<b>Total</b>	<b>18771.81</b>	<b>19484.81</b>	<b>20154.00</b>	<b>22,755</b>	<b>23,521</b>

19. The Commission in its Tariff Order for DISCOMs for 2009-10 had approved the energy requirement of the State at 18,921 MU as against the DISCOMs has drawn 19484.81 MU for the said year. So, the demand forecast made as above may undergo a change depending on the actual distribution loss and load growth.
20. The projection of demand for the purpose of determination of transmission charges includes the existing state generation capacity (net of auxiliary consumption) as well as the State's share from Central Generation Stations which is about 4,084 MW as on 01.04.2009, corresponding to an ex-bus energy availability of 18,537.3 MU.
21. **Other Long Term Open Access Consumers:** Projected Demand of emergency power & wheeling of power from NALCO and ICCL for FY 2009 to FY-2013 has been taken as approved in ARR for FY 2008-09.
22. **New Generation Capacity Addition:** Govt. of Orissa has already signed MoUs with IPPs/Private Investors for setting up 21 (twenty-one) coal based power plants. During June and September 2006, Govt. of Orissa had signed MoUs with 13 IPPs and GRIDCO had signed the PPAs with all the 13 IPPs. Subsequently GoO in February 07, 2009 had signed MoUs with 8 more IPPs. The details are as under:-



**Table - 4****Details of IPPs for which PPAs have been executed by GRIDCO in September, 2006**

<b>Sl. No.</b>	<b>Proposed IPPs</b>	<b>Installed Capacity (MW)</b>
1	Bhushan Thermal Power Project	2000 (2 x 150 + 1700)
2	Sterlite Thermal Power Project	2400 (4 x 600)
3	VISA Thermal Power Project	1000
4	Monnet Thermal Power Project	1005 (3 x 335)
5	GMR Thermal Power Project	1050 (3 x 350)
6	ESSAR Thermal Power Project	1200 (2 x 600)
7	TATA Thermal Power Project	1000
8	Malaxmi Mega Thermal Power Project (Navbharat)	2250 (3x350 + 2 x 600)
9	LANCO Babandh Thermal Power Project	1320 (2 x 660)
10	KVK Nilachal Thermal Power Project	1200 (4 x 300)
11	Mahanadhi Aban Thermal Power Project	1030 (2 x 515)
12	CESC Thermal Power Project	1000 (2 x 500)
13	Jindal India Thermal Power Project	1200 2x600
	<b>TOTAL</b>	<b>17,655 MW</b>

**Table - 5****Details of 8 nos. new IPPs for which MoUs have been signed by the State Govt. on 07.02.2009**

<b>Sl. No.</b>	<b>Name of New IPPs</b>	<b>Capacity (MW)</b>	<b>Location</b>
1.	M/s. Aarati Steel Ltd.	500	Ghantikhal, Cuttack
2.	M/s. Astaranga Power Co. Ltd.	2640	Astaranga, Puri
3.	M/s. Chambal Infrastructure & Ventures Ltd.	1200	Siaria, Dhenkanal
4.	M/s. Ind-Barath Energy (Utkal) Ltd.	700	Sahajbahal, Jharsuguda
5.	M/s. Jindal Steel & Power Ltd.	1320	Boinda, Angul
6.	M/s. Kalinga Energy & Power Ltd.	1000	Babuchakuli, Sambalpur
7.	M/s. Sahara India Power Corporation Ltd.	1320	Turla, Ratankhandi, Bolangir
8.	M/s. Visaka Thermal Power Pvt. Ltd.	1100	Bhandari Pokhari, Bhadrak
	<b>TOTAL</b>	<b>9780 MW</b>	

23. All the future IPPs are required to be set up in terms of the State Policy on Thermal Power Generation in Orissa notified by the State Govt. on 8th August 2008 and the entitlement of the State from such IPPs shall be as per Clause 3 of the said Policy. GRIDCO has already taken up the matter with CEA & PGCIL giving a proposal for development of STU Pooling centers connected to a cluster of IPPs. The STU Pooling Centers will be connected in turn with 765/400 KV CTU Pooling Stations at Angul, Dhenkanal & Jharsuguda. The proposal is yet to be finalized and crystallized. Pending a decision on the evacuation system, it is envisaged that the existing OPTCL transmission system including commissioning of the new systems covered under the capital expenditure programme given in the Business Plan will handle power generated by the following IPPs during the Business Plan period. The capacity addition proposed in respect of 4 (four) IPPs has been done in consultation with GRIDCO. The proposed capacity addition may undergo a change in case of any delay in commissioning of these projects.

**Table - 6**  
**Details of capacity to be handled with existing capex**

<b>Sl. No.</b>	<b>IPPs</b>	<b>Capacity (MW)</b>	<b>Orissa Share Energy (MU)</b>
1.	M/s. Bhusan Energy (P) Ltd., Angul	300	30% of Installed Capacity
2.	M/s. Sterlite Energy (P) Ltd., Jharsuguda	600	32% of Installed Capacity
3.	M/s. Jindal India Thermal Power Ltd., Talcher	600	32% of Installed Capacity
4.	M/s Ind-Barath Energy (Utkal) Ltd., Jharsuguda	350	12% of the Capacity
	<b>Total</b>	<b>1850 MW</b>	

24. OPTCL has considered the power to be available to the State as per the term of PPA/ MoU. Accordingly, the energy to be handled in the OPTCL system and the revenue estimation given in the Business Plan cover the Orissa share of power generated from the above four IPPs. No revenue has been projected for transmission of power of all other IPPs including the share of power of the above four IPPs which they are entitled to sell outside the State. Correspondingly no investment in upgrading the transmission system or commissioning of new transmission system has been built into the Business Plan. The Business Plan figure will be suitably modified to factor the capital expenditure requirement as and when the project details are received by OPTCL.
25. Further, Govt. of Orissa have signed MoUs on 09.04.2010 and 06.05.2010 with six nos. of IPPs with an installed capacity of 6120 MW where Orissa share will be around 800 MW. The details are given below:

**Table -7**  
**Details of 6 new IPPs for which MoUs have been signed by Govt. of Orissa on 9<sup>th</sup> April and 6<sup>th</sup> May, 2010.**

<b>SL. NO.</b>	<b>NAME OF IPP</b>	<b>LOCATION</b>	<b>INSTALLED CAPACITY (MW)</b>
1.	M/s. BGR Energy System Ltd.	Bhapur, Nayagarh	1,320
2.	M/s. J.R. Power Gen. Pvt. Ltd.	Kukudabahal, Jhinkiadar, Redakol in Sambalpur and Baja, Dhaurpall Kishore Nagar Tahsil of Angul	1,980
3.	M/s. Adhunik Power & Natural Resources Ltd.	Biramaharajpur, Sonapur	1,320
4.	M/s. Maa Durga Thermal Power Company Ltd.	Tangi, Cuttack	60
5.	M/s. Vijaya Power & Power Pvt. Ltd.	Turla, Khamar, Kesinga, Kalahandi	120
6.	M/s. JSL Ltd.	Luni, Dhenkanal	1,320
	<b>TOTAL</b>		<b>6,120</b>

## Loss Reduction

26. Transmission loss is purely a technical loss. OPTCL has limited control over the transmission loss due to several factors. The transmission loss is dependent on the system configuration and power flow requirements at different load centres. In view of the increasing demand for power at an accelerated pace due to ongoing industrialization and massive rural electrification in Orissa and stoppage of trading of surplus power there will be increased flow of power in the OPTCL transmission network contributing to increased transmission losses. The transmission loss reduction target is set taking into account the guiding principles of the National Tariff Policy. However, OPTCL has submitted that the level of Transmission losses to be achieved at the end of the control period should be realistic and achievable.
27. The summary of Loss reduction target projected by OPTCL for the next three years has been shown in the table below:

**Table - 8**  
**Transmission Loss Trajectory as projected by OPTCL**

	<b>FY07-08</b>	<b>FY08-09</b>	<b>FY09-10</b>	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>
Transmission Loss	4.24%	4.54%	4.50%	4.30%	4.20%	4.00%

## Total Projected Energy Requirement (in MU)

28. Based on demand projections and loss reduction target as elaborated above, the summary of the system demand during the Business Plan Period is as shown below:

**Table - 9**  
**Projected System Availability**

	<b>FY08-09</b>	<b>FY09-10</b>	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>
Existing Installed Capacity (MW)	4,061	4,061	4,061	4,061	4,061
Availability from CGP (MW)	192	300	300	300	300
New Availability –IPP (MW)	-	186	798	1,098	1,666
<b>Total Installed Capacity (MW)</b>	<b>4,253</b>	<b>4,547</b>	<b>5,159</b>	<b>5,459</b>	<b>6,027</b>
Existing Energy Availability (MU)	18,614	18,172	18,172	18,172	18,172
Energy Availability –CPP (MU)	1,214	1,892	1,892	1,892	1,892
Energy Availability –IPP (MU)	-	1,143	4,976	6,865	10,451
<b>TOTAL ENERGY AVAILABILITY (MU)</b>	<b>19,828</b>	<b>21,207</b>	<b>25,040</b>	<b>26,929</b>	<b>30,515</b>

**Table - 10**  
**Projected Energy Requirement (MU)**

Particulars	FY-'09	FY-'10	FY-'11	FY-'12	FY-'13
Total Availability (MU)	19,828	21,207	25,040	26,929	30,515
Less – Transmission Losses (%)	4.54%	4.50%	4.30%	4.20%	4.00%
<b>Net Availability (MU)</b>	<b>18,927.81</b>	<b>20,252.69</b>	<b>23,963.28</b>	<b>25,797.98</b>	<b>29,294.40</b>
Energy Requirement (MU)					
CESU	5,679.04	6,045.00	6,670.00	7,722.00	7,868.00
SOUTHCO	2,178.55	2,350.00	2,585.00	2,848.00	3,083.00
WESCO	6,387.47	6,290.00	6,451.00	6,720.00	6,800.00
NESCO	4,545.07	4,357.00	5,140.00	5,465.00	5,770.00
<b>Total DISCOMs</b>	<b>18,790.13</b>	<b>19,042.00</b>	<b>20,846.00</b>	<b>22,755.00</b>	<b>23,521.00</b>
Sale to CPP	144.39	10.00	10.00	10.00	10.00
State Surplus for Trading	34.87	1,200.69	3,107.28	3,032.98	5,763.40
<b>Sub-Total</b>	<b>18,969.39</b>	<b>20,252.69</b>	<b>23,963.28</b>	<b>25,797.98</b>	<b>29,294.40</b>
ICCL / Nalco	355.27	300.00	300.00	300.00	300.00
Inter-State Wheeling	33.74	30.00	30.00	30.00	30.00
<b>TOTAL</b>	<b>19,358.40</b>	<b>20,582.69</b>	<b>24,293.28</b>	<b>26,127.98</b>	<b>29,624.40</b>

**Capital Expenditure Plan**

29. OPTCL has proposed a total Capital Expenditure plan of Rs.2,374.32 Crore in the next five years. Capital expenditure is taken under the following heads:

- (a) Investment in New Greenfield and system strengthening projects of Rs.1642.19 cr.
- (b) Increment in O&M (capital) as under Master maintenance plan of Rs.394.64 cr.
- (c) Investment in IT of Rs.40.49 cr.
  - EHT project management – ERP solution;
  - Automation of energy accounting function of Load Dispatch;
  - Implementation of decision support and business intelligence system through ERP;
  - Automation of internal HR systems through ERP.
- (d) Investment in telecommunications to the extent of Rs.297 crs.
  - Renovation of PLCC/SCADA system.
  - V-SAT and Wideband communication system and
  - Integration of Distribution SCADA with ULDC system
  - Infrastructure Provision under ULDC project.

The details of break-up of capital expenditure are given in the Table below.

**Table - 11**

**(Rs. Crore)**

Particulars	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13	Total FY 09-13
Investment in Greenfield and System Strengthening Projects	61.49	463.41	510.59	392.88	213.83	1,642.19
O&M Expenditure under Master Maintenance Plan	-	53.00	151.44	129.05	61.15	394.64
Information Technology	0.18	19.36	17.93	1.52	1.50	40.49
Telecommunications	-	30.00	52.00	107.00	108.00	297.00
<b>Total Capital Expenditure</b>	<b>61.67</b>	<b>565.76</b>	<b>731.96</b>	<b>630.45</b>	<b>384.48</b>	<b>2,374.32</b>

30. OPTCL has proposed the following plans for Financing Capex.
- 90:10 Debt Equity Structure is considered for future projects
  - Total equity contribution of Rs.100 crs. Projected to be received from GoO during FY 09 to FY 11.
  - Rs.23.05 crs already received in FY 09; balance to be received in equal instalments in FY 10 and FY 11.
  - GoO Bond of Rs.200 crore converted to equity during FY 2010-11.
  - ROE @ 14% has been considered on full amount of equity.
  - Interest rate considered for new loans as 12% p.a. with a 18-year term and a moratorium period of 3 years.
  - Repayment of existing loans considered as per the repayment schedule agreed with FIs.

31. The details of proposed R&M expenses for each year is given below

**Table - 12**  
**R&M Expenses (Rs. Cr.)**

<b>R&amp;M Expenses</b>	<b>FY08-09</b>	<b>FY09-10</b>	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>
Master Maintenance Plan	41.34	84.08	60.08	53.19	51.65
IT R&M expense	0.12	1.67	3.85	5.50	10.27
Telecom R&M inc ULDC	0.12	12.93	16.05	16.05	16.05
<b>Total R&amp;M Expenses</b>	<b>41.58</b>	<b>98.68</b>	<b>79.98</b>	<b>74.74</b>	<b>77.97</b>

32. OPTCL has projected the Employee costs for the five year period based on the point to point inflation over CPI numbers for industrial workers. The following principle has been adopted for projecting the employees cost.
- (a) Employee costs have been projected at a rate of 12% p.a. escalation on projected figures of FY 07-08.
  - (b) Impact on wage revision has been factored in by considering a base increase of 30% in FY 10.
  - (c) Terminal Benefits as per actuarial valuation increased by Rs.40 cr per annum over preceding year.
  - (d) Induction of new employees has been considered in the level of Asst. Managers, Junior Engineers and non-executives against sanctioned posts for the period of the Business Plan.
  - (e) M/s National Productivity Council has been engaged by OPTCL for proposing the organizational restructuring. NPC has already submitted its draft report on organizational restructuring plan. OPTCL shall approach OERC separately with the final recommendations for approval. This may result in modifications to the employee costs at a later stage.

33. The A&G expenses have been projected by taking annual escalation of 6% over the audited figures of FY2007-08. The proposed A&G expenses include property related expenses, communication, professional charges, conveyance, travelling, OERC License fee etc.
34. The rates prescribed by CERC norms for depreciation have been considered for the projection of Revenue gap at present tariff and also for the calculation of ARR.
35. OPTCL has proposed that Return on Equity (RoE) of 14% post tax on the original equity investment as well as any additional investment made in the OPTCL out of the business cash flow should be allowed. Further in view of the emerging scenarios in transmission investment, ROE for supporting counterpart funding of the equity component for future projects and expansion plans should be allowed.

#### **Revenue Gap at Existing Tariff**

36. **Revenue at Existing Tariff:** The revenue receipts from the projected MUs proposed to be handled by OPTCL has been estimated at existing tariff (approved tariff for FY2009-10) for the next three years. Based on the estimated revenue realization and expenses as detailed in various sections of Business Plan, the estimated Revenue Gap/ Surplus are summarized below:

**Table - 13**  
**Revenue Gap on Existing Tariff (Rs. Cr.)**

Sl. No	Heads	FY08-09	FY09-10	FY10-11	FY11-12	FY12-13
1	Employee Cost	263.60	343.11	411.72	483.13	558.29
2	Repair & Maintenance Cost	41.58	98.68	79.98	74.74	77.97
3	A&G Cost	19.24	20.35	21.56	22.84	24.20
4	Less expenses capitalized	(6.74)	(9.60)	(10.66)	(12.07)	(13.72)
5	Depreciation	116.89	117.02	157.09	184.21	218.74
6	Advance Against Depreciation	-	-	-	-	-
7	Interest & Finance Charges on Long Term Liabilities	90.16	233.86	238.54	312.51	379.51
8	Interest on Working Capital	5.73	42.20	108.56	183.21	277.06
9	Less Interest during construction	(3.05)	(34.11)	(98.35)	(159.68)	(153.91)
<b>10</b>	<b>Sub-Total (1+2+3-4+5+6+7+8-9)</b>	<b>527.41</b>	<b>811.51</b>	<b>908.44</b>	<b>1,088.89</b>	<b>1,368.14</b>
11	Return on Equity	11.64	17.02	50.41	59.24	64.62
12	Contingency Reserve+ GCC Expenses	11.59	11.82	12.06	12.30	12.55
13	Pass Through Expenses *	20.01	113.89	523.45	981.76	1,540.77
<b>14</b>	<b>Total ARR (10+11+12+13)</b>	<b>570.65</b>	<b>954.25</b>	<b>1,494.36</b>	<b>2,142.18</b>	<b>2,986.07</b>
15	Less inter state wheeling	(0.77)	(17.59)	(28.83)	(29.17)	(44.53)
16	Net Transmission Cost (14-15)	569.88	936.66	1,465.53	2,113.01	2,941.55
17	Revenue from tariffs	405.09	396.72	433.70	472.84	488.53
<b>18</b>	<b>Surplus/(Gap) for the year(17-16)</b>	<b>(164.79)</b>	<b>(539.94)</b>	<b>(1031.83)</b>	<b>(1640.17)</b>	<b>(2453.02)</b>

\* Pass through expenses includes past accumulated losses and any expenses exceeding the approved ARR figures.

37. The revenue gap projected above is based on current approved tariff by OERC for FY 2009-10. However, for full recovery of ARR Intra-State transmission tariff need to be revised as shown below

**Table - 14**  
**Projected Intra-State Transmission Tariff - for full recovery of ARR (Rupees/unit)**

<b>Transmission Tariff</b>	<b>FY08-09</b>	<b>FY09-10</b>	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>
Intra-State Transmission Tariff	0.30	0.48	0.69	0.92	1.23
Approved By the Commission	0.21	0.2050	0.2350	-	-

### **Objections and Queries Raised by the Objectors**

38. The Licensee was allowed in the beginning of the hearing to give a power point presentation regarding its Business Plan for the FY 2008-09 to 2012-13. The objectors have made a number of comments/observations on the Business Plan submitted by the licensee. The issues raised by the objectors in their written as well as oral submissions during the hearing are broadly indicated below:
- The Proper system study should be conducted before preceding to any network expansion for evacuation of power. The system study should be comprehensive and should clearly specify point of interconnection and additional links required for evacuation.
  - DISCOMs suggest that each of the Capex Plan should have necessary regulatory approval before execution. The time line and mile stones approved in the Capex Plan need to be monitored on regular basis and no time or cost overrun should be permitted.
  - The financing of Capex may be done at Debt: Equity ratio of 70:30 in line with CERC regulation for Inter-State Transmission System for the period 2009-14.
  - The proposed Capex for evacuation of power from Sterlite Energy and OPGC should be borne by the Generators themselves. Since it is a part of generation scheme this ought to be accounted for in its Capital Cost and subsequently recovered through generation tariff.
  - There should be incentive scheme linked to availability of network so as to ensure availability of quality power at reasonable cost.
  - Transmission charge should be levied on export of power by State utilities.

- In OPTCL network system, some Transmission Lines and Sub-stations are under utilized, some Transmission Lines and Sub-stations are over loaded above allowable limit and some transmission lines are not utilized for the purpose of consumers of the State, due to which system losses are significantly high.
- In the proposed Business Plan, OPTCL has not considered the evacuation of power from OPGC (2 x 600 MW), Capacity addition of CGPs and that of the Small, Mini & Micro Hydel projects.
- The Transmission loss in OPTCL system is purely technical and controllable for which necessary metering, introduction of IT for facilitation of Network information and development of an advanced SCADA facility at SLDC is highly essential for online and real-time loss control of OPTCL system.
- Implementation of Intra-State ABT and online Monitoring of OPTCL system by SLDC may be initiated.
- The network expansion should be executed after identifying the requirements in consultation with stake holders and approval of OERC.
- DISCOMs have not agreed to the proposal of OPTCL since OPTCL has included capital expenditure towards network expansions in the estimate of revenue requirement.
- Each and every Scheme should be justified with necessary value addition such as improvement of Voltage and % reduction in system losses.
- DISCOMs have requested the Commission to direct OPTCL to submit realistic loss reduction programme and to direct OPTCL to submit Tariff in Rs/MWh instead of Paise / Unit.
- M/s OPTCL should take necessary steps for construction of new additional 132/33 KV Grid Substations at Khuntuni, Brahmagiri, Sakhigopal, Aul & Tangi.
- CESU prays that in such circumstances failure on the part of OPTCL for delivering quality power due to transmission network constraints should not be passed on to the distribution companies in future.



- OPTCL has proposed a debt equity structure of 90:10 for all future capital expenditure of Rs.2375 Crore which would have a direct impact on its tariff due to large interest burden of this expenditure. The Commission was requested to emphasize to finance the new projects either through Independent Power Transmission Company on Build Own Operate and Maintain (BOOM) model or through Merchant Transmission line.
- wheeling charge for the traded power has to be included in revenue earning of OPTCL

### **Rejoinder by OPTCL to the Queries of Objectors**

39. In response to the views of objectors on Business Plan of OPTCL for 2008-13, OPTCL had filed rejoinders for the same. The response of OPTCL has been broadly classified into the following issues.

40. **Debt-Equity structure of 90:10:**

The capex Plan has to be done keeping with a view to cater to the growing demand of the state as well as enhancing reliability, capability and availability of the transmission system in discharging its functions as a STU and Transmission Licensee. OPTCL was availing term loan from PFC/ REC to finance the transmission projects to the extent of 90% of the total cost of the project in view of inadequate equity support from the State Government. The balance 10% was to be arranged through internal generation or through equity from the State Government.

41. **Break up of Revenue from inter-state wheeling :**

The amount of Revenue from inter-state wheeling is given in table below.

**Table - 15**

<b>YEAR</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
State surplus for trading (MU)	34.87	1200.69	3107.28	3032.98	5763.4
Transmission Charge (P/U)	21	20.5	*20.5	*20.5	*20.5
Revenue from wheeling of tradable energy @ 25% of transmission charge (Rs. Crore)	0.18	6.15	15.92	15.54	29.54
Inter-State Wheeling (MU)	33.74	30	30	30	30
Revenue from inter-state wheeling @ 17.5 P/U (Rs. Crore)	0.59	0.53	0.53	0.53	0.53
SLDC Charges (Rs. Crore)		10.91	12.38	13.10	14.46
<b>Total Revenue (Rs. Crore)</b>	<b>0.77</b>	<b>17.59</b>	<b>28.83</b>	<b>29.17</b>	<b>44.52</b>

Note: \* Transmission Charge for 2010-11, 2011-12 and 2012-13 has been assumed at existing tariff (approved tariff for 2009-10).

42. **Evacuation of power from IPPs with reference to construction of 400 kV Ib-Meramundali DC line:**

OPTCL has proposed restoration of 400 kV Ib-Meramundali DC line (approx. 235 km.) to evacuate power from upcoming Sterlite Energy (P) Ltd. at Jharsuguda and 3<sup>rd</sup> and 4<sup>th</sup> units of OPGC at Ib. The estimated cost of the restoration of this line is Rs. 103 Crore and this amount has been considered as part of the capital expenditure plan of OPTCL.

43. **Reduction of Technical Losses:**

OPTCL has already initiated action for 100% energy auditing by installation of energy meters at both ends of all EHT lines and power transformers. Provision is also being made for on-line monitoring of the transmission elements at OPTCL Data Centre. The planning is being made as per CEA guidelines. However, the loss reduction criteria and voltage profile improvement etc. are also being studied during planning.

44. **System Study:**

OPTCL has prepared Comprehensive Transmission Planning of its Network for 11<sup>th</sup> and 12<sup>th</sup> plan period taking the system peak 4459 MW and 6363 MW respectively. In the said report point of interconnection of proposed sub-station and additional lines at different voltage level have been incorporated after due system study (i.e. Load flow study, Contingency Study, Short Circuit Study and Transient stability study). While preparing the Transmission Plan the guidelines of OERC, CERC and National Electricity Plan were taken into consideration.

45. **Strengthening of inadequate power system in EHT network of OPTCL in WESCO's jurisdiction**

- (1) Commissioning of Burla-Bolangir line along with 220 kV grid sub-station, Bolangir

The restoration work of 220 kV Burla-Bolangir line is going on in full swing with a target to complete and charge the line by September 2009. Simultaneously the commissioning work for 220 kV Bolangir grid sub-station is also going on and is likely to be completed by October, 2009.

- (2) Creation of 132 kV grid sub-station at Barpali

The construction of 2x12.5 MVA, 132/33 kV grid sub-station at Barpali is on the verge of completion except for some civil works. Construction of 132 kV LILO line from 132 kV Bargarh-Bolangir line to Barpali grid sub-station has

been completed. The line has been antitheft charged on 05.09.2009. The sub-station is to be charged by end of November 2009.

- (3) Creation of 132 KV grid sub-station at Bhawanipatna  
The construction of 2x12.5 MVA, 132/33 kV grid sub-station at Bhawanipatna with associated LILO line from existing Kesinga-Junagarh 132 kV line (6.61 km) is being taken up by PGCIL on turn key basis. They will be completing the project during 2010-11.
- (4) Creation of 132/33 kV grid sub-station at Padampur  
The construction work of 2 x 12.5 MVA, 132/33 kV grid sub-station at Padampur with associated line (45.53 km long S/C line on D/C tower from existing 132/33 kV grid sub-station at Patnagarh to Padampur) is being taken up by PGCIL on turnkey basis. They will be completing the project by 2010-11.
- (5) Creation of 132/33 kV grid sub-station at Nuapada  
The construction work of 2 x 12.5 MVA, 132/33 kV grid sub-station at Nuapada with associated line (72.288 km. long S/C line on D/C tower from existing 132/33 kV 72.288 km. at Khariar to Nuapada) is being taken up by PGCIL on turnkey basis. They will be completing the project by 2010-11.
- (6) Installation of 132/33 kV Transformer at 132 kV grid sub-station at Jharsuguda  
Action is being taken for modification of 132/11 kV grid sub-station at Jharsuguda to 132/33 kV grid sub-station and it is likely to be completed by December 2010.
- (7) Construction of 2 x 12.5 MVA, 132/33 kV grid sub-station at Kuchinda  
OPTCL has proposed to go for construction of a 2 x 12.5 MVA, 132/33 kV grid sub-station at Kuchinda with associated line (29.358 km. long LILO arrangement of existing Sambalpur-Rourkela 132 kV line) which will be done by PGCIL on turnkey basis. They will be completing the project by 2010-11.
- (8) Adding 3<sup>rd</sup> 40 MVA, 132/33 kV Transformer at 132 kV grid sub-station at Chhend  
As a part of system augmentation and capacity addition of Chhend grid sub-station, the work has already been taken up for installation of 3<sup>rd</sup> 40 MVA, 132/33 kV transformer there and is likely to be completed by October 2009.
- (9) Creation of new 220/33 kV grid sub-station in between Rajamunda-Bonai area

OPTCL has proposed to construct a 2 x 40 MVA, 220/33 kV grid sub-station at Bonai with LILO arrangement of existing Rengali-Tarkera 220 kV line (2.926 km.) for which approval of OERC & Govt. of Orissa have been obtained. Tendering work for the proposed scheme is in progress. The construction work is likely to be completed by 2011-12.

- (10) Creation of 220/33 kV or 220/132 kV and 132/33 kV grid sub-station at Gangagal near Bargaon. WESCO was requested to submit the load study of the area and feasibility of new grid sub-station at Bargaon or Bamra.

OPTCL has initiated action for enhancement of grid sub-station capacity in WESCO's area of operation as depicted below:

**Table - 16**

Sl. No.	Name of the Grid Substation	Installed TRF Capacity	Action plan for capacity Addition/ Up gradation.
1	Budhipadar (Power)	1x20MVA, 132/33kV	2 <sup>nd</sup> TRF, 20MVA (2009-10)
2	Katapali (Power)	2x20MVA, 132/33kV	3 <sup>rd</sup> TRF (40MVA) (2009-10)
3	Brajrajnagar	3x20MVA, 132/33kV 1x12.5MVA, 132/11kV	40MVA, 132/33kV in place of 12.5MVA, 132/11kV (2009-10)
4	Sonepur	2x12.5MVA, 132/33kV	3 <sup>rd</sup> TFR, 20MVA (2009-10), 20MVA (UG) (2009-10), 20MVA (UG) (2010-11)
5	Junagarh	2x12.5MVA, 132/33kV	20MVA (UPG) (2009-10)
6	Sambalpur (Ganeshnagar)	2x31.5MVA, 132/33kV	3 <sup>rd</sup> TFR, 40MVA (2009-10)
7	Sundargarh	2x20MVA, 132/33kV	3 <sup>rd</sup> TFR, 40MVA (2010-11)
8	Kesinga	2x20MVA, 132/33kV	3 <sup>rd</sup> TFR, 40MVA (2009-10)

**Installation of 4 nos. new grid sub-stations at CESU area:**

46. CESU has stressed on installation of 4 nos. additional grid sub-stations at Khuntuni, Brahmagiri, Sakhigopal and Tangi, Cuttack for improvement of voltage and catering to the future load growth. There is a proposal for creation of new 2x160 MVA, 220/132 kV grid sub-station at Dhenkanal. This will improve the voltage level in Dhenkanal command area. Further, OPTCL is planning one new 2x100 MVA, 220/132 KV grid sub-station at Puri. The same has not been incorporated in the Revised Business Plan. After commissioning of this sub-station at Puri, voltage will improve in Puri command area including Bramhagiri and Sakhigopal. The proposed tourism project at Samuka can avail power supply without any problem. CESU was requested to submit the load study of the area and feasibility of new grid sub-station at Tangi.

**Demand Projecions.:**

47. The Demand Projections made by OPTCL has been done in consultation with GRIDCO. In case of any delay in commissioning of these projects the demand projection may undergo a change.

**Obtaining approval of OERC towards planned capital expenditure :**

48. OPTCL is obtaining approval of OERC for each and every Major Investment proposal (Rs. 10 Crore or more) as per the existing Licence Conditions of OPTCL.

**VIEWS OF GOVERNMENT OF ORISSA**

49. Dept. of Energy, Govt. of Orissa vide an affidavit on 21.07.2009 stated that the energy requirement by DISCOMs as proposed by the OPTCL in its Business Plan for the period 2008-09 to 2012-13 was on lower side. Considering the massive rural electrification programme under RGGVY and BGJY and requirement of up-coming industries, demand projection needs upward revision.
50. OPTCL has proposed for evacuation of its share of power from the four IPPs only. There are a few other IPPs who have targeted for commissioning of their plants in 11<sup>th</sup> Five Year Plan. Since execution of transmission projects takes a considerable time, OPTCL has to make a realistic assessment in consultation with IPPs and plan for evacuation of power from such IPPs and include the same in its Business Plan for 2008-09 to 2012-13.
51. The list of green field as well as system strengthening projects should be finalized in consultation with DISCOMs to ensure that proposed transmission projects meet the requirement of DISCOMs.
52. To strengthen the transmission system of the State for catering huge demand due to massive rural electrification and industrialization, OPTCL should adopt futuristic planning.
53. The Government has decided to provide Rs.100.00 crore as equity support for execution of transmission projects in three financial years starting from 2008-09. In the year 2008-09 the OPTCL has been provided with Rs.23,05,55,000/- as equity support. In the annual budget of 2009-10 an amount of Rs.5.00 crore has been earmarked to be provided towards equity support to the OPTCL. Further Government may also consider giving Government guarantee, if needed. Government has already decided to give Government guarantee of Rs.550.00 crore to the OPTCL.

54. The ceiling for capital expenditure in respect of the OPTCL requiring government approval has been enhanced by the Government from Rs.5.00 crore to Rs.100.00 crore vide Resolution dt 22.05.2009.

**Observations of State Advisory Committee (SAC)**

55. The State Advisory Committee (SAC) constituted under Section 87 of Electricity Act, 2003 met on 1<sup>st</sup> June 2009 to deliberate on the Business plan of the licensees. The Director (Tariff) made a brief presentation on the Business Plan. Members in general expressed their concern about the poor performance of the licensees particularly on distribution loss, poor consumer services and lack of investment and undue delay in execution of transmission projects leading to cost overrun as a result the problem of low voltage due to grid constraints continuous but at the same time casting burden on consumers.
56. Some of the members opined that the quality of power supply should be improved by taking regular operation and maintenance work and infusion of capital for upgradation/expansion of the old transmission & distribution network. Further, Govt. of Orissa should examine various steps taken by other State Govts. to improve the transmission and distribution of electricity in their State and also provide some amount of subsidy to the power sector in the State.
57. Some of the members stressed the urgent need of capital investment in transmission and distribution sector for system augmentation and the necessity of a dedicated Project Monitoring Team (may be SPV) for taking up the schemes in order of priority and completing the scheme in time-bound manner. Special attention should be given to the ongoing schemes for their early completion. They further stressed for reactive management and need for installation of 11 KV capacitor banks in the selected sub-stations to minimize MVAR drawal and improvement of HT and LT voltage. They also emphasized for adoption of “model operating practice” in the utility and suggested that for the purpose, the management should review the adequacy of manpower both in quantitative and qualitative terms.

## COMMISSION'S OBSERVATIONS

### General Observations on Business Plan

58. The Commission, for approval of Business Plan for OPTCL for the period from FY 2008-09 to 2012-13 is guided by the provisions of the CERC (Terms and Conditions for Determination of Tariff) Regulation, 2009, National Electricity Policy (NEP), 2005, National Tariff Policy (NTP), 2006 as well as other statutory notifications and directives, while giving due considerations to the complexities of the Orissa Power Sector.

59. In the National Electricity Policy, 2005 at Para 5.3.1, 5.3.2 and 5.3.5 it is specified as under:

*“5.3.1 The Transmission System requires adequate and timely investments and also efficient and coordinated action to develop a robust and integrated power system for the country.*

*5.3.2 Keeping in view the massive increase planned in generation and also for development of power market, there is need for adequately augmenting transmission capacity. While planning new generation capacities, requirement of associated transmission capacity would need to be worked out simultaneously in order to avoid mismatch between generation capacity and transmission facilities.*

*5.3.5 To facilitate orderly growth and development of the power sector and also for secure and reliable operation of the grid, adequate margins in transmission system should be created. The transmission capacity would be planned and built to cater to both the redundancy levels and margins keeping in view international standards and practices. A well planned and strong transmission system will ensure not only optimal utilization of transmission capacities but also of generation facilities and would facilitate achieving ultimate objective of cost effective delivery of power.”*

60. In the National Tariff Policy, 2006 at Para 7.0, it is stated :

*“The tariff policy, insofar as transmission is concerned, seeks to achieve the following objectives:*

*(a) Ensuring optimal development of the transmission network to promote efficient utilization of generation and transmission assets in the country;*

*(b) Attracting the required investments in the transmission sector and providing adequate returns.”*

61. Further at Para 7.1(4) in the National Tariff Policy, 2006, the following is stated:

*“(4) In view of the approach laid down by the NEP, prior agreement with the beneficiaries would not be a pre-condition for network expansion. CTU/STU should undertake network expansion after identifying the requirements in consonance with the National Electricity Plan and in consultation with stakeholders, and taking up the execution after due regulatory approvals.”*

62. National Tariff Policy, 2006 at Para 7.2(2) refers to approach to transmission loss allocation where it is stated:

*“(2) The Appropriate Commission may require necessary studies to be conducted to establish the allowable level of system loss for the network configuration, and the capital expenditure required to augment the transmission system and reduce system losses. Since additional flows above a level of line loading leads to significantly higher losses, CTU/STU should ensure upgrading of transmission systems to avoid the situations of overloading. The Appropriate Commission should permit adequate capital investments in new assets for upgrading the transmission system.”*

63. The National Tariff Policy, 2005 vide Para 7.3 deals with the Key Performance Indicators (KPI) for transmission licensees which includes efficient network construction, system availability and loss reduction within the targeted period so as to avoid cost over-run and time over-run.

#### **Fixation of Reference Year/Base Year**

64. OERC had enunciated a Long Term Tariff Strategy (LTTS) for the licensees vide order dated 18.06.2003 in Case No. 8/2003 for a 5 year period from starting from FY 2002-03 and ending in FY 2006-07. FY 2002-03 & FY 2003-04 were considered then as the base year and transition year respectively. However the Commission extended the control period by one year covering FY 2007-08. The Control Period has, therefore, come to an end in March 2008.
65. OPTCL - the Transmission Licensee was not covered under the Commission's Order dtd. 18.06.2003 on Long Term Tariff Strategy. The first control period was for the four distribution companies alone. OPTCL was created with effect from 01.04.2005 as per Govt. of Orissa Notification No. 6892 dtd. 09.06.2005 under a Transfer Scheme being carved from the erstwhile GRIDCO. With a view to bringing transmission licensee under LTTS and MYT frame work, the Commission has directed OPTCL, the transmission utility vide Letter Dt.26.06.2007 to file its Business Plan for the period starting from 2008-09.
66. Para 5.3 (h) of the National Tariff Policy, 2006 provides that the initial control period could be for a period of at least 3 years duration, if deemed necessary by the Regulatory Commission on account of data uncertainty and other practical considerations, it may go up to 5 years.
67. In view of the above, OPTCL, the transmission licensee has proposed to consider a four-year control period to begin with from FY 2009-10 to FY 2012-13 with FY 2007-08 as the base year/reference year. The projection and trajectory have been made for four-year period based on the audited accounts of FY 2007-08 and the provisional figures of FY 2008-09.



68. Considering the provision in the National Tariff Policy, 2005 and based on OPTCL's submission, **the Commission accepts the proposal of OPTCL and approves the Business Plan for four-year control period from FY 2009-10 to 2012-13 as detailed in the subsequent paragraphs.**

#### **Transmission Planning**

69. As per Para 10 (2) of the Transfer Scheme dtd. 09.06.2005 of Govt. of Orissa, OPTCL – the Transmission licensee has been notified by the State Govt. as the State Transmission Utility (STU).
70. As per Sec. 39 (2) of the Act, the functions of the STU shall be
- (a) *to undertake transmission of electricity through intra-state transmission system.*
  - (b) *to discharge all functions of planning and co-ordination relating to intra-State transmission system with Central Transmission Utility (CTU) / State Govt. / Generating Companies/ licensees etc.*
  - (c) *to ensure development of an efficient, co-ordinated and economical system of intra-State transmission lines for smooth flow of electricity from a generating station to load centres.*
71. Para 5.3.2 of NEP, 2005 at sub-para (2) & (3) states as under:
- (a) The Central Transmission Utility (CTU) and State Transmission Utility (STU) have the key responsibility of network planning and development based on the National Electricity Plan in coordination with all concerned agencies as provided in the Act. The CTU is responsible for the national and regional transmission system planning and development. The STU is responsible for planning and development of the intra-State transmission system. The CTU would need to coordinate with STUs for achievement of the shared objective of eliminating transmission constraints in a cost effective manner.
  - (b) CTU/STU should undertake network expansion after identifying the requirements in consultation with stakeholders and taking up the execution after due regulatory approvals.
72. Section 3(4) of the Act stipulates that the Authority shall prepare a National Electricity Plan in accordance with National Electricity Policy and notify such plan once in five years.
73. In exercise of the above power mentioned in Para-74 above, National Electricity Plan (Transmission and Related Aspects) has been prepared by CEA in April, 2007 which was notified in Gazette of India on 3<sup>rd</sup> August, 2007.

74. Para 2.2 (1) & (4) of National Electricity Plan deals with growth objectives of Transmission Network where inter-alia it is stated as under:
- (a) Development of transmission system should be across the country so that all areas could have similar level of electricity system irrespective of uneven disposition of electric power generating sources in the country.
  - (b) CTU and STU are responsible for planning the development of the transmission system. National Electricity Plan prepared by CEA is to serve as guiding document in this process.
75. While dealing with the development process of the transmission system across the country, National Electricity Plan at Para 2.4.1 and 2.4.2 outlines the development process of the intra-State transmission system by STUs which include the network planning, scheme formulation and the programme for Intra-State transmission development with the following transmission system requirements:
- (a) Transmission system for power evacuation of the State sector and the Private sector generation projects for intra-State benefit within the State.
  - (b) Intra-State transmission system (mostly at 220 KV and below level) for absorption of power made available by the CTU through Inter-State transmission system.
  - (c) Intra-State transmission system for meeting the routine annual load growth in different areas of state as well as the additional load growth due to massive industrialization and Rural Electrification.
  - (d) Transmission system required for strengthening of the State Grid so as to cater to the increased transmission needs and increasing the reliability of the system.
- The transmission system needs to be planned and developed in an optimized manner appropriately coordinated with the development plans for the regional grid system duly focusing on the specific requirements of the state.
76. The Commission has issued Orissa Grid Code Regulations, 2006 which is in force w.e.f. 14<sup>th</sup> June, 2006 and this shall have to be complied with by OPTCL in its capacity as STU and a holder of Transmission Licensee.
77. Orissa Grid Code (OGC) specifies Planning Code for State Transmission System (STS) and in Para 3.8 stipulates the Perspective Plan to be carried out by OPTCL – the STU as per the following:-

- (a) The STU is charged with the responsibility to prepare and submit a long-term (10 years) plan to the Commission for Transmission System expansion to meet the future demand in accordance with the Licence Condition.
- (b) For fulfillment of the above requirement the STU shall:
  - (i) Forecast the demand for power within the State in each of the succeeding five years and provide to the Commission details of the demand forecasts, data, methodology and assumptions on which the forecasts are based.
  - (ii) Prepare a least cost generation plan for the State to meet the ten years load demand as per the forecast, after examining the economic, technical and environmental aspects of all available alternatives taking into account the existing contracted generation resources and effects of demand side management.
  - (iii) Discharge all functions of planning and co-ordination relating to the State transmission system compatible with the above load forecast and generation plan, a long term (10 years) plan for the transmission system in accordance with Section-39(2) (b) of the Act, compatible with the above load forecast and generation plan in consultation with CEA. Central Transmission Utility (CTU) shall have to be consulted in connection with systems to evacuate power from inter-State transmission system.

#### **Transmission Loss Reduction**

- 78. OPTCL Stated that Transmission loss is purely technical loss. OPTCL has no control over the transmission loss due to several factors, which is evident from the fluctuation of transmission loss derived for different years.
- 79. The National Tariff Policy, 2005 envisages that the loss compensation should be reasonable and should be linked to an applicable technical loss benchmark. It also states that the transactions should be charged on the basis of average losses arrived at after appropriately considering the distance and direction sensitivity, as applicable to relevant voltage level, on the transmission system.

80. OPTCL further stated that the transmission loss is dependent on the system configuration and power flow requirements at different load centres. In view of the increasing demand for power at an accelerated pace due to ongoing industrialization of Orissa and stoppage of trading of surplus power there will be increased flow of power in the OPTCL transmission network contributing to increased transmission losses. The transmission loss reduction target is set taking into account the National Tariff Policy but, OPTCL submits that the level of Transmission losses to be achieved at the end of the control period should be realistic and achievable. OPTCL's transmission losses for wheeling for FY 2008-09 is 4.52%. OPTCL proposes a transmission loss of 4.50% for FY 2009-10 (4% approved for 2009-10 as well for 2010-11). Thereafter a reduction in loss levels of 0.20% for FY2010-11 and reduction of 0.10% in loss levels for FY2011-12 and a further reduction of 0.20% have been considered for FY 2012-13 thus reducing the overall transmission loss levels to 4.0% at the end of the Business Plan period. The reduction in loss levels will be achieved by the system strengthening as contemplated in the Master Maintenance Plan prepared by OPTCL.
81. OPTCL is of the view that if high loss reductions target are fixed for the future years then this will lead to a situation wherein OPTCL will be unable to achieve the target and its cash flows will be affected. Penalising for reasons beyond OPTCL's control is not fair and would adversely affect the financial viability of OPTCL.
82. During the Annual Public hearings for approval of ARR and Transmission Tariff for OPTCL, the objectors have been insisting that the Commission should accept the recommendations of Sovan Kanungo Committee for reduction of transmission loss @ 0.3% per annum.
83. After taking into account the submissions made by OPTCL, the level of transmission loss reduction achieved from 4.93% in 1999-2000 to 4.52% in 2008-09 with fluctuations in between (4.15% in 2003-04, 3.92% in 2004-05, 4.60% in 2005-06, 5.04% in 2006-07 and 4.24% in 2007-08) and need for consistent reduction, the Commission is of the opinion that the present level of transmission must have to be reduced to below 4% by the end of the Business Plan.
84. Accordingly, based on the above, the summary of loss reduction target proposed by OPTCL and approved by the Commission for the Business Plan period is shown in Table below:

**Table - 17**  
**Transmission Loss Trajectory**

	<b>FY07-08</b>	<b>FY08-09</b>	<b>FY09-10</b>	<b>FY10-11</b>	<b>FY11-12</b>	<b>FY12-13</b>
OPTCL proposal	4.82%	4.54%	4.50%	4.30%	4.20%	4.00%
<b>Commission's approval</b>	4.24% (Actual audited)	4.52% (Actual audited)	<b>4.0%</b> <b>(approved in ARR)</b>	<b>4.0%</b> <b>(approved in ARR)</b>	<b>3.90%</b>	<b>3.80%</b>

85. The Commission directs that OPTCL shall continuously monitor the operation of the transmission system, prevent overloading wherever possible by load diversion and take up innovative measures for improving system loading of the existing network. Effective utilization of new lines and their impact on transmission loss need to be intimated to the Commission periodically and kept in the website of OPTCL for information of all stakeholders.

#### **Demand Projections**

86. OPTCL has submitted the demand projection in the revised Business Plan for the period starting from 2008-09. OPTCL has also submitted the load forecast for the period 2008-2017. The projection submitted in the Business Plan is not tallying with that of Load forecast. Though, the above submissions were made at different points of time, still inconsistencies in the data are noticed to some extent.

**Table – 18**  
**System demand including transmission loss (MU)**

	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
Submission made by OPTCL in the Revised Business Plan	17,211	18,790	19,042	20,846	22,755	23,521
Submission made by OPTCL in the latest submission of Load Forecast for the year 2008-17	17,243	19,438	21,698	22,040	26,003	26,933

87. The growth in demand from DISCOMs has been estimated considering the increase in demand due to implementation of RGGVY Scheme, BGJY Scheme, GGY and Biju KBK Plan, growth in large industry and addition of new heavy industries. In this regard a number of meetings were conducted at the official level of OERC in presence of representatives of OPTCL & DISCOMs during December, 2008. Further, the demand of DISCOMs has been revisited for FY 2009-10 & 2010-11 while approving the ARR of DISCOMs for 2010-11. The summary of system demand of DISCOMs' as finalised is shown in the table given below:

**Table-19**  
**DISCOMs Demand (MU)**

Distribution Company	FY 08-09 (actual)	FY 09-10 (Estimated by OERC in ARR)	Actual for 2009-10	FY 10-11 (Estimated by OERC in ARR & Business Plan for DISCOMs)	FY 11-12 (As per Business Plan approved for DISCOMs)	FY 12-13 (As per Business Plan approved for DISCOMs)
CESU	5672.6	6377.3	6232.67	6420.0	7,722.2	7,868.1
NESCO	4545.0	4783.6	4705.25	5122.0	5,465.0	5,769.5
WESCO	6378.5	6385.5	6261.56	6244.0	6,720.0	6,800.0
SOUTHCO	2175.8	2316.8	2285.33	2368.0	2848.0	3083.0
<b>Total DISCOMs Demand</b>	<b>18771.8</b>	<b>19863.2</b>	<b>19484.81</b>	<b>20154.0</b>	<b>22,755.2</b>	<b>23,520.7</b>

88. The total energy requirement for FY 2009-10 as approved by the Commission in its Tariff Order is 18,921 MU. Though while the approving the Tariff Order for 2010-11 the same has been estimated at 19863.2 MU for 2009-10 (actual 19484.81). The demand forecast made as above is based on the demand projection approved by the Commission while approving the Business Plan of the four Distribution Companies. The same demand has been considered in OPTCL Business Plan.

89. The projection of demand for the purpose of determination of transmission charges includes the existing state generation capacity (net of auxiliary consumption), CGP generation capacity and also energy wheeled through OPTCL transmission line for CGPs and new IPPs. The existing State Sector demand as on 01 April 2010 is 4,084 MW (including the share from Central Sector Generating Stations and excluding share from CGPs), corresponding to an ex-bus energy availability of 18,537 MU. The details are given in Table below.

**Table-20**  
**Existing Source of Power for Orissa**

GENERATING STATIONS	CAPACITY DETAILS (NOS. x MW)	Orissa Share			Ex-bus availability to GRIDCO (MU)	REMARKS
		%	MW	MU		
<b>HYDRO (OHPC)</b>						
HIRAKUD	2*49.5+2*32+3*37.5+3* 24Chipilima)	100.00	348	1,174.0	1,162.3	Design Energy less Auxiliary Consumption (AC) @ 1%
BALIMELA	6*60+2*75	100.00	510	1,183.0	1,171.2	
U.KOLAB	4*80	100.00	320	832.0	823.7	
RENGALI	5*50	100.00	250	525.0	519.8	
INDRAVATI	4*150	100.00	600	1,962.0	1,942.4	
MACHAKUND	(3*17+3*21.25)=114.75MW	50.00	57	262.5	259.9	Assuming Orissa drawal of 50% energy

<b>TOTAL HYDRO</b>			<b>2,085</b>	<b>5,938.5</b>	<b>5,879.1</b>	
<b>SMALL HYDRO</b>						
SAMAL S H P (OPCL)	5 * 4	100.00	20	114	113	Design Energy less Auxiliary Consumption (AC) @ 1%
MEENAKSHEE HEP	2*12.5+3*4	100.00	37	142	140	
<b>TOTAL STATE HYDRO</b>			<b>2,142</b>	<b>6,194</b>	<b>6,132</b>	
<b>THERMAL</b>						
IBTPS	2*210	100.00	420	2,943	2,664	Considering PLF of 80% and Aux. Consumption at 9.5%
TTPS	2*110+4*60	100.00	460	3,304	2,957	Considering PLF of 82% and Aux. Consumption at 10.5%
<b>TOTAL STATE THERMAL</b>			<b>880</b>	<b>6,248</b>	<b>5,621</b>	
<b>STATE TOTAL</b>			<b>3,022</b>	<b>12,442</b>	<b>11,753</b>	
<b>CENTRAL STATIONS</b>						Central Transmission Loss (CTL) of 3.09% considered as per ARR Order for FY2010-11
<b>HYDRO</b>						
CHUKHA	4*84=336 Availability to ER-270	15.19%	41	283.3	271.8	Based on Past trend and parameters taken in the ARR of GRIDCO for FY2010-11
TALA	6 * 170=1020	4.25%	43	151.3	145.2	
TEESTA	3 * 170= 510	20.59%	105	529.8	507.2	Design Energy of 2573MU less Auxiliary Consumption (AC) @ 1.2% & CTL @ 3.09%
<b>TOTAL CENTRAL HYDRO</b>			<b>189</b>	<b>964.4</b>	<b>924.2</b>	
<b>THERMAL</b>						
FSTPS	3*200+2*500=1600	13.63%	218	1,623.2	1,463.9	PLF of 85% , Aux. Cons. at 6.94% & CTL @ 3.09%
TSTPS - I	2*500=1000	31.80%	318	2,367.8	2,145.5	PLF of 85% , Aux. Cons. at 6.5% & CTL @ 3.09%
TSTPS - II	4*500=2000	10.00%	200	1,489.2	1,349.4	PLF of 85% , Aux. Cons. at 6.5% & CTL @ 3.09%
KHSTPS - I	4*210=840	15.24%	128	953.1	840.5	PLF of 85% , Aux. Cons. at 9.0% & CTL @ 3.09%
KHSTPS - II	3*500=1500	0.60%	9	67.0	60.7	PLF of 85% , Aux. Cons. at 6.5% & CTL @ 3.09%
<b>TOTAL CENTRAL THERMAL</b>			<b>873</b>	<b>6,500.4</b>	<b>5,860.0</b>	
<b>SUB TOTAL CENTRAL SECTOR</b>			<b>1,062</b>	<b>7,464.7</b>	<b>6,784.2</b>	
<b>TOTAL (CENTRAL+STATE)</b>			<b>4,084</b>	<b>19,906.3</b>	<b>18,537.3</b>	

90. In the proposed Business Plan period OPTCL has considered only four IPPs to supply power to GRIDCO. So OPTCL will handle the evacuation of power to the extent of GRIDCO's entitlement with its existing transmission system as per capex programme. Wheeling of power for the IPPs' share and other 17 IPPs not considered in the plan as the project details are yet to be firmed up. The details of power available to GRIDCO from the proposed four IPPs are given below.

**Table -21****(MU)**

<b>Name of the Project</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
Ms Sterlite Energy	1886.59	4,844	4,844
Bhusan Energy		567	567
Monnet Ispat		883	2,119
Ind-Bharath Energy		198	530
Jindal India		303	2,321
<b>Sub Total</b>	<b>1886.59</b>	<b>6,795</b>	<b>10,381</b>
Samal Hydro		70	70
<b>Total Availability</b>	<b>1886.59</b>	<b>6,865</b>	<b>10,451</b>

91. Demand projections for DISCOMs are estimated considering implementation of RGGVY & BGJY Scheme and anticipated growth in industrial consumption. Further the demand for emergency power by CGPs and wheeling of power for NALCO / ICCL and Inter-state Wheeling as projected by OPTCL has been considered in the Business Plan.

92. The total projected availability excluding Transmission losses is as follows:

**Table –22**

<b>Particulars</b>	<b>2008-09 (Actual)</b>	<b>2009-10 (Actual)</b>	<b>2010-11 (Projected)</b>	<b>2011-12 (Projected)</b>	<b>2012-13 (Projected)</b>
Existing Availability (MU)	18206.21	16689.50	18777.41	18,537	18,537
Availability from CGPs& Co-Gen(300MW at 80% PLF & 10% aux.)	1180.18	2967.09	1580.0	1,892	1,892
New Availability –IPP (MU)	-	-	1886.59	6,865	10,451
Others (UI & Banking)	433.71	1383.59			
<b>Total Availability (MU)</b>	<b>19,828.10</b>	<b>21040.18</b>	<b>22,244</b>	<b>27,294</b>	<b>30,880</b>
Less – Transmission Losses (%)	4.52%	4.00% (approved)	4.00%	3.90%	3.80%
<b>Net Availability (MU)</b>	<b>18,931.8</b>	<b>20198.4</b>	<b>21,354</b>	<b>26,230</b>	<b>29,707</b>

93. The Commission observed that as per Clause 3.4 of Orissa Grid Code (effective from 14th June, 2006) CEA would formulate perspective transmission plan for Inter-State Transmission System as well as Intra-State Transmission System. These perspective transmission plans would be continuously updated to take care of the revisions in load projections and generation scenarios considering the seasonal and time of the day variations. The STU shall carry out planning process from time to time as per the requirement for identification of major State Transmission system, including schemes in the State which shall fit in with the perspective plan developed by CEA.



94. The OPTCL filed its revised five year Business Plan for the period 2008-09 to 2012-13 before the Commission on 09.06.2009. OERC in its letter No. 3911 dtd. 11.05.2010 addressed to Sr. GM (R&T), OPTCL has requested to furnish the up to day information relating to Capex/ Investment Plan of OPTCL which were earlier incorporated in the revised plan submitted on 09.06.2009. As per information sought in the aforesaid letter the revised Capex/Investment Plan for implementation of projects relating to TP and construction, O&M, Telecom and IT activities are filed by OPTCL on dtd. 12.07.2010.
95. The planned CAPEX has to be done keeping with a view to cater to the growing demand of the state as well as enhancing reliability, capability and availability of the transmission system in discharging its functions as a STU and Transmission Licensee. OPTCL has been availing term loan from PFC/ REC to finance the transmission projects to the extent of 90% of the total cost of the project in view of inadequate equity support from the State Government. The balance 10 % was to be arranged through internal generation of resources or through equity from the State Government.
96. The power system of the State has some low voltage pockets in certain remote zones fed as tail end, causing high system loss. In order to eradicate low voltage problem in different parts of the State, it necessitates bringing out improvement in the system by way of installation of several new transmission lines and Sub-Stations in the State during 11<sup>th</sup> & 12<sup>th</sup> five year plan. There is a technically and economically justified requirement for implementation of these additional system reinforcements in the transmission network to meet the system needs during 11<sup>th</sup> & 12<sup>th</sup> five year plan.
97. The main thrust and emphasis as well as the fundamental requirements in respect of proposed additional transmission schemes is laid on the following:
- (a) Improvement of system voltage profile at various points of the transmission net work.
  - (b) To minimize interruption of power supply to consumers.
  - (c) Enhance security / reliability of power system.
  - (d) Enhance quality and supply standards of system.
  - (e) Strengthening of transmission system.
  - (f) Availability of alternate power supply.
  - (g) Enable OPTCL to receive an economic return.
  - (h) Reduce overloading of important sections.
  - (i) Reduce the overall transmission system losses.
  - (j) Meet the future load demand of the State.

98. The list of transmission project completed during 2007-08, 2008-09 and 2009-10 and 2010-11 are given below:

**Table -23**  
**TRANSMISSION PROJECT COMPLETED**

SL. NO.	NAME OF THE WORKS	DATE OF COMPLETION
<b>PROJECT COMPLETED DURING 2007-08</b>		
1	220 KV Budhipadar - Burla D.C. Line. [61.29 Kms.]	20.04.2007
2	2x100 MVA, 220/132/33 KV Burla sub-station.	20.04.2007
3	Construction of 132 KV D.C. LILO arrangement from 132 KV Meramundali-NBFAL line and 132 KV switching station to extend power supply to M/s. Hind Metal & Industries Pvt. Ltd. [0.49 Km.]	24.04.2007
4	1st. 20 MVA transformer at 220/33 KV Sub-Station at Balimela alongwith transmission line. [1.2 Kms.]	19.11.2007
5	LILO of Chainpal - Dhenkanal 132 KV line at Meramundali sub-station. [1.78 Kms.]	27.11.2007
6	LILO of Chipilima - Bargarh 132 KV line at Hirakud. [12.66 Kms.]	27.04.2007
7	220 KV Indravati - Theruvalli 3rd circuit. [91 Kms.]	05.09.2007
8	LILO of Chainpal - Choudwar 132 KV line at Meramundali sub-station. [1.78 Kms.]	27.11.2007
9	One circuit of 220 KV Kuchei - Balasore line. [75.829 Kms.]	03.10.2007
10	LILO of Bhanjanagar - Chandaka 220 KV line at Mendhasal sub-station. [6.22 Kms.]	02.01.2008
11	220 KV switchyard of 400/220 KV sub-station at Mendhasal.	02.01.2008
12	LILO of Nayagarh - Chandaka 220 KV line at Mendhasal sub-station. [5 Kms.]	03.01.2008
13	220 KV Ib - Budhipadar 4th circuit along with bay extension. [25.958 Kms.]	07.01.2008
14	220 KV D.C. line from Balugaon to Chandaka via Mendhasal. [90 Kms.]	26.02.2008
<b>PROJECT COMPLETED DURING 2008-09</b>		
1	Circuit - I from PGCIL S/S at Kuchei to Balasore S/S has been commissioned at 220 KV.	26.08.2008
2	2nd 20 MVA transformer at 220/33 KV Sub-Station at Balimela.	26.09.2008
3	2x315 MVA ICT commissioned at 220 KV at Mendhasal S/S by way of back-charging	21.10.2008
4	1 <sup>st</sup> 100 MVA Auto-transformer charged at Bhadrak S/S	22.10.2008
5	220 KV Ib-Budhipadar 3 <sup>rd</sup> ckt. Along with bay extension	07/12/08
6	220 KV D.C. Line from Duburi to Paradeep	23.12.2008
7	Installation of 2 <sup>nd</sup> 20 MVA 220/33 KV transformer at Barkote S/S	14.01.2009
8	Construction of 2 nos. of 132 KV feeder bay at Rajgangapur grid S/S	01/03/09
9	Installation of 4th 100 MVA auto transformer at Chandaka S/S	16.03.2009
10	132 KV Phulnakhara LILO on Mancheswar-Cuttack line	31.03.2009
<b>PROJECT COMPLETED DURING 2009-10 &amp; 2010-11 (Upto May, 2010)</b>		
1	1 no. 100 MVA transformer at 220/132kv Paradeep Substation	06.05.09

	2nd 220/132kV 50MVA Auto Transformer at Paradeep Grid S/S	23.09.09
2	1x12.5MVA, 132/33kV substation at Karanjia with associated lines. 2nd.12.5MVA 132/33 KV Tfr.at Karanjia (23 kMS.)	06.07.09 19.09.2009
3	1x20 MVA, 132/33 KV substation at Phulnakhara.	24.07.2009
4	2nd. 100 MVA 220/132 KV Auto Tfr. At Bhadrak Grid S/S.	20.09.2009 (Idle Charged) 22.09.2009 (Loaded)
5	132kV Uttara-Sijua S/C Line on D/C Tower (anti-theft charged) [8.94 Kms]	05.09.09
6	400 KV D/C line from Meramundali to Mendhasal (1 ckt. Is charged at 400 KV). [100.451 Kms]	31.01.2010
7	132 KV Barapalli-LILO line from Bargard-Bolangir 132 KV line [5 Kms]	05.9.2009
8	3 Nos. of 132 KV Feeder bay extension at Hind Metals Switching Station	06.10.2009
9	Hirakud LILO Burla - Sambalpur 132 KV Line [8 Kms.]	17.01.2010
10	2x12.5MVA 132/33kV Grid S/S at Barpalli	18.01.2010
11	2x12.5MVA 132/33kV Grid S/S at Basta with associated line [0.92 Kms]	30.3.2010
12	132 KV Badagada-Uttara S/C line on D.C tower [12.25 Kms]	23.3.2010
13	2x20 MVA 132/33 KV S/S at Badagada (Bhubaneswar)	30.3.2010
14	12.5 MVA 132/33 KV Transformer at 220/132/33 KV Bolangir Grid S/S	30.3.2010
15	220kV DC Line from Burla to Bolangir charged at 220 KV [117.847 Kms]	20.04.10
16	1st 100 MVA Auto Transformer at 220/132/ KV S/S at Bolangir(New)	07/05/10

99. OPTCL has furnished revised Capex on dtd. 12.07.2010 for both ongoing (erstwhile PMU projects) & projects executed under TP wing along with Capex for new projects amounting to Rs. 2672.13 Crore. Phasing of expenditure as proposed by OPTCL is shown below:

**Table-24**  
**CAPEX Requirement**

**(Rs. In Crore)**

Sl. No.	ITEM	Estimated Cost	Expenditure up to 31.03.2008	Phasing expenditure				
				08-09	09-10	10-11	11-12	12-13
A	Capex for on-going erstwhile PMU Projects	465.30	256.97	17.24	12.10	90.66	60.00	28.33
B	Capex for on-going projects under TP Wing	825.62 *	413.10	81.31	50.24	215.25	64.00	16.88
C	Total for PMU & TP (A+B)	1290.92	670.07	98.55	62.35	305.91	124.00	45.21

D	Capex for new projects	1381.21 **	0.62	0.35	1.55	255.14	596.38	413.34
E	GRAND TOTAL (C+D)	2672.13	670.69	98.90	63.90	560.67	705.38	412.22

\* Extra expenditure of Rs.15.17 cr has been incurred for 400 KV Meramundali-Duburi line.

\*\* Balance amount of Rs.113.83 cr will be carried over to financial year 2013.14.

### Capital expenditure for green field and system strengthening projects:

100. OPTCL has submitted a list of on-going projects and future projects in the business plan. OPTCL has made power studies with the help of M/s PRDC, Bangalore. The status of the projects is as listed below in Table-24:

**Table-25**

#### A. On-going project of OPTCL

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expendi ture upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
A .	GREEN FIELD AND SYSTEM STRENGTHENING PROJECTS ( CAPEX FOR ONGOING ERSTWHILE PMU PROJECTS).								
1	400 KV IB- Meramundali DC line [235 kms.]	To be commissioned during 2012-13	246.77	107.77	----	0.67	50	60	28.33
2	220 KV Budhipadar-Bolangir D.C. Line via Burla(Burla-Bolangir portion-117.847 Kms.) Total length of line :[179.137 kms.]Restoration cost:30.34 Crs.	Completed	69.72	28.65	9.20	10.1	21.76	0	0
3	132 KV Mancheswar-Badagada S.C. line [13 Kms.]	To be commissioned during 2010-11	5.3	2.02	0.66	0.02	2.60	0	0
4	132 KV Badagada-Uttara S.C. line [12.36 Kms.]	Work completed & the line is anti-theft charged on 23.03.10.	5.28	1.87	1.56	0.01	1.84	0	0
5	132 KV Uttara-Sijua S.C. line [11 Kms.]	Work completed & the line is anti-theft charged on 6.9.09.	3.54	2.39	0.95	0.01	0.19	0	0
6	132 KV Hirakud- LILO Burla/Sambalpur line [8.5 Kms.]	Commissioned during 2009-10	1.97	1.84	--	0.03	0.1	0	0
7	220/132 kV Bolangir (New):- 220kV bays(6 nos.), 132kV bays(8 nos.), 33kV bays(5 nos), [2x100MVA, 1x12.5MVA tr.]	Commissioning work of 2 <sup>nd</sup> 100 MVA auto transformer is in progress. [95 % work completed.]To be commissioned during 2010-11	28.12	26.72	0.04	0.5	0.86	--	0
8	400/220 kV Sub-station at Mendhasal (New):— 400 kV bays(4 nos.), 220kV bays(14 nos.), [2x315MVA tr.]	Commissioned during 2009-10	47.65	39.18	4.38	0.66	3.43	0	0
9	400/220kV Substation at Duburi (New):- 400kV bays(4 nos.), 220kV bays(10 nos.), [2x315MVA tr.]	To be commissioned during 2010-11	42.07	35.14	0.05	0.01	6.87	--	0
10	132/33 kV Badagada (New):- 132kV bays(5 nos.), 33kV bays(8 nos.), [1x20MVA tr.]	Commissioned during 2009-10	7.6	5.39	0.36	0.07	1.78	0	0

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
11	132/33 kV Phulnakhara (New):- 132kV bays(5 nos.), 33kV bays(8 nos.), [1x20MVA tr.]	Commissioned during 2009-10	7.28	6	0.04	0.01	1.23	0	0
	<b>TOTAL –A (Rupees in Crore)</b>		<b>465.3</b>	<b>256.97</b>	<b>17.24</b>	<b>12.1</b>	<b>90.66</b>	<b>60</b>	<b>28.33</b>
<b>B.</b>	<b>GREEN FIELD AND SYSTEM STRENGTHENING PROJECTS (CAPEX FOR ONGOING TRANSMISSION PROJECTS).</b>								
1	220 KV DC line from <b>Duburi</b> to <b>Paradeep</b> [113.433 Kms.] and 2x100 MVA, 220/132 KV S/S at <b>Paradeep</b> .	1 no 100MVA & 1 no. 50 MVA Auto Transformer has been commissioned.	70.214	55.65	0	0.08	14.48	----	----
2	220 KV <b>Narendrapur-Chandaka</b> DC line via Mendhasal [187 Kms.].	Commissioned during 2007-08.	67.85	64.69	0.19	0.01	2.96	----	----
3	220 KV 2nd DC line from <b>lb - Thermal</b> to <b>Budhipadar</b> [25.958 Kms.] alongwith 2 nos. bay extension at Budhipadar S/S.	Commissioned during 2007-08.	15.22	12.47	0.12	0.11	2.52	----	----
4	220 KV DC line from <b>Kuchie</b> to <b>Kailash Ch.Pur</b> [19.652 Kms.].	Commissioned at 220 KV during 2008-09	10.81	9.42	0.01	0.01	1.37	----	----
5	220 KV DC line from <b>Kailash Ch.Pur</b> to <b>Padmanavpur</b> [34.198 Kms.].	Commissioned	18.03	16.37	---	0.02	1.64	----	----
6	220 KV DC line from <b>Padmanavpur</b> (AP-16) to <b>Balasore</b> Grid S/S [21.979 Kms.].	Commissioned	12.72	9.55	0.25	0	2.92	----	----
7	2 nos. of 220 KV feeder bay extension at <b>Balasore</b> S/S for Kuchei feeders.	Commissioned	4.08	2.62	0.11	0.08	1.27	----	----
8	400 KV DC line from <b>Meramundali</b> to <b>Mendhasal</b> [100.451 Kms.].	Commissioned	72.68	68.61	0.03	----	4.04	----	----
9	220 KV DC line from <b>Mendhasal</b> to <b>Bidanasi</b> [31 Kms.].	Partly commissioned at 220KV in 400KV line	17.39	13.48	0.63	0	3.28	----	----
10	2x20MVA, 220/33 KV S/S at <b>Balimela</b> with associated transmission line [1.2 Kms].	Commissioned during 2008-09	17.57	16.89	--	---	0.68	----	----
11	2x100 MVA, 220/132 KV S/S at <b>Bhadrak</b> with associated transmission line [1.431 Kms.].	Commissioned	33.06	13.31	2.17	10.8	6.81	----	----
12	Installation of 2nd 20 MVA, 220/33 KV transformer at <b>Barkote</b> sub-station.	Commissioned during 2008-09	4.65	1.2	2.89	0.55	0.01	----	----
13	Installation of 3rd 40 MVA, 132/33 KV transformer at <b>Chhend</b> sub-station.	To be commissioned during 2010-11.	4.39	0.55	3.23	0.47	0.14	----	----
14	Installation of 4 <sup>th</sup> 100 MVA, 220/132 KV auto-transformer at <b>Chandaka</b> grid sub-station.	Completed	7.07	0.34	4.62	0.17	1.94	----	----
15	Installation of 2x12.5 MVA transformers at existing 132/33 KV <b>Akhusingi</b> switching-station.	To be commissioned during 2010-11.	6.555	0	1.6	2.25	2.71	----	----

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
16	2x12.5 MVA, 132/33 KV S/S at <b>Basta</b> with associated transmission line [3 Kms.].	Commissioned during 2009-10.	16.99	0.89	9.05	1.06	5.99	----	----
17	2x12.5 MVA, 132/33 KV S/S at <b>Karanjia</b> with associated transmission line [23 kms.].	Commissioned during 2009-10.	18.23	8.41	8.12	1.01	0.69	----	----
18	2x12.5 MVA, 132/33 KV S/S at <b>Barapalli</b> with associated transmission line [5 kms.].	Commissioned during 2009-10.	15.87	0.55	8.55	2.27	4.5	----	----
19	400KV DC line from <b>Meramundali</b> to <b>Duburi</b> [96 Kms.].	To be commissioned during 2010-11.	141.48	116.34 (+ Interest 32.89 Crores)	38.66	0.01	1.64	----	----
20	2X20 MVA, 132/33 KV S/S at <b>Anandapur</b> with associated transmission line [29.834 Kms.].	To be commissioned during 2010-11.	23.68	---	1.03	14	8.66	0	----
21	132KV in220 KV tower <b>Bidanasi – Cuttack</b> D.C. line [10.42 Kms.].	To be commissioned during 2011-12.	16.72	1.66	----	0.28	12	2.78	0
22	132 KV S.C. line on D.C. tower from <b>Paradeep</b> grid S/S to <b>Jagatsingpur</b> grid S/S [56.073 Kms.] with 2 nos. feeder bay extension [one at each end].	To be commissioned during 2011-12.	16.74	0.04	0.05	----	10	6.65	0
23	2x40 MVA, 220/33 KV S/S at <b>Bonai</b> with associated transmission line [2.926 Kms.].	To be commissioned during 2011-12.	28.74	----	0.003	0.09	20	8.65	0
24	2x20 MVA, 132/33 KV S/S at <b>Barbil</b> with associated transmission line [1.5 Kms.].	To be commissioned during 2011-12.	17.4	----	----	0	12	5.4	0
25	2X12.5 MVA, 132/33 KV S/S at <b>Nuapada</b> with associated transmission line [72.288 Kms.].	To be commissioned during 2012-13.	34.84	----	----	3.53	18	9.83	3.48
26	2X12.5 MVA, 132/33 KV S/S at <b>Dabugaon</b> with associated transmission line [40.753 Kms.].	To be commissioned during 2012-13.	25.974	----	----	2.6	15	5.77	2.6
27	2X12.5 MVA, 132/33 KV S/S at <b>Padampur</b> with associated transmission line [45.532 Kms.].	To be commissioned during 2012-13.	27.574	----	----	2.91	15	6.86	2.8
28	2X12.5 MVA, 132/33 KV S/S at <b>Kuchinda</b> with associated transmission line [29.358 Kms.].	To be commissioned during 2012-13.	25.965	----	----	2.6	15	5.77	2.6
29	2X12.5 MVA, 132/33 KV S/S at <b>Bhawanipatna</b> with associated transmission line [6.61 Kms.].	To be commissioned during 2012-13.	19.593	----	----	1.99	12	3.60	2
30	2x12.5 MVA, 132/33 KV S/S at <b>Boudh</b> with associated transmission line [50.732 Kms.].	To be commissioned during 2012-13.	33.53	0.06	----	3.38	18	8.69	3.4
<b>TOTAL –B. (RUPEES IN CRORES)</b>			<b>825.62</b>	<b>413.1</b>	<b>81.31</b>	<b>50.24</b>	<b>215.25</b>	<b>64</b>	<b>16.88</b>
<b>(C)----TOTAL( A+B) (RUPEES IN CRORES)</b>			<b>1290.92</b>	<b>670.07</b>	<b>98.55</b>	<b>62.35</b>	<b>305.91</b>	<b>124</b>	<b>45.21</b>

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
D. GREEN FIELD AND SYSTEM STRENGTHENING PROJECTS ( CAPEX FOR NEW PROJECTS)									
1	2X12.5 MVA, 132/33 KV S/S at <b>Purushottampur</b> with associated transmission line [2.5 Kms.].	To be commissioned during 2012-13.	15.99	0.005	----	0	5.98	7	3
2	2x12.5 MVA, 132/33 KV S/S at <b>Chandpur</b> with associated transmission line [2.31 Kms.].	To be commissioned during 2012-13.	16.812	----	----	---	5	8	3.812
3	2X20 MVA, 132/33 KV S/S at <b>Banki</b> with associated transmission line [19.69 Kms.].	To be commissioned during 2012-13.	21.169	----	----	0.05	6	12	3.12
4	2x12.5 MVA, 132/33 KV S/S at <b>Kalunga</b> with associated transmission line [6 Kms.].	To be commissioned during 2012-13.	17.93	----	----	0.21	5	7	5.72
5	2x160MVA & 2X20MVA, 220/132/33KV S/S at <b>Lapanga</b> with associated transmission lines	To be commissioned during 2012-13.	64.83	--	--	1.00	20	32	11.83
6	2x160MVA 220/132& 2x20MVA 132/33KV S/S at <b>Karadagadia</b> with associated lines	To be commissioned during 2012-13.	80.94	--	0.35	0.02	25	40	15.57
7	2x100MVA,220/132/33KV S/S at <b>Kuanrmunda</b> with LILO arrangement from existing 220KV Budhipadar – Tarkera D/C lines (10KMs)	To be commissioned during 2012-13.	67.59	--	--	--	15	35	17.59
8	2x40MVA,132/33 KV S/S at <b>Hindol Road ( KHAJUARAKATA)</b> with associated Transmission lines	To be commissioned during 2012-13.	16.39	--	--	--	5	8	3.39
9	2x40MVA,220/33KV S/S at <b>Gopinathpur</b> near Nuagaon (Keonjhar) with associated lines.	To be commissioned during 2012-13.	29.93	--	--	--	10	14.93	5
10	2x160MVA,220/132KV S/S at <b>Dhenkanal (New)</b> with connectivity by making LILO of Meramundali-Duburi 220KV lines	To be commissioned during 2013-14	65	--	--	--	10	25	15
11	2x100MVA & 2x40MVA,220/132/33KV S/S at <b>Dhamara</b> With LILO connectivity from Duburi -Balasore Line.	To be commissioned during 2013-14	73.33	--	--	--	15	25	15
12	2x12.5MVA,132/33Kv S/S at <b>Udala</b> with LILO arrangement of Balasore – Baripada lines (30 KMs)	To be commissioned during 2012-13.	27.122	--	--	0.03	8.09	15	4
13	2x20 MVA, 132/33 KV S/S at <b>Titlagarh</b> with SC Line from Kesinga toTitilagarh & One Bay extension at Kesinga.	To be commissioned during 2012-13	23.13	--	--	--	7	10	6.13

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
14	2x100 MVA, 220/132 KV Grid S/S at <b>Cuttack</b> with 2 nos. 220 KV feeder bay extension at Bidanasi S/S with linking arrangements at both end.	To be commissioned during 2012-13	32.67				5	20	7.67
15	Conversion of 132/11 KV to 2x40 MVA, 132/33 KV S/S at <b>Sarasmal</b> , Jharsuguda.	To be commissioned during 2012-13	13.42				3	7	3.42
16	2x40 MVA, 132/33 KV S/S at <b>Luna</b> by making LILO arrangement from 1 ckt of existing 132 KV Kendrapara-Paradeep DC line.	To be commissioned during 2012-13	17.45				4	10	3.45
17	2x315 MVA, 400 KV Grid S/S at <b>Lapanga</b> in Sambalpur District with LILO of 1 Ckt. Of 400 KV Bisra – Raipur line and both circuits of IB-Thermal-Meramandali 400 KV line at Lapanga .	To be commissioned during 2013-14	167.48				20	60	60
18	Construction of 2x20 MVA, 132/33 KV S/S at <b>Olavar</b> and two no. 132 KV feeder bay extension at Pattamundai Grid S/S with 132 KV DC line from Pattamundai to Olavar.	To be commissioned during 2012-13	35.38				5	18	12.38
19	2x100 MVA, 220/132 KV S/S at <b>Kesinga</b> with 220 KV D/C line from Bolangir to Kesinga & 1no. 220 KV bay extension at Bolangir. [80 Kms.]	To be commissioned during 2013-14	70.00				8	25	30
20	Construction of 2x100 MVA & 2x40 MVA 220/132/33 KV Grid S/S at <b>Puri</b> with associated 220 KV D.C line from Jatni to Puri & 2 nos. 220 KV Feeder bay extension at proposed 400/220/132 KV S/S at Jatni (Uttara).	To be commissioned during 2013-14	115.09				12	30	40
21	Construction of 220/132/33 KV at <b>Lohanda</b> near Joda with construction of 132 KV DC line from Lohanda Grid S/S to Barbil S/S & 2 nos. of 132 KV feeder bay extension at Barbil Grid.	To be commissioned during 2012-13	50.80				8	25	17.8
22	Construction of 2x100 MVA, 220/132/33 KV Grid S/S at <b>Pratapsasan</b> near Balakati with associated 220 KV DC LILO line of proposed 220 KV Cuttack-Jatni line.	To be commissioned during 2013-14	61.75				8	20	25



Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
23	Construction of 2x40 MVA, 132/33 KV Grid S/S at <b>Baliguda</b> in district of Phulbani with construction of 56 Kms 132 KV SC line from Phulbani to Baliguda and 1 no. 132 KV feeder bay extension at Phulbani. [56 Kms]	To be commissioned during 2013-14	28.18				4	8	12
24	Construction of 2x20 MVA, 220/33 KV Grid S/S at <b>Narasinghpur</b> in district of Cuttack with construction of 4 Kms 220 KV DC line for LILO arrangement of 1 ckt. Of existing 220 KV Bhanjanagar-Meramundali DC line.	To be commissioned during 2012-13	23.09				5	10	8.09
<b>Transmission Lines</b>									
1	400 KV DC Line LILO of IB – Meramundali to Lapanga – 15KMs.	To be commissioned during 2012-13	15.00	--	--	--	3	8	4
2	Bisra-Raipur 400KV line LILO to Lapanga – 30KMs	To be commissioned during 2012-13	30.00	--	--	--	5	15	10
3	220KV connectivity from Jaynagar to Jaynagar(PG) with 2 nos. of 220 KV bay extension at E-10 [8 KMs ]	To be commissioned during 2011-12	15.00	--	--	--	2	8	5
4	220KV connectivity from Uttara to Puri – 48 KMs	To be commissioned during 2012-13	25.92	--	--	--	5	15.00	5.92
5	132KV connectivity from Ransingpur - Uttara – 7KMs	To be commissioned during 2011-12	2.73	--	--	--	1.5	1.23	--
6	132KV connectivity from <b>Joda to Barbil</b> – 25 KMs	To be commissioned during 2011-12	9.75	--	--	--	3.75	6	--
7	132KV connectivity from <b>Baripada to Kuchei</b> – 7 KMs	To be commissioned during 2011-12	2.73	--	--	--	1	1.73	--
8	132KV connectivity from <b>Salipur to Kendrapara</b> – 30 KMs	To be commissioned during 2012-13	15.28	--	--	--	3	8	4.28
9	132KV connectivity from Kuanmunda to Chhend – 15 KMs	To be commissioned during 2012-13	5.85	--	--	--	1	3	1.85
10	132KV connectivity from Dhenkanal(New) to Nuapatna – 40 KMs	To be commissioned during 2012-13	15.60	--	--	--	--	7.6	8.00
11	132KV connectivity from Phulbani to Boudh – 47KMs	To be commissioned during 2012-13	18.33	--	--	--	--	8.33	10.00
12	132KV connectivity from Junagarh to Dabugaon –78 KMs	To be commissioned during 2012-13	30.42	--	--	--	--	12.42	18.00

Sl. No.	Name of the Project with scope of work	Status of implementation	Estimated cost [Rs. cr.]	Expenditure upto 31.03.08 (crore)	Phasing of expenditure in Rs. Crore				
					08-09	09-10	10-11	11-12	12-13
13	Construction of 132 KV DC line from Baripada PGCIL (Kuchel) Grid S/S to Jaleswar Grid S/S with 2 nos. 132 KV Bay extension each at Baripada PGCIL (Kuchel) & Jaleswar. [60KMs]	To be commissioned during 2012-13	31.32	--	--	--	5	20	6.32
14	132KV connectivity from Bhadrak to Anandpur – 50 KMs	To be commissioned during 2012-13	19.5	--	--	--	--	8.5	11.00
15	132KV feeder bay extension at Hind Metal Switching Station with associated transmission lines.	Commissioned during 2009-10	4.67	0.61	--	0.24	3.82	--	--
16	Construction of 2 <sup>nd</sup> Ckt. From Loc.No.116 of 132 KV Chandaka – Nimapada S.C line to Nimapada Grid with one no. 132 KV Bay Extn.	To be commissioned during 2011-12	3.64	--	--	--	2	1.64	--
<b>TOTAL-D</b>			<b>1381.21</b>	<b>0.62</b>	<b>0.35</b>	<b>1.55</b>	<b>255.14</b>	<b>596.38</b>	<b>413.34</b>
<b>E. GRAND TOTAL (C+D) (RS. IN CRORES)</b>			<b>2672.13</b>	<b>670.69</b>	<b>98.9</b>	<b>63.9</b>	<b>561.05</b>	<b>720.38</b>	<b>458.55</b>

101. In the mean time the Commission has allowed in-principle approval of investment proposals of OPTCL as mentioned below:

**Table – 26**  
**Investment Proposal approved by OERC**

Sl. No	Name of the Project	Approval of OERC in	Amount in cr.	Schedule date of completion
1.	400 KV Meramundali – Duburi D.C. line	Case No.01/2007	131.47	06/09
2.	220/132 KV S/S at Bhadrak alongwith associated transmission line	Case No.01/2007	27.64	06/09
3.	132/33 KV S/S at Basta along with associated transmission line	Case No.01/2007	16.98	06/09
4.	132/33 KV S/S at Karanjia along with associated transmission line	Case No.01/2007	24.20	06/09
5.	132/33 KV S/S Barapalli along with associated transmission line	Case No.01/2007	15.86	06/09
6.	132/33 KV S/S at Anandpur along with associated transmission line	Case No.58/2007	06/10	06/10
7.	132/33 KV S/S at Purushottampur along with associated transmission line	Case No.04/2007	15.99	Sep,09
8.	132 KV Paradeep-Jagatsinghpur S.C. line with feeder bay extension at both ends.	Case No.04/2007	18.19	24 months from the date of award.
9.	* 132/33 KV S/S at Nuapada along with associated transmission line	Case No.15/2008	34.84	June,2010
10.	* 132/33 KV S/S at Dabugaon along with associated transmission line	Case No.15/2008	25.97	Dec,09
11.	132/33 KV S/S at Chandpur along with associated transmission line.	Case No.15/2008	16.81	Dec,09
12.	* 132/33 KV S/S at Padampur along with	Case No.19/2008	27.57	24 months from

Sl. No	Name of the Project	Approval of OERC in	Amount in cr.	Schedule date of completion
	associated transmission line			the date of award.
13.	* 132/33 KV S/S at Kuchinda along with associated transmission line	Case No.19/2008	25.96	24 months from the date of award.
14.	* 132/33 KV S/S at Bhawanipatna along with associated transmission line	Case No.20/2008	19.59	24 months from the date of award.
15.	* 132/33 KV S/S at Boudh along with associated transmission line	Case No.20/2008	29.87	24 months from the date of award.
16.	132/33 KV S/S at Banki along with associated transmission line	Case No.24/2008	21.16	24 months from the date of award.
17.	220/132 KV S/S & 132/33 KV S/S at Karadagadia along with associated transmission line	Case No.31/2008	80.94	24 months from the date of award.
18.	132/33 KV S/S at Kalunga along with associated transmission line.	Case No.74/2008	17.93	Dec,2010
19.	132/33 KV S/S at Barbil along with associated transmission line	Case No.74/2008	17.40	Dec, 2010
20.	220/33 KV S/S at Bonai along with associated transmission line	Case No.74/2008	28.74	Dec, 2010
21.	220 KV Bidanasi – Cuttack D.C.line	Case No.74/2008	9.43	Oct,2010
22.	Restoration of 220 KV Budhipadar-Burla-Bolangir D.C. line	Case No.74/2008	28.88	July,09
23	Provision of 3 <sup>rd</sup> transformer bays with capacity up-gradation in different S/Ss.	**Case No.39/2008	152.30	2008-09
			125.82	2009.10
24	2x12.5 MVA,132/33 KV S/S at Udala along with associated transmission line	Case No.86/2009	29.22	June-2011
25	2x20 MVA,220/33 KV S/S at Keonjhar along with associated transmission line	Case No.86/2009	29.68	April-2011
26	2x160 MVA,220/132 kV and 2X20 MVA, 132/33 KV S/S at Lapanga along with associated transmission line	Case No.86/2009	70.19	December-2011

\* Agreement made with PGCIL on 19.12.08 – The project will be completed within 30-36 months from LOI.

\*\* The Commission agrees in principle and OPTCL is directed to negotiate with lenders and finalise the funding required for the purpose. After getting green signal from the lenders, OPTCL is to approach the Commission with details for approval

102. Projected Break-up of revised Capex for the control period as submitted by OPTCL in their filing dtd. 12.07.2010 in reply to Commission's letter No. 3911 dtd. 11.05.2010 is given in table below:

Table – 27

(Rs. in crores)

LATEST CAPEX PLAN (2008-09 TO 2012-13)												
YEAR  CAPEX PLAN	2008-09		2009-10		2010-11		2011-12		2012-13		TOTAL	
	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010	As per Revised BP submitted on 09.06.2009	As per latest CAPEX Plan submitted on 12.07.2010
TP & CON.	61.49	98.90	463.41	63.90	510.59	561.05	392.88	720.38	213.83	458.55	1,642.19	1902.78
O&M	-	-	53.00	-	151.44	142.33	129.05	106.52	61.15	-	394.64	248.85
TELECOM	-	-	30.00	-	52.00	56.30	107.00	142.50	108.00	96.51	297.00	295.31
IT	0.18	0.18	19.36	1.21	17.93	20.77	1.52	13.32	1.50	6.84	40.49	42.32
Total	61.67	99.08	565.77	65.11	731.96	780.45	630.45	982.72	384.48	561.90	2,374.32	2489.26

103. As stipulated in National Tariff Policy, the Commission desires that OPTCL should strengthen its Project Management Group headed by a Director (Projects), for timely completion of the project. The effect of cost over-run, if any, due to time over-run will not be normally entertained by the Commission for giving credit in determination of Transmission tariff of the OPTCL unless explained with detailed reasoning, thereof. The management of OPTCL may identify the officer(s) concerned and make them accountable for timely completion with suitable incentive/penalty scheme for early commissioning/delay in the project. For this OPTCL is also directed to delegate adequate technical, administrative and financial powers to those officers entrusted with timely completion of the projects.
104. The Commission also feels that OPTCL should file all projects relating to setting up of lines and substations to be undertaken during any year at a time as far as possible and not in a piecemeal manner. When the upcoming load and its nature is known to the licensee through load forecasting, piecemeal submission of projects as and when it desires is not desirable.
105. The Commission will carry out prudence check of the Capex investment at the end of the year on receipt of details on completed works so as to consider passing on the above cost to consumers. However, the cost overrun due to delay in completion of the projects will be borne by the licensee.
106. **Improvement of Quality of Supply**
1. As regards Master Maintenance Plan submitted in the Business Plan, 87 grid S/Ss of different voltage class needs up-gradation/augmentation. Master up-

gradation is required so that the system could operate effectively and also replacement of old /obsolete equipments for strengthening of the transmission system. OPTCL submitted that refurbishment, renovation & up-gradation is required as the existing system has outlived their economic life, fully loaded and over stressed with addition of lines & growth in demand.

2. The Commission feels that the present unsatisfactory conditions of the power supply have arisen because of poor maintenance and lack of monitoring by the licensees on the performance of various elements of system. The power interruption has occurred in some cases due to failure of Lightning Arrestors, Insulators, Circuit Breaker etc. These are all the results of bad maintenance. No preventive maintenance is being carried out in a systematic manner. To ascertain this, the Commission has set up various enquiry committees to know the exact status of maintenance of power house, Grid substations, distribution substations, transformers, distribution/transmission lines and the actual state of interruption in various areas of the State. As reported by the enquiry committees, OPTCL is equally responsible for low voltage, interruptions & overall poor quality of power supply in the State. This is mainly due to the fact that most of the projects being executed by OPTCL are lagging behind the scheduled date of completion and inadequate maintenance of the existing system. This was also discussed in detail during various performance reviews of OPTCL taken up by the Commission. The Commission advised OPTCL to have a well structured project management group with identified responsibility to avoid cost & time overrun and also to extend quality power to the ultimate electricity consumers of the State.

### **Financial Parameters**

#### **107. Employee Cost**

- (i) Man in position vis-à-vis sanction strength:

OPTCL has proposed to add 1836 nos. of post in different grades over a period of 4 years starting from 2009-10 to 2012-13 subject to approval of State Government from time to time. The basis on which the additions of no. of employees are projected by OPTCL is not available. Before putting any number the Commission has to be satisfied about the prudence of addition of number of employees required to carry out requisite Business Plan. It is understood that the assessment of man power position and organization

restructuring of the OPTCL is under study by an external agencies namely National Productivity Council, the report of which is awaited. Commission after receipt of the said report will be able to assess the man power requirement in OPTCL.

(ii) Normal Annual Increment

OPTCL in their Business Plan have estimated an increase of 12% on salary, wages and other allowances for existing employees, while projecting the employee's expenses for the control period FY 2009-13. The Commission while approving the ARR towards transmission tariff allows normal annual increment @3% of Basic Pay as approved by the Commission based on audited actual for the previous year after factoring in induction and retirement in number of employees every year. The Sixth Pay Commission recommendation has also prescribed the rate of annual increment of 3% over Basic Pay and Grade Pay taken together. In view of such a position and Commissions' approach towards allowing employee cost in the ARRs, the Commission approves 3% of annual increment on basic pay and grade pay taken together during the control period 2009-13.

As regards Dearness Allowance Commission allows the rate in the ARR in line with what is approved by Govt. of Orissa from time to time. Accordingly, Commission approves the DA rates equivalent to the DA as notified by the Govt. of Orissa from time to time for the control period FY 2009-13. Other components of the Employee cost would be allowed on actual basis after due scrutiny.

(iii) Terminal Benefit:

OPTCL has projected the requirement of terminal benefit for the control period 2008-09 to 2012-13 based on the actuarial valuation and normal annual increase at the rate of Rs.40 crore based as per the past trend.

To assess the terminal liabilities of the employees on a particular date, the Commission based on the Accounting Standard (As-15) has got done actuarial valuation of the terminal liabilities in respect of OPTCL and four DISCOMs upto 31.03.2008 through an independent actuary. In the mean time due to implementation of 6<sup>th</sup> Pay recommendation by OPTCL, the projection towards terminal liabilities of OPTCL may under go a substantial change. Keeping in view of such a scenario Commission has again appointed an independent actuary to assess the terminal liability as on 31.03.2009 with projection up to

31.03.2011. Based on the report of the actuary any escalation projected will be taken into consideration while assessing the terminal liability of the OPTCL for the control period 2009-13. Accordingly Commission after receipt of the report from the actuary would allow the provision towards terminal benefit for funding the pension corpus of OPTCL, based on the actuarial report.

Impact of New Pension Scheme(NPS) for employees joining after 1.1.2005 - OPTCL has submitted that employees joining on or after 01 January 2005 would be covered under the new pension scheme, where employee is required to contribute 10% of monthly salary and dearness allowance and a matching contribution is to be met by the employer, OPTCL. The employer's liability on this account is, therefore, limited to monthly contribution of 10% of salary and DA towards pension. OPTCL in its Business Plan submission however has not projected any liability on this account in this Business Plan for FY 2009-13.

In line with the Govt. of India notification Govt. of Orissa notified NPS for the State Govt. employees joining on or after 01.01.2005. Since the employees joining in OPTCL after 01.01.2005 would be eligible for NPS, the liability of the employer limiting monthly contribute of 10% of salary and DA toward pension only has to be taken care off. Once the NPS study on organizational restructuring of OPTCL is available the above liability also needs to be assessed. The Commission would accordingly take a view to pass on such liability during the control period FY 2009-13 during the review of Business Plan.

### **Repair and Maintenance Expenses**

108. The OPTCL in its Business Plan submission for the control period 2009-13 have envisaged R&M expenses on three major accounts.

- a) Master Maintenance Plan of Operation & Maintenance.
- b) Telecom R&M expense plan
- c) IT R&M expense plan

➤ Master Maintenance Plan (MMP)

OPTCL currently owns 87 grid substations of different voltage class and about 10521.973 Ckt KM of EHT lines. OPTCL inherited the assets of erstwhile OSEB which are now old and obsolete and many assets have also outlived their expected life consequently putting burden on the already fragile transmission system. The recent expansion of the system due of

industrialization and rural electrification programme has also contributed to the susceptibility of the system. In order to maintain the transmission system at utmost level there is urgent need to refurbish, renovate and upgrade the system. OPTCL in order to address such issue has submitted a Master Maintenance Plan which envisages its programme during the control period to strengthen the system. OPTCL has identified following major tasks to be undertaken in the MMP.

- Replacement of power transformer
  - i) 52 nos. third auto power transformer to be put in 49 grid substations.
  - ii) To procure 8 nos. of 160 MVA auto transformers.  
41 Nos. of 132/33 KV 40 MVA Power transformer.  
2 nos. of 220/33 KV 40 MVA power transformer  
1 no. of 220/33 KV 20 MVA power transformer.
- Replacement of circuit breaker – to replace old breakers and to keep some as spares for emergency purpose.
- Replacement of CT, PT & LA – All 0.5 class CT, PT will be replaced by 0.2 class accuracy equipment.
- Change of transformer oil – CPRI is going to conduct DGA test for condition monitoring of all auto transformer on such recommendation transformer oil is to be replaced.
- Testing equipments to be provided to all E & MR subdivision and change the old testing equipments.
- Replacement of relays – old relays to be replaced and all electromechanical relays to be replaced by numeric relays.
- Other importance replacement and upgradation includes
  - o Control cable
  - o SF-6 gas
  - o Tower members
  - o Overhauling of CBs
  - o Illumination
  - o ERs system
  - o Energy meters
  - o Renovation of EHT lines
  - o Capacitor bank

The OPTCL has envisaged following amounts to be spent under the master maintenance plan during the control period FY 2009-13.



**Table - 28****(Rs. Crore)**

	<b>FY 08-09</b>	<b>FY 09-10</b>	<b>FY 10-11</b>	<b>FY 11-12</b>	<b>FY 12-13</b>
Master Maintenance Plan	41.34	84.08	60.08	53.19	51.65

➤ R&M expenses of telecom

OPTCL has submitted for a total provision of Rs.61.20 crore to be spent on R&M expenses of telecom. This would be spent mainly on two accounts.

- Renovation of PLCC/SCADA system – Rs.37 crore and
- R&M of ULDC equipment – Rs.24.210 crore

The proposed annual expenses on R&M of telecom is as below:

**Table - 29**

	<b>FY 08-09</b>	<b>FY 09-10</b>	<b>FY 10-11</b>	<b>FY 11-12</b>	<b>FY 12-13</b>
R&M expenses of telecom	0.12	13.93	16.05	16.05	16.05

➤ R&M expenses on account of IT initiatives

OPTCL has submitted revised IT capex programme on dtd. 12.07.2010 of Rs.42.32 crore during the control period of FY 2009-13 for implementation of a comprehensive IT infrastructure in OPTCL. In order to maintain such IT assets added through capex programme OPTCL has proposed following annual provision towards R&M expenditure on account of IT initiatives.

**Table - 30**

	<b>FY 08-09</b>	<b>FY 09-10</b>	<b>FY 10-11</b>	<b>FY 11-12</b>	<b>FY 12-13</b>	<b>Total</b>
R&M expenses of IT	0.12	1.67	3.85	5.50	10.27	21.41

The transmission system forms the backbone of the entire value chain of the electricity network. A robust transmission grid serves as a strategic link between generation and distribution network. The Commission is, therefore, concerned about maintenance of such a fragile transmission system of OPTCL. The OPTCL needs to spend adequately to maintain the transmission system in order to cater to the growing demand of consumers and exponential addition of consumers through various rural electrification programmes. In order to assess the status of OPTCL transmission system, Commission engaged teams of independent experts to enquire into O&M of EHT division of Kesinga, Theruvali, Balasore, Jajpur Road (part), Joda and Bhubaneswar (part).

The summary recommendation of the enquiry team on such inspection is given below:

- *Provision of PLCC/SCADA is completely neglected in most of the Grid S/S OPTCL should provide SCADA interface in all 220 KV Grid S/S.*
- *Very old ABCBs, MOCBs, BOCBs specifically at Rayagada, Kesinga and Theruvali Grids may be replaced immediately.*
- *As 220kV and 132 kV network & the associated grid S/Ss of the system is the backbone of the transmission system, a regular planned maintenance and timely augmentation of lines and substations with proper protection system in place are required to minimize breakdowns and extend uninterrupted power supply to DISCOMs. Further a system can be so designed that it can meet the contingency maintenance.*
- *OPTCL should maintain its network in a proper manner and plan out the strategy starting from procurement to timely maintenance. OPTCL has been directed to replace the circuit breakers wherever required in a phased manner and should be completed within next one year.*
- *Modern way of management and planning is required by OPTCL for a healthy transmission system to extend quality & reliable power to DISCOMs. Hence, for better flexibility of the transmission system, OPTCL should set up a team consisting of professionally experts in each O&M circle to attend any type of problem in the grids under that circle.*
- *There should be regular review by the GM of EHT (O&M) circle regarding functioning of each O&M Division under his control at least once in each quarter and the review report with all the problems along with the suggestions/remedial measures should be sent to the Corporate office of OPTCL for appropriate action.*
- *OPTCL should carryout regular patrolling of all the feeders. The weak points identified during regular patrolling should be replaced during the prearranged shutdown to avoid longer interruptions owing to breakdowns/faults. Regular/Periodical patrolling of all lines must be ensured. Review/analysis of each interruption should be made and planning strategy should be developed for proper operation and maintenance of the transmission system*
- *Alternative source of supply should be made available at all grid substations to avoid total power failure in the region due to fault in the single source of supply. All EHT Grid S/S should operate in a ring arrangement.*
- *Civil maintenance of control rooms, quarters & buildings etc. are badly neglected causing damage to structures and equipments, hence the Commission directed OPTCL to review the works of Civil Works Divisions and repair and maintenance works should be done immediately to avoid further deterioration.*

- *Transformers should be off-loaded at erection sites instead at Central Store to avoid time & cost over run. The Commission directed that the civil construction and the dispatch schedule of the equipment should be properly planned for the purpose.*

*In addition to the above, the present poor condition of transmission system can be ascribed to poor maintenance, long delay in execution of projects and monitoring performances of various elements of system.*

The Commission has addressed this issue in the approval of ARR towards determination of transmission tariff of OPTCL for FY 2010-11. Commission, therefore, directs that OPTCL shall fully implement the recommendations of the independent expert as a part of the R&M expense in phased manner in order to complete the same during the control period of 2009-13.

The Commission in Case No.33/2009 has passed an order on the petition of the OPTCL in the matter of investment proposal for implementation of Enterprise Resource Planning (ERP) system, Wide Area Network (WAN) and Data Centre on availing loan assistance from PFC Ltd. This order deals with the proposal of the OPTCL to switch from conventional IT to comprehensive & integrated IT solution by minimizing investment on Wide-Area-Network (WAN) to render service to the three entities i.e. OPTCL, SLDC and GRIDCO by implementing ERP model. The Commission in the said order accepted the following investment proposal of OPTCL in principle to be made during the Business Plan period of 2009-13 in terms of capital expenditure and R&M expenditure on IT implementation of OPTCL.

**Table - 31**

**(Rs. Crore)**

FINANCIAL YEAR	CAPITAL EXPENDITURE				R&M EXPENDITURE			
	Data Centre	WAN	ERP	Total	Data Centre	WAN	ERP	Total
<b>2009-10</b>	5.000	6.289	1.211	12.500	-	0.96	0.365	1.325
<b>2010-11</b>	0.300	-	2.953	3.253	0.5	1.815	0.155	2.470
<b>2011-12</b>	-	-	2.043	2.043	0.53	1.815	1.067	3.412
<b>2012-13</b>	-	-	-	0.000	0.53	1.815	0.825	3.170
<b>TOTAL</b>	5.300	6.289	6.207	17.796	1.560	6.405	2.412	10.377

The Commission while approving the same made some observation at para 7 to 11 and modalities regarding implementation of the IT programme of OPTCL. The extract of the said order is quoted below:

- “7. *During the hearing of this case on 30.08.2009, the Commission, while accepting the investment proposal in principle, made the following observations.*

- (i) While implementing the project, the OPTCL should start with establishing mechanism to collect the data online from twenty-three inter-connection points on a priority basis. This data is of paramount importance as it constitutes around 80% of the volume of power transmitted in the network.
  - (ii) For faster and proper energy accounting and settlement, the energy data should be made available to the Discoms, preferably at the DSOCC (Distribution System Operation Control Centre). In this regard, the Commission directed the OPTCL to provide suitable connectivity at DSOCC of Discoms, may be, through extension of MPLS connectivity to these centres. As OERC and Deptt. of Energy, Govt. of Orissa are important beneficiaries of the project, the Commission felt that MPLS VPN connectivity should be extended to them with suitable access permission.
  - (iii) The timelines for each of the activity in ERP implementation need to be specified.
8. In compliance of the above, OPTCL has filed its reply on 23.09.2009 which states the following:
- (i) OPTCL will build online data capture facility at interconnection points on a priority basis.
  - (ii) MPLS VPN connectivity will be extended to four Discoms, Deptt. Of Energy, Govt. of Orissa and OERC.
  - (iii) OPTCL has submitted the detailed activities with regard to implementation of ERP system comprising of the following three phases.
- Phase 1: It covers modules viz; FA, MDM Billing & Settlement, Core HR, Sel. Services of HRMS, iRecruitment
- Phase 2: It covers modules viz; EAM, INV, PO, AP, AR, Project Management, Costing, Billing, Payroll, OTL
- Phase3:It covers modules viz; iSupplier, iExpense, iProcurement, Sourcing, Cash Management, Quality, Reports, OLM, Performance Management, Compensation Workbench
- The total project has been planned to be completed in 15 months (64 weeks) time period.
9. The ERP project comprises of four mandatory components namely, Data Centre, ERP, WAN and FMS. The detailed cost benefit analysis submitted by OPTCL based on discounted cash flow approach reveals that the NPV of the project is positive indicating that it is a worthwhile proposal for investment where benefits in financial terms to be accrued upto the year 2021-22 have been estimated to be higher than the costs to be incurred in implementing the project.
10. After hearing the petitioner and perusal of the records and also the details of cost benefit analysis submitted by OPTCL in written form, Commission approves the investment proposal for implementation of

*ERP, WAN and Data Centre on availing loan assistance from PFC Ltd. or from other sources or from internal resources as per requirement and availability. The timeline and activities for ERP implementation as proposed by OPTCL is also approved and is given as Annexure to this order.*

11. Working Group

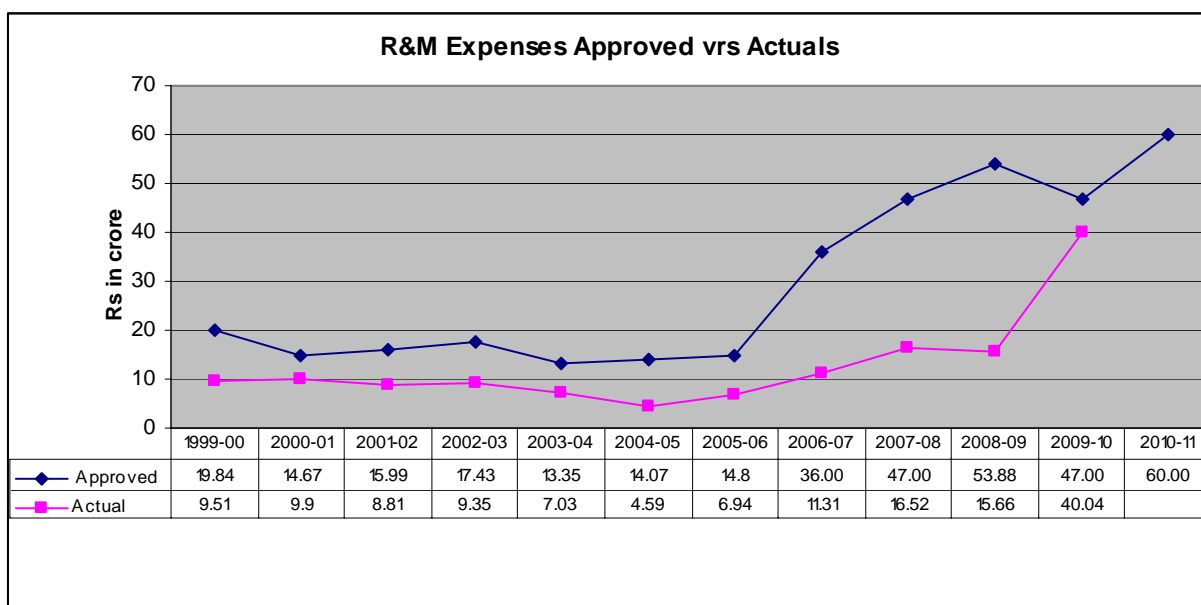
*This project has the potential to become an enabler for the whole power sector of Orissa and its success will have far-reaching impact on the sector. However, the Commission feels that key to its successful implementation lies in the manner of co-ordination amongst the stake holders especially amongst OPTCL, SLDC and Gridco. Therefore, the Commission directs the OPTCL to constitute a Working Group with two members each from OPTCL, Gridco, SLDC and one member each from Cesu, Nesco, Southco, Wesco, Deptt. of Energy, GoO and OERC. This Group should meet once in two months to discharge the following functions:*

- oversee the implementation of the project*
- resolve issues as and when they occur*
- co-ordinate on behalf of their organisations*
- recommend any change / suggestion in project schedule, budget or any other matter of significance for necessary approval by the authorities.*
- certify that the project has been duly delivered.*

*This Group will appraise the Commission of the developments by forwarding the copy of the proceeding of the meeting held once in every two months as stated above. The proceeding must clearly indicate the responsibilities of the authorities/officials and the timeline for compliance by them.”*

In view of the above, OPTCL is directed to carry out the implementation of IT programme during the control period 2009-13. The Commission would monitor the progress of the implementation of said programme periodically during quarterly performance review.

The Commission in the recent transmission tariff order for FY 2010-11 observed that OPTCL has not been able to spend the money provided in the successive ARRs. The pattern of spending vis-à-vis approved expenditure in the ARR is shown in the graph below:



It can be seen from the graph the OPTCL needs to do much to utilize money on R&M expenses in order to meet the challenges posed by the massive rural electrification programme and growing demand of the consumers. Commission in the latest tariff order has allocated Rs.60 crore to the OPTCL towards R&M expenses which is a substantial rise over the last years approval of Rs.47 crore. The Commission would review the pattern of spending during the current financial year of 2010-11 which would set the tone of the capability of OPTCL to spend on R&M expenses for the balance years of the control period of 2011-12 and 2012-13.

### **Administrative and General Expenses**

109. The OPTCL in its Business Plan submission has projected A&G expenses by taking annual escalation of 6% over the audited figures of FY 2007-08. The A&G expenses broadly cover property related expenses, communication, professional charges, conveyance, traveling, OERC licensee fee etc. The annual expenses on A&G for the Business Plan period as submitted by OPTCL are shown in the following table:

**Table - 32**

	FY 07-08	FY 08-09	FY 09-10	FY 10-11	FY 11-12
A&G expenses	17.92	19.24	20.35	21.56	24.20

110. The Commission while approving the ARR of OPTCL allows escalation at rate of inflation as measured by WPI, over the approved amount in the ARR. The Commission has already approved following amounts towards A&G expenses in the ARR of FY 2008-09, 2009-10 and 2010-11.

**Table - 33****(Rs. Crores)**

	<b>FY 08-09</b>	<b>FY 09-10</b>	<b>FY 10-11</b>
A&G expenses approved in ARR	16.57	14.35	15.14

The Commission, therefore, in accordance with principle as adopted in the ARR would allow and review the A & G expenses of the OPTCL during the balance period of Business Plan of 2011-12 and 2012-13.

### **Depreciation**

111. OPTCL in its Business Plan for the period 2009-13 has submitted that the depreciation has been considered at the rates prescribed in the CERC (Terms and Conditions of Tariff) Regulations, 2009. The CERC regulation provides for the following regarding depreciation.

#### *Regulation 17(4)*

*Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III to these regulations for the assets of the generating station and transmission system.*

*Provided that, the remaining depreciable value as on 31<sup>st</sup> March of the year closing after a period of 12 years from the date of commercial operation shall be spread over the balance useful life of the assets.*

112. The Commission, however, computes depreciation in compliance to the directive of the Hon'ble High Court of Orissa at the pre-92 rates on the original book value of the assets. The rates prescribed in the pre-92 rate of GoI of Orissa is lesser than rates prescribed under CERC Regulation. A comparison of such rates is given below:

**Table - 34**

<b>Sl No.</b>	<b>Particulars</b>	<b>Depreciation rate prescribed under CERC Regulation (%)</b>	<b>Pre-92 rate of depreciation as per GoI notification dtd.31.01.92</b>
1	Land & Right	0.00	0.00
2	Buildings	1.80	1.80
3	Plant & Machinery (other civil works)	1.80	1.80
4	Plant & Machinery	2.57	3.80
5	Plants & Machinery (lines, cables & network assets)	2.57	2.57
6	Vehicles	18.00	12.86
7	Furniture, Fixture	6.00	4.55
8	Office Equipment	6.00	9.00

### **Upvaluation of asset**

113. The OPTCL came into being under a Transfer Scheme, namely The Orissa Electricity Reform (Transfer of Transmission & Related Activities) Scheme, 2005 of Govt. of Orissa effective from 1<sup>st</sup> April, 2005. The provisional balance sheet in the said transfer scheme shows a gross fixed asset of Rs.1715.33 crore.
114. In the previous years upto FY 2002-03, the Commission was calculating depreciation at post-94 rates as prescribed by Govt. of India on the asset base that was revalued on 01.04.1996. The aggregate value of assets transferred and vested in GRIDCO was Rs.2394.70 crore as on 01.04.1996 whereas the original book value of such assets was only Rs.1200.70 crore meaning thereby an upvaluation of Rs.1194 crore.
115. The Hon'ble High Court in Misc. Case No.8953 of 2002 directed to calculate depreciation on the pre-valued cost of assets as on 1996 at pre-92 rates. Accordingly, Commission allows depreciation to OPTCL at pre-92 rates.
116. As regards upvaluation of assets, such upvaluation resulted in substantial increase in the provision towards depreciation and cascading increase in the price of energy which ultimately would have borne by the consumers through higher tariff. In view of the Kanungo Committee recommendations and Commission's advice the revaluation of the assets have been kept in abeyance by the Govt. of Orissa through successive notifications.
117. Govt. of Orissa first came up with the notification No.1068/E dtd.29.01.2003 and notified following regarding keeping in abeyance the effect of up-valuation of assets.
- i) *The effect of upvaluation of assets of OHPC and GRIDCO indicated in notification No.5210 dtd.01.04.1996 and No.5207 dtd.01.04.1996 would be kept in abeyance from financial year 2001-02 prospectively till 2005-06 or the sector turns around whichever is earlier to avoid re-determination of tariff for past years and also re-determination of assets of various DISCOMs. For this purpose depreciation would be calculated at pre-92 norms notified by Government of India.*
118. Subsequently, Govt. of Orissa, Department of Energy in their letter No.1704 dtd.17.02.2009 communicated following regarding keeping in abeyance of up-valuation of assets of OPTCL.

*In the matter of extension of the moratorium period and other dispensation stipulated in Energy Department Notification No. 1068/R&R-I-2/2002 dt.29.01.2003 upto 2011-*



*12 it is stated that Finance Department has already concurred in the proposal of keeping in abeyance of up-valuation of assets of GRIDCO/OPTCL & OHPC and freezing of ROE to GRIDCO & OHPC from the year, 2006-07 to 2010-11. The matter is going to be placed before the State Cabinet for a decision after which the same will be communicated*

Further in letter No.R&R-I-15/2009/81 dtd.06.01.2010, state Govt. notified the following regarding calculation of depreciation.

*ii) Both GRIDCO/OPTCL and OHPC would be entitled to depreciation on the revalued (pre-92) assets.*

119. The above notification is apparently erroneous as it says depreciation is to be calculated on revalued (pre-92) assets, commission sought the clarification on the matter and suggested following amendment to the above clause.

*Both GRIDCO/OPTCL and OHPC would be entitled to depreciation on the pre-revalued assets calculated at pre-92 norms notified by Govt. of India.*

120. In response to the suggestion by the Commission, Govt. of Orissa vide their letter No.1577 dtd.23.02.2010 clarified the following in the matter.

*9. Upvaluation assets of GRIDCO/OHPC*

*In this regard necessary notification for keeping in abeyance the upvaluation of assets of GRIDCO & OHPC till 2010-11 has been issued by Government under intimate to all concerned. Government orders will be obtained for modification of the above notification on the basis of the suggestion of OERC.*

121. In light of the above facts OPTCL would be allowed depreciation on the pre-valued assets at pre-92 rates notified by Govt. of Orissa during the control period of 2008-09 to 2012-13. Commission in fact has allowed such rates in the ARR of OPTCL for FY 2008-09, 2009-10 and 2010-11.
122. The depreciation expense has been linked to the interest obligation on the long term loans and serves as the source to finance such obligation. In such a scenario the amount of depreciation allowed in a year should match the interest payment obligation.

However, calculation of depreciation on pre-valued assets at pre-92 rates leaves depreciation much lower than the loan payment obligation. In order to mitigate such a mismatch CERC Tariff Regulations, 2004 provided for 'Advance Against Depreciation'. This amount was limited to the difference between 1/10<sup>th</sup> of the loan

amount and depreciation. CERC in its new regulation namely CERC (Terms and Conditions of Tariff) Regulations, 2009 abolished the provision of Advance Against Depreciation.

123. Commission in the ARR of 2009-10 and 2010-11 has taken a view to allow depreciation as per the CERC (Terms and Conditions of Tariff) Regulation, 2009. The depreciation calculated at the CERC norms is higher than depreciation calculated at pre-92 norms. Commission, therefore, allows the difference between depreciation calculated at CERC Regulation and pre-92 norms as the special appropriation. Commission has allowed such special appropriation in the OPTCL ARR for FY 2009-10 and 2010-11. Commission would accordingly allow depreciation according to the principle followed in the ARR of FY 2009-10 and 2010-11 for the balance years of the control period 2011-12 and 2012-13.

### **Return on Equity (ROE)**

124. OPTCL in its Business Plan submission has quoted Regulation 56(iii) of CERC (Terms and Conditions of Tariff) Regulation, 2004 wherein ROE shall be computed on the equity base determined in accordance with Regulation 54 and shall be 14% per annum.
125. The new regulation of CERC (Terms and Conditions of Tariff) Regulation 2009, the ROE is to be calculated in the following manner.

*15(2)- Return on equity shall be computed on pretax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation. Gross up is to be done in the following manner.*

*15.4(i) In case of the generating company or the transmission licensee paying Minimum Alternate Tax (MAT) @11.33% including surcharge and cess*

$$ROE = \frac{15.50}{(1-0.1133)} = 17.481\%$$

*ii) In case of generating company or transmission licensee paying normal corporate tax of 33.99% including surcharge and cess.*

$$ROE = \frac{15.50}{(1-0.3399)} = 23.481\%$$

126. The OPTCL has however proposed to allow Return on Equity (ROE) of 14% post tax on the original equity investment as well as any additional investment made in OPTCL out of the business cash flow. OPTCL has also submitted to allow ROE for supporting counterpart funding of the equity component for future projects and expansion plan. OPTCL has received Rs.28.05 cr. from Govt. of Orissa in shape of equity share capital towards execution of new transmission projects in the backward districts of the State. OPTCL during filing of the ARR of 2010-11 informed the Commission that Govt. of Orissa had contemplated to release Rs.100 cr. to OPTCL over a period of 3 years as equity share capital to undertake new transmission projects in the backward districts of the State.
127. The Commission allows return on equity at the rate 15.5% on the equity share capital as per the CERC Regulation, 2009. Commission accordingly would allow ROE on equity share capital during the remaining period of the Business Plan i.e. 2011-12 and 2012-13.

#### **Provision for Bad and Doubtful Debts**

128. The Commission in its ARR order for Transmission charges has taken a view that OPTCL receives hundred percent of its revenue through Escrow Mechanism from DISCOMs on first charge basis and, therefore, there is no loss on account of bad and doubtful debts. Commission, therefore, would not allow any provision towards bad and doubtful debt to OPTCL for the balance years of the Business Plan period of 2011-12 and 2012-13.

#### **Interest on Short Term Loan/Working Capital**

129. OPTCL in its Business Plan submission has submitted to allow the interest on short term borrowing linked to the prevailing prime lending rate (PLR) for short term borrowing. The average collection period of OPTCL's dues is seven days hence it requires minimum cash balance to meet 10 days expenses under Employee, R&M, A&G and interest expenses.

130. Commission during finalisation of ARR towards Transmission Charges has observed that Transmission Charges of OPTCL are recovered as first charge from monthly BSP bill of DISCOM through Escrow Mechanism. Commission also allows rebate given by OPTCL, as a part of their revenue requirement. In view of such an observation of the Commission no interest on short term borrowings towards working capital would be allowed during the balance years of the for the Business Plan period during the year FY 2011-12 and 2012-13.

#### **Other Income/Miscellaneous Receipts**

131. The Commission while analyzing the miscellaneous receipt during the annual ARR filing of OPTCL, takes into consideration the receipts towards wheeling, supervision charges and other receipts through the cash flow statements which is prorated appropriately for the year. The wheeling charges paid by the CGPs in the year are excluded from the miscellaneous receipts.

The Commission would continue to follow the same principle while allowing miscellaneous receipts to the OPTCL during the balance years of the Business Plan period during the year FY 2011-12 and 2012-13.

#### **Existing Loans and Repayments**

132. OPTCL has annexed a detailed plan for existing loan schedule and its repayments during the plan period FY 2008-09 to FY 2012-13. According to such schedule OPTCL would have following liability by the end of the Business Plan period 2012-13.

Principal liability	-	Rs.101.81 cr.
Interest liability	-	<u>Rs.175.14 cr.</u>
Total liability	-	Rs.276.94 cr.

133. OPTCL in its Business Plan has submitted that its total loan balance at the beginning of year FY 2009-10 was Rs.1026.96 cr. However, in its ARR filing for FY 2010-11 the total principal balance as on 31.03.2010 was shown at Rs.1035.83 cr. with interest liability of Rs.122.00 cr. and principal liability of Rs.171.64 cr. for that year.
134. The Commission has followed certain principles while approving individual loans in the ARR. Commission would continue to follow such principles during the balance years of the control period of FY 2011-12 and 2012-13 which are discussed below for individual loan.

**i) State Govt. Loan**

OPTCL in its Business Plan has shown State Govt. loan towards State Govt. (Cash) loan and State Govt. (CRF) loan. Govt. of Orissa in the matter of debt servicing to State Govt. notified following in its notification dtd.29.01.2003.

ii) *Moratorium on debt servicing by GRIDCO and OHPC to the State Government would be allowed from the FY 2001-2002 to FY 2005-06 except the amount in respect of loan from World Bank to the extent the State Govt. required to pay to the Govt. of India. Govt. of Orissa vide its notification dtd.06.01.2010 however notified the following with regard to repayment of State Govt. loan.*

135. Government of Orissa vide its notification dated 6.01.2010 however notified the following with regard to repayment of State Government loans.

*iv)Both GRIDCO/OPTCL and OHPC shall repay the principal amount of the loan amount actually taken from the State Govt. along with the interest as per the terms and conditions of loan other than those attributable to the revaluation of assets.*

136. The above notification of State Govt. is in variance with the notification dtd.29.01.2003 wherein moratorium on debt servicing by GRIDCO and OHPC on State Govt. loan was allowed. Commission in response to such notification of the State Govt. has requested Government of Orissa to make necessary amendment to the said notification extending the concession/benefits upto the financial year 2012-13. Govt. in its reply have stated that such proposal was under consideration.

137. In view of the above position, no interest impact on State Govt. loan is passed in the ARR and Commission would continue to follow the same principles during the Business Plan period of the control period of FY 2011-12 and 2012-13 regarding debt servicing of State Govt. loan.

**Other loans**

138. The Commission allows interest impact on loan balance on the basis of details in submission in ARR after due scrutiny on the loans such as Central Govt., IBRD loan (through GoO), REC (Term Loan), REC loans (New), PFL (project loan), short term loan for new projects (Banks), Pension Trust Bond and Bank Loans. The Commission would continue to allow interest on above loan during the Business Plan period of 2009-13 except on OSEB loan.

139. The summary principles of financial parameters are given below.

**a) Employee Cost**

- The Commission has approved escalation of 3% on the basic pay and grade pay towards normal increment during last three years of the control period i.e. 2008-09, 2009-10- and 2010-11. During the balance years of control period the Employee cost would be approved at the rate of 3% of annual increment on basic pay and grade pay taken together for FY 2011-12 and 2012-13. OPTCL projected Rs.147.13 crore as arrear arising out of implementation of 6<sup>th</sup> Pay Commission during ARR of 2010-11. The Commission decided to allow the said arrear in a staggered manner in three installments. Accordingly, the Commission allowed Rs.49.04 crore of the ARR of FY 2010-11. the Commission would allow the balance amount of Rs.97.09 crore towards arrear in two installments during the balance years of control period FY 2011-12 and 2012-13.
- The Commission allowed DA on the basic and grade pay in line with the notification of Govt. of Orissa from time to time. The DA rates would be approved equivalent to the DA rates as notified by the Govt. of Orissa from time to time during the balance years of the control period FY 2011-12 and 2012-13.
- Terminal benefit would be allowed on the basis of the report from the actuary towards funding the pension corpus of OPTCL.

**b) R&M**

- The Commission in Case No.33/2009 has passed an order in the matter of investment proposal for implementation of Enterprise Resource Planning (ERP) system, Wide Area Network (WAN) and Data Centre on availing loan assistance from PFC Ltd. The Commission in the said order accepted the investment proposal of OPTCL in principle to be made during the Business Plan period of 2009-13 in terms of capital expenditure and R&M expenditure on IT implementation of OPTCL.
- In the tariff order for FY 2010-11 a sum of Rs.60 crore has been allocated to the OPTCL towards R&M expenses. The Commission would review the pattern of spending during the current financial year of 2010-11 which would set the tone of the capability of OPTCL to spend on R&M expenses for the balance years of the control period FY 2011-12 and 2012-13.

**c) A&G Expenses**

- The A&G Expenses would be allowed escalation of 5.5% (rate of inflation as measured by WPI) over the approved amount for FY 2010-11 in ARR during the balance years of control period of FY 2011-12 and 2012-13.

**d) Depreciation**

- Depreciation would be calculated at pre-92 norms but allowed as per the CERC (Terms and Conditions of Tariff) Regulation, 2009. The depreciation calculated at the CERC norms is higher than depreciation calculated at pre-92 norms. The difference between depreciation calculated at CERC Regulation and pre-92 norms would be allowed as the special appropriation for the balance years of the control period 2009-13.

**e) Provision for Bad and Doubtful Debts**

- No bad and doubtful debt would be allowed to OPTCL for the Business Plan period of 2009-13.

**f) Interest on Short Term Loan/Working Capital**

- No interest on short term borrowings towards working capital would be allowed for the Business Plan period of 2009-13.

**g) Other Income/Miscellaneous Receipts**

- The Miscellaneous receipts would account towards wheeling, supervision charges and other receipts through the cash flow statements which is prorated appropriately for the year. The wheeling charges paid by the CGPs in the year would be excluded from the miscellaneous receipts. The same principle has been adopted during the previous periods of control period and would be continued to be followed during balance years of the control period FY 2011-12 and 2012-13.

**h) Interest on Loans**

- No interest impact on State Govt. loan is passed in the ARR during previous years of the Business Plan period. Accordingly, no interest on State Govt. loan would be passed during balance period of control period FY 2011-12 and 2012-13.
- Interest impact on other loan balance is allowed on the basis of details in submitted in the ARR after due scrutiny. The other loans include

loans such as Central Govt., IBRD loan (through GoO), REC (Term Loan), REC loans (New), PFL (project loan), short term loan for new projects (Banks), Pension Trust Bond and Bank Loans except on OSEB loan.

- The interest on old loans for existing at the beginning Business Plan Period is allowed as the pass through in the ARR as per the terms and conditions stipulated in the loan document. As regards the new loans to be availed during the control period of Business Plan the Commission allows the same based on the projects approved by the Commission and actual loan availed for those period. This principle would be followed during balanced years of control period of FY 2011-12 and 2012-13.

**i) ROE**

- Return on equity would be allowed at the rate of 15.5% on the equity share capital as per the CERC Regulation, 2009 during the remaining period of the Business Plan i.e. FY 2011-12 and 2012-13.

**140. Commission directives**

The following directives are issued by the Commission for compliance of OPTCL.

- a) The OPTCL should reduce the transmission loss during the Business Plan Period as approved by the Commission at Para 84 and Table 17.
- b) The financial parameters as approved by the Commission in Para 139 would be followed by OPTCL during the balance years of control period i.e. FY 2011-12 and 2012-13.
- c) To submit the details of CAPEX actually incurred and capitalisation of assets in the format already prescribed by the Commission to undertake necessary prudence check during successive performance reviews.
- d) To maintain separate accounts with respect to the costs incurred in respect of lines & bays respectively.
- e) An appropriate procedure for prioritising capital works should be drawn up by the OPTCL and submitted for approval by the Commission annually. Project cost estimates should be worked out on a realistic basis.



- f) OPTCL should strengthen its project implementation cell with recruitment of professional having experience with management of contract and project management skills on contract basis. A specialized dedicated unit is to be created with adequate powers for monitoring the progress, fixing accountability of the key personnel and for release of funds for the project so that transmission system should be ready by the time of requirement for evacuation of power.
- g) Each of the projects which has been approved by OERC should be closely monitored by OPTCL. There should be sufficient delegation of power and authority and specific officers should be entrusted with specific responsibility to ensure completion of projects in time. The concerned officer shall be personally responsible for the cost over run and time over run if there is delay in completion and commissioning of projects as per the schedule fixed by the Commission while approving the investment proposal of the OPTCL.
- h) The Commission is of the firm opinion that it may not be possible to allow cost escalation and time over-run on OPTCL account which shall be borne by the consumers, and such cost escalation may be disallowed at the time of capitalization. It is directed that (a) all the statutory clearance be the part of the pre-tender exercise and must be obtained before awarding the contract (b) in the detailed survey of the lines, RoW issues must be identified before taking up the actual execution work.
- i) OPTCL shall take all measures to improve the quality of service i.e. reduction of interruptions and maintenance of good voltage and frequency. OPTCL shall display on its website the details of interruptions (number of interruptions & duration of interruptions) of major lines and sub-stations, maximum and minimum voltage at station bus of each sub-station on a monthly basis.

- j) OPTCL shall continuously monitor the operation of the transmission system, prevent overloading wherever possible by load diversion and take up innovative measures for improving system loading of the existing network. Effective utilization of new lines and their impact on transmission loss need to be intimated to the Commission periodically and kept in the website of OPTCL for information of all stakeholders.
- k) The Commission will continue to take up periodical reviews of Repair and Maintenance works of the licensee and engage independent team of experts to monitor and report the progress of R&M works being undertaken. Technical audit to recheck and verify the status of work being executed by the licensee shall be a regular feature in the Business Plan period.
- l) As 220 kV and 132 kV network & the associated grid S/Ss of the system are the backbone of the transmission system, a regular planned maintenance and timely augmentation of lines and substations with proper protection system in place are required to minimize breakdowns and extend uninterrupted power supply to DISCOMs. Further a system can be so designed that it can meet the contingency maintenance. OPTCL should maintain its network in a proper manner and plan out the strategy starting from procurement to timely maintenance.

141. The application of OPTCL bearing Case No.51/2007 is disposed of accordingly.

Sd/-  
**(B. K. MISRA)**  
**MEMBER**

Sd/-  
**(K. C. BADU)**  
**MEMBER**

Sd/-  
**(B. K. DAS)**  
**CHAIRPERSON**