

# Volume-I

Main Petition

**ODISHA POWER GENERATION CORPORATION LTD.**

( A Government Company of the State of Odisha)  
CIN : U40104OR1984SGC001429



**Regd. Off :** Zone - A, 7th Floor, Fortune Towers, Chandrasekharapur, Bhubaneswar - 751 023, Odisha.  
Ph. : 0674-2303765 - 66, Fax : 0674 - 2303755 / 56  
Web : www.opgc.co.in

Ref: OPGC/Units 3 & 4/Tariff /2019-20/ 86

January 17, 2019

To,

**The Secretary,**

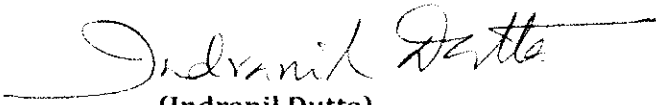
Odisha Electricity Regulatory Commission,  
Plot No.4, Chunokoli, SailashreeVihar  
Bhubaneswar- 751 021

**Sub: Authorisation of Mr. Ritwik Mishra, GM (C&RA) for filing of petition for approval of capital cost and tariff determination for units 3 & 4 (2x660 mw) from anticipated cod to march 31, 2019.**

Sir,

This is to certify that Mr.Ritwik Mishra, functioning as General Manager, Commercial & Regulatory Affairs, Odisha Power Generation Corporation Ltd., posted at the corporate office at Zone-A, 7<sup>th</sup> Floor, Fortune Towers, Chandrasekharapur, Bhubaneswar-751023, Odisha, India (Petitioner),is hereby authorised to file the petition for approval of capital cost and tariff determination for units 3 & 4 (2x660 mw) from anticipated cod to march 31, 2019 and appear on behalf of the petitioner for the tariff hearing and other procedure before OERC.

Thanking you  
Yours faithfully

  
(Indranil Dutta)  
Managing Director

PUSKAR SAHOO  
NOTARY, BHUBANESWAR  
GOVT. OF ODISHA  
MOB: 9337129137

*Memo*  
17.1.2019

**AFFIDAVIT**

**BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION,  
BHUBANESHWAR**

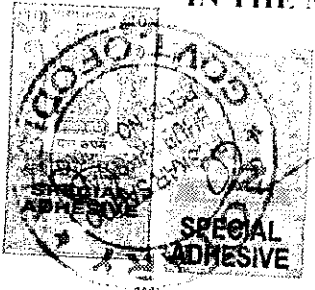
FILE NO. 1

CASE No. \_\_\_\_ of 2019

**IN THE MATTER OF**

Petition for Approval of Capital Cost and Tariff determination  
for Units 3 & 4 (2x660 MW) from anticipated COD to March  
31, 2019

**AND**



**IN THE MATTER OF**

Odisha Power Generation Corporation Ltd. (OPGC Ltd.),

**THE APPLICANT**

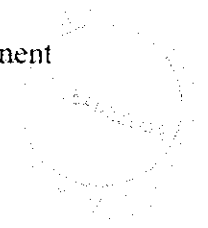
Zone-A, 7<sup>th</sup> Floor, Fortune Towers, Chandrasekharpur,  
Bhubaneswar-751023, Odisha, India (Petitioner)

I, Ritwik Mishra, son of Shri. Muralidhar Mishra, aged about 50 years, do solemnly affirm  
and say as follows:

- (a) That I am the General Manager (C&RA) of Odisha Power Generation Corporation Limited, the Petitioner in the above matter and am duly authorised by the said Petitioner to make this affidavit on its behalf.
- (b) The statements made in paragraphs 1.1 to 5 of the Petition herein now shown to me are true to my knowledge and statements made in paragraphs 1.1 to 5 are based on information made available to me and I believe them to be true.

*Ritwik Mishra*

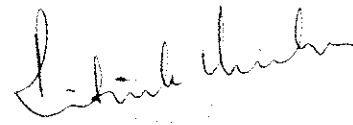
Deponent



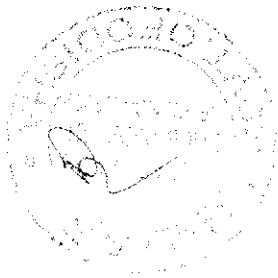
**Verification**

I, the deponent above named do hereby verify that the contents of my above affidavit are true to my knowledge; no part of it is false and nothing material has been concealed there from.

Verified at Bhubaneswar on the 17<sup>th</sup> day of January, 2019.



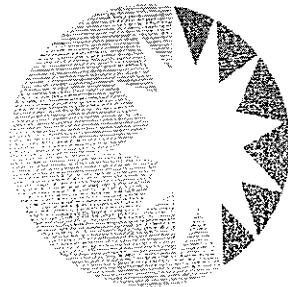
Deponent



PUSKAR SAHOO  
NOTARY, BHUBANESWAR  
GOVT. OF ODISHA  
MOB-9331129137

**ODISHA POWER GENERATION CORPORATION LIMITED**

**BHUBANESWAR**



**OPGC**  
*Power for Progress*

**PETITION FOR APPROVAL OF CAPITAL COST AND  
TARIFF DETERMINATION FOR UNITS 3 & 4 (2x660 MW)  
FROM ANTICIPATED COD TO MARCH 31, 2019**

**JANUARY, 2019**

**BEFORE THE ODISHA ELECTRICITY REGULATORY COMMISSION,  
BHUBANESHWAR**

CASE No. \_\_\_\_\_ of 2019

**IN THE MATTER OF** Petition for Approval of Capital Cost and Tariff determination  
for Units 3 & 4 (2x660 MW) from anticipated COD to March  
31, 2019

**AND**

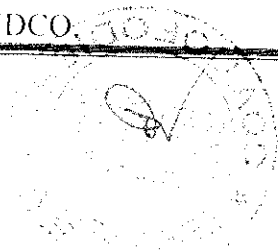
**IN THE MATTER OF** Odisha Power Generation Corporation Ltd. (OPGC Ltd.),  
**THE APPLICANT** Zone-A, 7<sup>th</sup> Floor, Fortune Towers, Chandrasekharpur,  
Bhubaneswar-751023, Odisha, India (Petitioner)

**ODISHA POWER GENERATION CORPORATION LIMITED (“The Petitioner”)  
RESPECTFULLY SUBMITS AS FOLLOWS:**

Odisha Power Generation Corporation Limited (hereinafter referred as “OPGC” or “the Petitioner”) is a company incorporated under the Companies Act, 1956 and having its registered office at Zone-A, 7<sup>th</sup> floor, Fortune Towers, Chandrasekharpur, Bhubaneswar, Odisha-751023.

OPGC, a generating company as defined in the Electricity Act, 2003, has an existing coal based thermal power station comprising of 2 Units of 210 MW capacity (Units 1 & 2), situated at IB Thermal Power Station Complex, Banharpalli, Jharsuguda District. OPGC is setting up 2 Units of 660 MW capacity (Units 3 & 4) as base load power plant, at the same site as that of the exiting plant.

OPGC and GRIDCO Limited (“GRIDCO”) had entered into a Long-Term Power Purchase Agreement (PPA) dated January 4, 2011 for supply of 50% of the Installed Capacity from Units 3 & 4 to GRIDCO as per the allocation specified in the PPA. Hon’ble OERC vide its Order dated April 4, 2012 in Case No. 113 of 2011 approved the long-term PPA between OPGC and GRIDCO.



*[Handwritten Signature]*

The construction activities of Units 3 & 4 are in advanced stages of completion with anticipated CODs being March 06, 2019 and January 30, 2019 for Unit 3 & Unit 4 respectively. OPGC is filing the instant Petition for approval of Capital Cost and Tariff determination from anticipated COD of the plant to March 31, 2019.

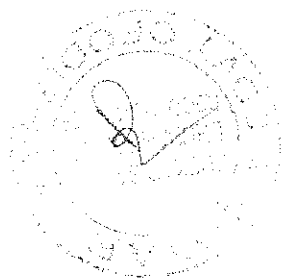
### **Prayers to the Hon'ble OERC**


OPGC respectfully prays that the Hon'ble OERC may:

- i. Admit the instant Petition;
- ii. Grant an expeditious hearing in the matter;
- iii. Approve the Capital Cost as claimed in the Petition;
- iv. Approve the tariff for FY 2018-19 as claimed in the Petition;
- v. Approve the recovery of other charges on actual basis as incurred during the year;
- vi. Approve the billing of Capacity Charges and Energy Charges for FY 2018-19 in accordance with the provisions of the OERC Tariff Regulations, 2014;
- vii. Approve the billing of Infirm Power to be supplied by OPGC to GRIDCO as per the provisions of the PPA/OERC Tariff Regulations, 2014;
- viii. Approve the interim tariff to be applicable from anticipated COD of Unit 4 upto disposal of the instant Petition and continue the same for the next control period till the tariff is decided by the Commission;
- ix. Approve the billing of monthly Capacity Charge and Energy Charge determined in the instant Petition till determination of final capital cost and tariff by the Hon'ble Commission;
- x. Condone any inadvertent omissions, errors, shortcomings and permit OPGC to add/change/ modify/ alter this filing and make further submissions as may be required at a future date; and
- xi. Pass such other and further Orders as deemed fit and proper in the facts and circumstances of the case.

Bhubaneswar

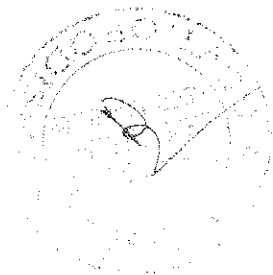
January 17, 2019



  
Petitioner

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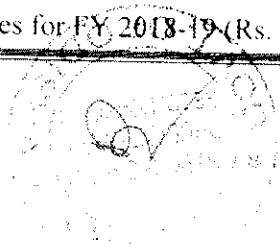


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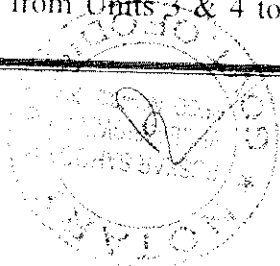


*[Handwritten Signature]*

## **1 Introduction**

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- 1.1 Odisha Power Generation Corporation Limited (herein after referred as "OPGC" or "the Petitioner") is a company incorporated under the Companies Act, 1956 and having its registered office at Zone-A, 7<sup>th</sup> floor, Fortune Towers, Chandrasekharpur, Bhubaneswar, Odisha-751023.
- 1.2 OPGC, a generating company as defined in the Electricity Act, 2003, has an existing coal based thermal power station comprising of 2 Units of 210 MW capacity (Units 1 & 2), situated at IB Thermal Power Station Complex, Banharpalli, Jharsuguda District.
- 1.3 OPGC, GRIDCO and GoO signed a Tripartite Agreement dated October 18, 1998 ("Tripartite Agreement") providing certain further amendments to existing PPA for Unit 1 & 2 and other provisions including those concerning the establishment of Units 3 & 4 of IB Thermal Power Station by OPGC.
- 1.4 Subsequently, certain disputes arose between the parties on issues arising from the terms of the PPA, Tripartite Agreement and other agreements between the Parties. In order to resolve these disputes, the parties entered into discussion and GoO constituted a Task Force vide Resolution No. 3895 dated May 7, 2007 for resolving disputes regarding tariff and other related matters. GoO based on the recommendations of Task Force, issued Notification No. 7216 dated June 21, 2008 ("2008 Notification") and Notification No. 10061/E dated October 12, 2009 for resolving all such disputes on terms and conditions contained therein in regard to Unit 1 & 2 and also in regard to setting up of Unit 3 & 4 of Capacity 2 x 660 MW (Supercritical Technology), as overall settlement of all such disputes. In view of the above, OPGC is setting up 2 Units of 660 MW capacity each (Units 3 & 4) as base load power plant, at the same site as that of the exiting plant.
- 1.5 OPGC and GRIDCO Limited ("GRIDCO") had entered into a Long-Term Power Purchase Agreement (PPA) dated January 4, 2011 for supply of 50% of the Installed Capacity from Units 3 & 4 to GRIDCO as per the terms of the PPA. Hon'ble OERC



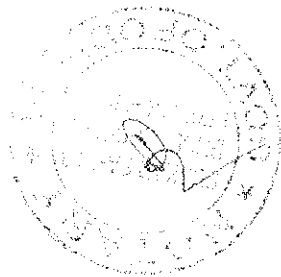
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*Shihul* Page 5

vide its Order dated April 4, 2012 in Case No. 113 of 2011 approved the long-term PPA and ruled as under:

*"14. In view of the above, we approve the PPA 2 between GRIDCO and OPGC considering Govt. of Odisha notifications and keeping in view the technological advantages and the interest of the state."*

- 1.6 Subsequently, vide its Notification No. 10485/OPGC- 25/2018 dated December 20, 2018 Government of Odisha has approved the arrangement for executing Supplementary Power Purchase Agreement to the existing PPA for additional 25% of installed capacity of Units 3 & 4 from COD upto March 31, 2023 and 100% of installed capacity of Units 3 & 4 from April 1, 2023 onwards for a period of 25 years thereafter. Therefore, the contracted capacity from COD of Unit 4 upto March 31, 2023 shall be 75% of the installed capacity and 100% thereafter.
- 1.7 The construction activities of Units 3 & 4 are in advanced stages of completion with anticipated CODs being March 06, 2019 and January 30, 2019. OPGC is filing the instant Petition for approval of Capital Cost and Tariff determination from anticipated COD to March 31, 2019.
- 1.8 The Petition is structured in the following manner:
- Section 1 (This Section): Introduction
  - Section 2: Approach for Filing Petition
  - Section 3: Capital Cost of Unit 3 & 4
  - Section 4: Generation Tariff for FY 2018-19
  - Section 5: Prayers



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## **2 Approach for Filing Petition**

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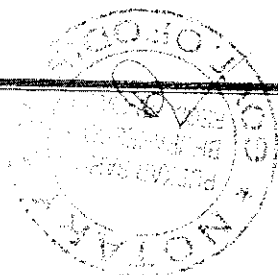
- 2.1 Hon'ble OERC vide its Order dated April 4, 2012 in Case No. 113 of 2011 approved the long-term PPA for allocation of contracted capacity and sale of power from Units 3 & 4 (2x660 MW) of Ib Thermal Power Station between OPGC and GRIDCO for a term of 25 years. The copy of PPA dated January 4, 2011 is enclosed at **Annexure 1**.
- 2.2 The instant Petition has been filed for approval of Capital Cost and determination of Generation Tariff for FY 2018-19 for Units 3 & 4 of IB Thermal Power Station of OPGC Ltd., having installed capacity of 1320 MW (2X660 MW), located at Banharpalli in District Jharsuguda.
- 2.3 The statutory and PPA provisions under which the instant Petition is being filed are as under.
- 2.4 Clause 1 of Schedule 4 of the PPA provides as under:

***1. Tariff basis***

*Tariff under this agreement shall be based on tariff norms and parameters of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 ("**Tariff Regulations**"). Accordingly, the Tariff norms and parameters stated hereunder have been included in this schedule based on the tariff norms and parameters outlined in the Tariff Regulations.*

*As and when any amendment to the Tariff norms and parameters are made in the Tariff Regulations, the said norms and parameters in this Schedule shall be applied to reflect the said amendments from time to time.*

*While the tariff provisions given herein are considered for the Power Station as a whole, while computing tariff for sale to GRIDCO, the provisions shall be considered in proportion to the 50% Contracted Capacity for GRIDCO."*



2.5 Subsequently, vide its Notification No. 10485/OPGC- 25/2018 dated December 20, 2018 Government of Odisha has approved the arrangement for executing Supplementary Power Purchase Agreement to the existing PPA for additional 25% of installed capacity of Units 3 & 4 from COD upto March 31, 2023 and 100% of installed capacity of Units 3 & 4 from April 1, 2023 onwards for a period of 25 years thereafter. Therefore, the contracted capacity from COD of Unit 4 upto March 31, 2023 shall be 75% of the installed capacity and 100% thereafter. The relevant extract of the GoO Notification is reproduced below:

*"4. After careful consideration, Government have been pleased to approve the arrangement worked out in the "Shareholders' meeting of OPGC" to contract the PPA for the entire capacity of Unit-3&4 between OPGC and GRIDCO in the following manner:*

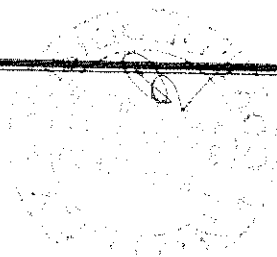
*(i) OPGC and GRIDCO shall execute a supplementary Agreement to the existing PPA on same terms as the executed PPA for 50% (660 MW), for another 25% (330 MW) of OPGC expansion capacity, to be effective from COD of Units 3&4, till 31<sup>st</sup> March, 2023. The Supplementary Agreement shall also include enhancement of the PPA from 75% to 100% from 1<sup>st</sup> April, 2023 for a period of 25 years thereafter.*

*(ii) Supplementary Agreement shall provide for amendment of the existing PPA for 50% of OPGC-II expansion capacity (660 MW) to be co-terminus with the arrangement as proposed in (i) above and to incorporate changes with respect to coal sourcing from OCPL.*

*.....*

*(vii) OPGC, GRIDCO, OPTCL and Department of Energy, Government of Odisha will take necessary approval from OERC for above arrangements."*

2.6 The copy of above stated Notification is enclosed at **Annexure 2**. The Supplementary Agreement is being drafted and after finalisation, shall be submitted to the Hon'ble Commission for approval in due course of time. As the Supplementary Agreement shall be essentially on the same terms as the approved PPA, OPGC requests the Hon'ble Commission to approve the tariff for sale to GRIDCO considering the 75% capacity allocation for FY 2018-19 as per the above stated GoO Notification dated December 20, 2018.



*[Handwritten signature]*

2.7 Hon'ble OERC has notified the Odisha Electricity Regulatory Commission (Terms and Conditions for Determination of Generation Tariff) Regulations, 2014 ("OERC Tariff Regulations, 2014") for the Control Period upto March 31, 2019. Regulations 1.5 and 1.6 of the OERC Tariff Regulations, 2014 specifies as under:

*"1.5 These provisions shall be applicable to all existing and future Generating Stations supplying power to GRIDCO (The State designated entity to procure power for DISCOMs)/distribution licensees of the State under long term agreement except generating stations which are subject to the jurisdiction of the Central Commission and also such renewable energy generating stations located in the State whose tariff is decided by the Commission under relevant Regulations and orders.*

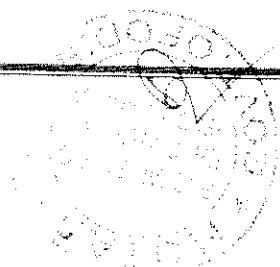
*1.6 Subject to the provisions of the Act, Rules and Policies, any new generating station which comes up in future and proposes to supply electricity to a distribution licensee of the State shall be subjected to the norms prescribed under these Regulations by the Commission, unless it proposes to supply electricity through bidding in accordance with the guidelines issued by the Central Government as per provisions of Section 63 of the Act."*

2.8 Regulation 2.2 of the OERC Tariff Regulations, 2014 specifies as under:

*"2.2 Tariff in respect of the generating station may be determined for the whole of the generating station or a unit or units of the generating station: Provided that tariff shall be determined unit wise till the time tariff cannot be determined for the whole of the generating station or for units as per the condition mentioned in proviso below :*

.....

*Provided that where only a part of the generation capacity of a generating station is tied up for supplying power to the beneficiaries through long term power purchase agreement and the balance of the generation capacity have not been tied up for supplying power to the beneficiaries, the tariff of the generating station shall be determined with reference to the capital cost of the*



*entire project, but the tariff so determined shall be applicable corresponding to the capacity contracted for supply to the beneficiaries."*

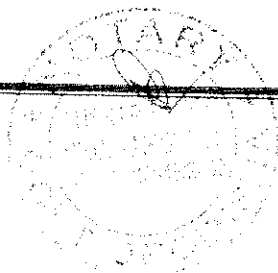
2.9 Regulations 2.5 and 2.6 of the OERC Tariff Regulations, 2014 specifies as under:

*"2.5 The generating company may make an application for determination of tariff, in respect of the units of the generating station completed or **projected to be completed within six months from the date of application.***

*2.6 The generating company shall make an application as per Formats prescribed by the Commission with necessary information and explanations, for determination of tariff based on capital expenditure incurred duly certified by the auditors" (emphasis provided)*

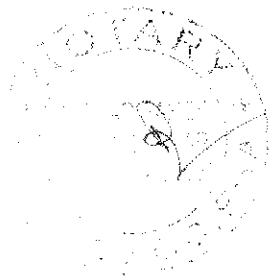
2.10 In light of the above stated provisions of the PPA and OERC Tariff Regulations, 2014, the tariff for supply of power from Units 3 & 4 of OPGC under the approved PPA with GRIDCO is to be determined by the Commission in accordance with its Tariff Regulations, 2014.

2.11 The PPA executed between OPGC and GRIDCO stipulates that the tariff under the PPA shall be based on tariff norms and parameters of CERC Tariff Regulations, 2009 as amended from time to time. At the time when the PPA was executed, OERC Tariff Regulations for determination of generation tariff was not notified. Subsequently, Hon'ble OERC has notified the Odisha Electricity Regulatory Commission (Terms and Conditions for Determination of Generation Tariff) Regulations, 2014 ("OERC Tariff Regulations, 2014") for the Control Period upto March 31, 2019. Regulation 1.5 of the OERC Tariff Regulations, 2014 clearly provides that the provisions of OERC Tariff Regulations, 2014 will be applicable for all existing and future Generating Stations supplying power to GRIDCO/Distribution Licensees of the State under long term agreement except generating stations which are subject to jurisdiction of CERC. As of now, OPGC has only executed the PPA with GRIDCO and hence OPGC will be supplying power to GRIDCO and hence the Units 3 and 4 of OPGC does fall under the jurisdiction of OERC.



- 2.12 Hence, in accordance with the provisions of OERC Tariff Regulations, 2014, this Petition for approval of tariff is being filed as per the norms and principles stipulated in OERC Tariff Regulations, 2014.
- 2.13 As per Regulation 2.5 of OERC Tariff Regulations, 2014, the generating company may make an application for determination of tariff, in respect of the units of the generating station completed or projected to be completed within six months from the date of application. As the Unit 3 and Unit 4 are likely to achieve COD by March 06, 2019 and January 30, 2019, the current Petition is filed for determination of tariff.
- 2.14 The current Control Period as per OERC Tariff Regulations, 2014 is upto 31 March, 2019 and accordingly, OPGC is filing the instant Petition for approval of Capital Cost and determination of tariff from anticipated COD of Unit 4 upto March 31, 2019 in accordance with the provisions of the OERC Tariff Regulations, 2014.

*Atish Mishra*



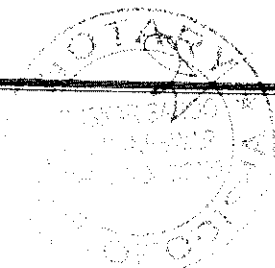


### 3 Capital Cost of Units 3 & 4

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#### *Background of the project*

- 3.1 The Government of Odisha (GoO), vide its letter dated April 17, 2013 had accorded the approval for setting up of Units 3 & 4 of IB TPS of OPGC at the estimated cost of Rs. 11547.00 Crore (including the cost of Captive Coal Mine). Out of the total estimated cost of Rs. 11547.00 Crore, the estimated cost of the power project is Rs. 10165.00 Crore. The copy of DPR and the Approval by the Government of Odisha are enclosed at **Annexures 3 & 4**.
- 3.2 Units 3 & 4 are being developed adjacent to existing Units 1 & 2 of IB TPS at Banharpalli. The site is located in Jharsuguda District of Odisha on the bank of Hirakud reservoir and about 20 km south of Belpahar Railway Station and 40 km southwest of Jharsuguda town. The coal required for Units 3 & 4 shall be met from the Manoharpur and Dipside of Manoharpur coal blocks allocated to M/s Odisha Coal and Power Limited (OCPL) (a JV of OPGC and OHPC) and transported by means of Merry-Go-Round system owned and operated by OPGC. Till the achievement of rated production capacity of the allocated coal mines, the coal requirement shall be met through the bridge linkage and flexible coal utilisation from MCL.
- 3.3 Unit 3 is connected with OPTCL's 400 kV S/s at Lapanga and Unit 4 is connected with PGCIL's 400/765 kV S/s Jharsuguda with split bus arrangement at OPGC's 400 kV switchyard.
- 3.4 As GRIDCO's share in the installed capacity of Units 3 & 4 is enhanced to 75% from COD upto March, 2023 and 100% thereafter, OPGC has relinquished the Long-Term Inter-State Open Access availed for Unit 4. OPGC requests the Hon'ble Commission to allow the recovery of charges, if any, incurred for relinquishment of Long-Term Inter-State Open Access availed for Unit 4 at a later stage.
- 3.5 The chronology of events for the project are as follows:



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**Table 1: Chronology of key events for the project**

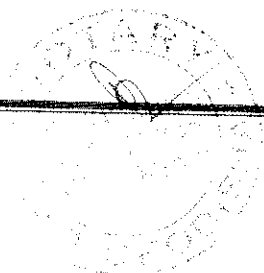
S. No.	Particulars	Date
1	Allocation of Manoharpur and Dipside of Manoharpur coal blocks to OPGC	August 3, 2007
2	Environmental Clearance from Ministry of Environment & Forests	February 4, 2010
3	Clearance from Airports Authority of India	March 15, 2010
4	Consent to Establish by Odisha State Pollution Control Board	August 28, 2010
5	Date of Financial Closure	November 23, 2012
6	Investment Approval by GoO	April 17, 2013
7	Award of BTG package	April 27, 2013
8	Award of BoP package	July 11, 2013
9	Agreement with water resource department for water allocation	August 26, 2013
10	Grant of Long-Term Open Access for supply of 600 MW outside the state	September 13, 2013
11	Zero Date (Notice to Proceed)	March 26, 2014
12	Cancellation of allotment of Manoharpur and Dipside of Manoharpur coal blocks to OPGC by Supreme Court	September 24, 2014
13	Allotment Agreement for Allocation of Manoharpur and Dipside of Manoharpur coal blocks to M/s OCPL for end use of power generation at expansion Units of OPGC	August 31, 2015
14	PGCIL Connectivity	December 4, 2017
15	OPTCL Connectivity	November 3, 2018
16	Anticipated CODs	
	Unit 3	March 06, 2019
	Unit 4	January 30, 2019

**Capital Cost**

3.6 Regulation 3.1 of the OERC Tariff Regulations, 2014 specifies as under:

*“3.1 Capital Cost for a Project shall include-*

*(a) The expenditure incurred or projected to be incurred, including Interest During Construction (IDC) & Incidental Expenditure During Construction (IEDC) and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan-*



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(i) Being equal to 70% of the funds deployed in the event of the actual equity in excess of 30% of the funds deployed by treating the excess equity as normative loan ; or

(ii) Being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed, up to the date of commercial operation of the project, as admitted by the Commission, after prudence check :

Provided that any revenue earned during construction period up to COD on account of interest on deposits or advances, or any other receipts may be taken into account for reduction in incidental expenditure during construction.

(b) Capitalised initial spares subject to the ceiling norms specified as under :

(i) Coal-based thermal generating stations – 2.0% of original project cost

.....

(c) Additional capital expenditure determined under Regulations 3.3 and 3.4 of these Regulation :

Provided that the assets forming part of the project, but not in use shall be taken out of the capital cost."

3.7 The instant Petition is for approval of Capital Cost anticipated to be incurred for Units 3 & 4. The Capital Cost of Units 3 & 4 claimed by OPGC is shown in the Table given below:



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**Table 2: Capital Cost of Units 3 & 4 (Rs. Crore)**

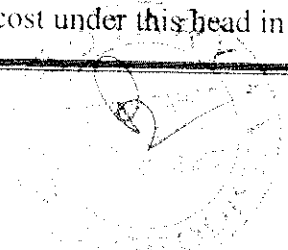
S. No.	Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)=(v)+(vi)
1	Land	149.00	131.48	131.71	0.20	131.91
2	BTG	3892.00	3541.76	3868.36	419.28	4287.64
3	BoP	2877.00	1535.65	1713.63	138.81	1852.44
4	MGR	670.00	874.54	1318.08	232.17	1550.25
5	Township & Colony	200.00	135.45	151.30	30.99	182.29
6	Ash pond	289.00	47.96	175.37	80.15	255.51
7	Pre-commissioning expenses	475.00	87.00	332.92	4.26	337.18
8	Overheads	391.00	299.08	412.35	37.70	450.05
9	Water Conservation Fund	0.00	0.00	101.80	0.00	101.80
10	<b>Hard Cost</b>	<b>8943.00</b>	<b>6652.91</b>	<b>8205.52</b>	<b>943.55</b>	<b>9149.07</b>
11	IDC & FC	1223.00	1123.76	1521.82	0.00	1521.82
12	<b>Total</b>	<b>10165.00</b>	<b>7776.67</b>	<b>9727.34</b>	<b>943.55</b>	<b>10670.90</b>
13	Inclusion of cost pertaining to Units 1 & 2 as per Clause 2(c) of Schedule 4 of the PPA			75.00		75.00
14	<b>Total project cost</b>	<b>10165.00</b>	<b>7776.67</b>	<b>9802.34</b>	<b>943.55</b>	<b>10745.90</b>

3.8 The package wise cost is discussed in detail in the paragraphs below:

**Land**

3.9 Units 3 & 4 are being set up on the land adjacent to the operational Units 1 & 2, which was acquired at the time of setting up of Units 1 & 2 and value for which is considered within the additional Rs. 75 Crore considered at Sl. No. 13 of Table 2. However, additional land is required for MGR and ash pond which has been procured on lease basis from Odisha Industrial Infrastructure Development Corporation (IDCO).

3.10 The cost of land as estimated in the DPR was Rs. 149 Crore. As against the same, the actual expenditure incurred upto August 31, 2018 is Rs. 131.48 Crore. The anticipated expenditure upto COD of the station is Rs. 131.71 Crore and the total expenditure projected to be incurred under this head is Rs. 131.91 Crore which is less than the estimated cost under this head in DPR.



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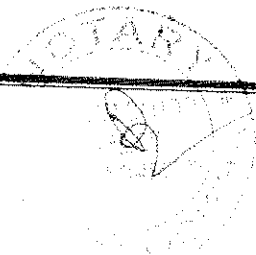
**Table 3: Cost of land (Rs. Crore)**

Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
Land cost	149.00	131.48	131.71	0.20	131.91

**Boiler Turbine Generator (BTG) package**

- 3.11 The BTG package was awarded to M/s BHEL pursuant to International Competitive Bidding (ICB). Accordingly, the contracts for Supply and Services for BTG package was executed on April 27, 2013 at the award cost of Rs. 4051.00 Crore. The extracts of contracts executed with M/s BHEL are enclosed at **Annexures 5 & 6**. The scope of Supply Contract included the supply of equipment including mandatory spares. The scope of Services Contract included the inland transportation of equipment from supply point to delivery point and erection & commissioning of the main plant. Notice to Proceed (NTP) was issued to M/s BHEL on March 26, 2014 after fulfilment of conditions precedent by both the BTG and BoP contractors.
- 3.12 In addition to the contracts awarded to M/s BHEL, miscellaneous contracts amounting to Rs. 5.13 Core were awarded on firm price basis for procurement of material for (i) pipes, (ii) pumps, and (iii) construction equipment. These works were not included in the scope of BTG contract awarded to M/s BHEL.
- 3.13 The cost of BTG package as estimated in the DPR was Rs. 3892.00 Crore. As against the same, the awarded cost is Rs. 4056.13 Crore. The actual expenditure incurred up to August 31, 2018 is Rs. 3541.76 Crore. The anticipated expenditure up to COD of the station is Rs. 3868.36 Crore and the total expenditure projected to be incurred under this head upto cut-off date is Rs. 4287.64 Crore.

*Shihabuddin*

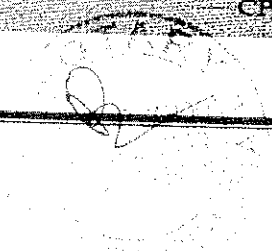
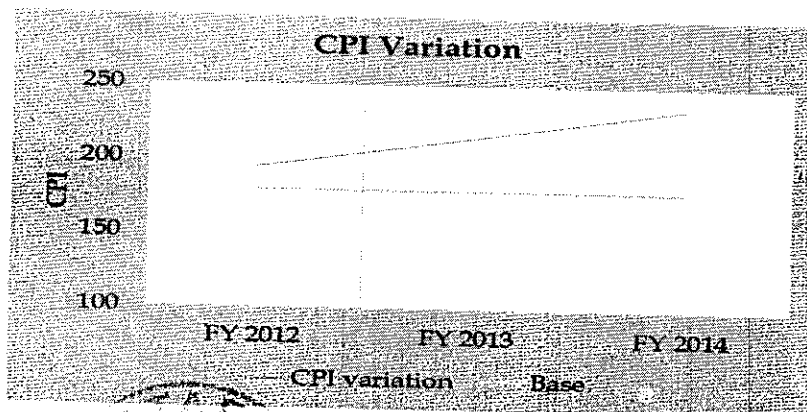
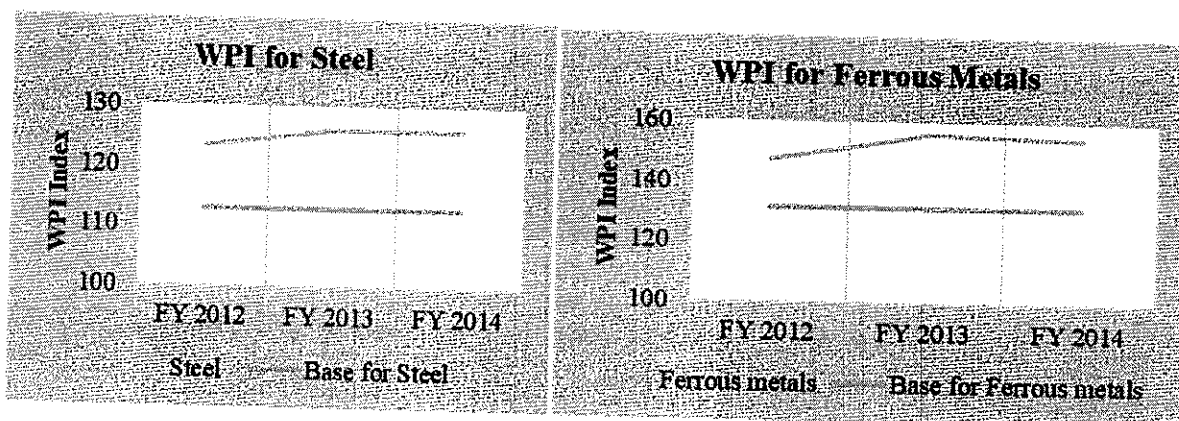


**Table 4: Cost of BTG package (Rs. Crore)**

Particulars	DPR Cost	Awarded Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
M/s BHEL - Supply	3892.00	3609.07	3171.56	3415.47	265.42	3680.89
M/s BHEL - Services		441.93	370.20	452.89	153.86	606.75
Other miscellaneous contracts		5.13				
<b>Total</b>	<b>3892.00</b>	<b>4056.13</b>	<b>3541.76</b>	<b>3868.36</b>	<b>419.28</b>	<b>4287.64</b>

3.14 The reasons for increase in cost of BTG package from DPR cost to the estimated cost is as discussed below:

- i. The DPR estimates were prepared in the year 2010 considering the then prevailing rates. Whereas the contracts were awarded to M/s BHEL in the year 2013 pursuant to International Competitive Bidding. It is pertinent to mention that the WPI and CPI movement during the period from 2010 to 2014 was on increasing trend as shown below:



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- ii. Therefore, the increase in cost of BTG package from DPR estimates to the awarded cost is justified considering the increasing trend of raw materials and labour cost during the period from 2010 to 2013.
- iii. The contracts awarded to M/s BHEL provides for changes in the scope of work by issue of Change Orders, in the events necessitating the same with corresponding contract price adjustment. OPGC has exercised due diligence while admitting such Change Orders. The difference between the likely completed cost and the awarded cost is on account of the Change Orders as shown below:

**Table 5: Impact of change orders on contract price of M/s BHEL**

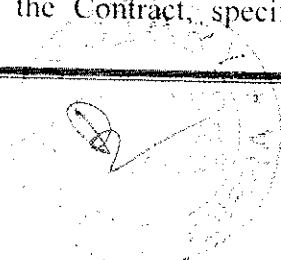
S. No.	Change Order	Impact (Rs. Crore)
1	Safety Bonus (not included in Contract price)	5.00
2	Change Orders issued (price variation, variations in service tax, variations in seller taxes etc.)	68.44
3	Potential Change Orders (Goods and Services Tax and Krishi Kalyan Cess)	10.83
4	Change Order claims under evaluation	147.61
5	<b>Total</b>	<b>231.88</b>

- iv. In view of the above justification, the increase in BTG cost from awarded cost is totally justified in light of the market conditions and the contract provisions.

**Balance of Plant (BoP) package**

3.15 The BoP package was awarded to M/s BGR Energy Systems Limited (BGRESL) pursuant to International Competitive Bidding (ICB). Accordingly, the contracts for Supply and Services for BoP package was executed on July 11, 2013 at the award cost of Rs. 1573.07 Crore. The extracts of contracts executed with M/s BGRSEL are enclosed at **Annexures 7 & 8**. The scope of Supply Contract included the supply of equipment including mandatory spares. The scope of Services Contract included the erection and commissioning of Balance of Plant. NTP was issued to M/s BGRSEL on March 26, 2014 after fulfilment of conditions precedent by the Contractor. The time gap between award of contract and issue of NTP is on account of the following:

- i. As per the Contract, specified conditions precedent were to be fulfilled for

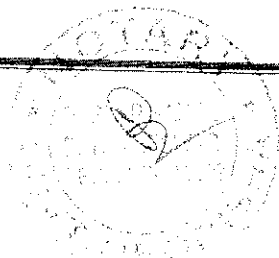
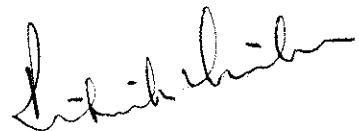


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issuance of NTP and submission of Performance Security was one of them.

- ii. Major discrepancies were observed on NTP pre-requisites to be fulfilled by BOP contractor and number of discussions were held to get the required deliverables.
- iii. After repeated pursuance with them the issues were resolved which ultimately delayed issuance of NTP.

- 3.16 In addition to contracts placed on M/s BGRSEL, miscellaneous contracts amounting to Rs. 31.62 Core were awarded on firm price basis for (i) miscellaneous civil works, (ii) consultancy services for complying with environmental norms, and (iii) procurement of dozers. These works were not included in the scope of BoP contract awarded to M/s BGRSEL.
- 3.17 Further, OPGC has placed the contract for Ash Water Recycling System (AWRS) package on M/s Driplex Water Engineering Pvt. Ltd. pursuant to Domestic Competitive Bidding (DCB) at firm price of Rs. 107.35 Crore on October 23, 2017. The scope of work of this contract included the Design, engineering, manufacturing, procurement of equipment and materials, inspection and testing, insurance, packing and dispatch and delivery of the equipment to Site, unloading, storage, civil and structural works, erection, testing & commissioning of (i) Ash Water Recycling System, (ii) Ash Water Pipeline, (iii) Cooling Tower Blowdown RO System, and (iv) Transmission System for Ash Water Recycling system. These works were not included in the scope of work of the contracts placed on M/s BGRSEL and awarded separately.
- 3.18 The cost of BoP package as estimated in the DPR was Rs. 2877.00 Crore. As against the same, the awarded cost is Rs. 1712.04 Crore. The actual expenditure incurred up to August 31, 2018 is Rs. 1535.65 Crore. The anticipated expenditure up to COD of the station is Rs. 1713.63 Crore and the total expenditure projected to be incurred upto the cut-off date under this head is Rs. 1852.44 Crore.





**Table 6: Cost of BoP package (Rs. Crore)**

Particulars	DPR Cost	Awarded Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
M/s BGRSEL - Supply	2877.00	946.94	1528.14	1597.17	133.45	1730.62
M/s BGRSEL - Services		626.13				
Other miscellaneous contracts		31.62				
M/s Driplex - AWRS package		107.35	7.51	116.45	5.37	121.82
<b>Total</b>	<b>2877.00</b>	<b>1712.04</b>	<b>1535.65</b>	<b>1713.63</b>	<b>138.81</b>	<b>1852.44</b>

3.19 The total estimated cost of BoP cost is on lower side in comparison to the DPR estimates primarily on account of the lower prices discovered in ICB. This is on account of the severe competition in the competitive bidding undertaken for EPC contracts of BoP packages. Similar trend is also observed in the award of BoP packages of other generating stations in the country. For instance, in the case of SCCL Thermal Power Plant (2x600 MW) in the state of Telangana the discovered price pursuant to ICB in the year 2013 was Rs. 973.02 Crore as against the DPR estimates of Rs. 1457.42 Crore.

3.20 The contracts placed on M/s BGRSEL are on firm price basis. However, the contracts provide for changes in the scope of work, by issue of Change Orders, in the events necessitating the same with corresponding contract price adjustment. OPGC has exercised due diligence while admitting such Change Orders. The difference between the likely completed cost and the awarded cost of M/s BGRSEL is Rs. 129.96 Crore. The same is on account of the Change Orders as shown below:

**Table 7: Impact of Change Orders on contract price of M/s BGRSEL**

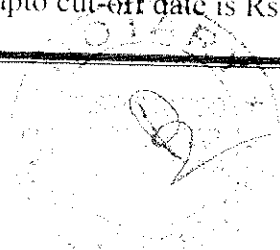
S. No.	Change Order	Impact (Rs. Crore)
1	Safety Bonus (not included in contract price)	5.00
2	Change Orders issued (price adjustment, variations in service tax, etc.)	60.21
3	Change Order claims under evaluation	64.75
4	<b>Total</b>	<b>129.06</b>

3.21 The balance increase in the cost of BoP cost is on account of the change orders of M/s Driplex and cost variation in other contracts.

3.22 In view of the above justification, the increase in BoP cost from awarded cost is justified in light of the market conditions and the contract provisions.

**Merry-Go-Round (MGR) package**

- 3.23 M/s RITES Ltd. has been appointed as the Owner's Engineer for tendering and execution of MGR works at the award price of 43.87 Crore. The Lumpsum, Turnkey, Engineering Procurement and Construction contract for MGR was placed on M/s Larsen & Toubro Limited (L&T) at the firm price of Rs. 1026.00 Crore pursuant to International Competitive Bidding (ICB). The extract of contract executed with M/s L&T is enclosed at **Annexure 9**.
- 3.24 The contracts for procurement of 3 nos. locomotives was placed on M/s DLW at firm price of Rs. 60.46 Crore on nomination basis. The lumpsum contract for supply of 110 nos. of wagons, 3 nos. Brake Vans and Spares was placed on M/s Titagarh Wagons Limited at the firm price of Rs. 45.57 Crore on Competitive Bidding basis.
- 3.25 The MGR route had interferences with PGCIL's and OPTCL's transmission lines and for the required diversion PGCIL and OPTCL were awarded relevant contracts on deposit basis. The contract for diversion of the power transmission line of PGCIL intercepting with the MGR was placed on M/s PGCIL on deposit basis at the price of Rs. 39.74 Crore in first phase and Rs. 15.78 Crore in second phase. Also, OPGC had to incur an expenditure of Rs. 1.37 Crore for diversion of OPTCL transmission line intercepting the MGR. In addition, miscellaneous contracts amounting to Rs. 1.14 Crore were placed for execution of MGR works.
- 3.26 The cost of MGR package as estimated in the DPR was Rs. 670.00 Crore. As against the same, the awarded cost is Rs. 1233.93 Crore. The actual expenditure incurred up to August 31, 2018 is Rs. 874.54 Crore. The anticipated expenditure up to COD of the station is Rs. 1318.08 Crore and the total expenditure projected to be incurred under this head upto cut-off date is Rs. 1550.25 Crore.



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**Table 8: Cost of MGR package (Rs. Crore)**

Particulars	DPR Cost	Awarded Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
M/s RITES	670.00	43.87	874.54	1318.08	232.17	1550.25
M/s L&T		1026.00				
M/s DLW		60.46				
M/s Titagarh Wagons		45.57				
M/s Power Grid		39.74				
M/s Power Grid-Relocation of Transmission Line		15.78				
Expediting of OPTCL Line		1.37				
Miscellaneous contracts		1.14				
<b>Total</b>	<b>670.00</b>	<b>1233.93</b>	<b>874.54</b>	<b>1318.08</b>	<b>232.17</b>	<b>1550.25</b>

3.27 The original cost estimates in the DPR appears to be on much lower side in comparison to the award cost mainly on account of the time difference between the DPR estimates (2010) and the actual award of contracts (2014&2015). RITES had subsequently submitted a revised estimate of Rs. 956.23 Crore, which was approved by the Committee of Directors of OPGC in February 2014. The revised estimate excludes rolling stock. Hence, as compared to the revised estimate, the price discovered through bidding is higher by Rs. 260.55 Crore. All the contracts, except the contract placed for procurement of locomotives on M/s DLW and shifting of PGCIL/OPTCL transmission towers interfering with the MGR corridor, are awarded through open competitive bidding.

3.28 The increase in total projected cost from awarded cost is on account of the increase in the contract price of M/s L&T. The contract placed on M/s L&T is on firm price basis. However, the contracts provide for changes in the scope of work, by issues of Change Orders, in the events necessitating the same with corresponding contract price adjustment. OPGC has exercised due diligence while admitting such Change Orders. The difference between the total estimated cost and the awarded cost is Rs. 316.32 Crore. The same is on account of the Change Orders and additional scope of work as

shown below:

**Table 9: Details of MGR cost variation**

S. No.	Change Order	Impact (Rs. Crore)
1	Safety Bonus (not included in contract price) – M/s L&T	4.70
2	Change Orders issued (variations in service tax, etc.) – M/s L&T	50.40
3	Potential Change Orders (GST etc.) – M/s L&T	96.26
4	Change Order claims under evaluation – M/s L&T	26.60
5	Additional scope of work (other than M/s L&T)	138.36
6	<b>Total</b>	<b>316.32</b>

3.29 In view of the above justification, the increase in MGR cost from awarded cost is justified in light of the market conditions and the contract provisions.

#### **Township & Colony**

3.30 The construction of residential facilities for the employees of Units 3 & 4 is being done through multiple contracts awarded through open competitive bidding.

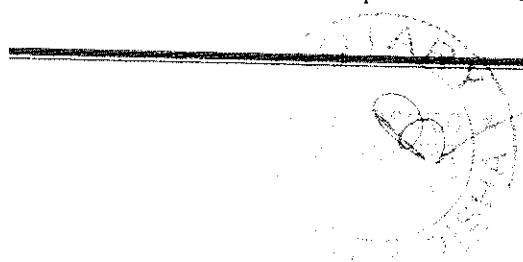
3.31 The cost of township and colony as estimated in the DPR was Rs. 200.00 Crore. As against the same, the actual expenditure incurred up to August 31, 2018 is Rs. 135.45 Crore. The anticipated expenditure up to COD of the station is Rs. 151.30 Crore and the total expenditure projected to be incurred under this head upto cut-off date is Rs. 182.29 Crore which is lower than the cost estimated in DPR under this head.

**Table 10: Cost of Township & Colony (Rs. Crore)**

Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
Township & Colony	200.00	135.45	151.30	30.99	182.29

#### **Ash pond**

3.32 The contract for ash pond construction for Units 3 & 4 was placed on M/s Shree Balaji



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Engicon Private Limited at the firm price of Rs. 199.75 Crore pursuant to Domestic Competitive Bidding (DCB). In addition to the same, miscellaneous contracts are placed for construction activities related to ash pond. The contract price of M/s Balaji is expected to increase to Rs. 220.49 Crore on account of Change Orders amounting to Rs. 20.74 Crore. The extract of the contract placed on M/s Balaji is enclosed at **Annexure 10**.

3.33 The cost of ash pond as estimated in the DPR was Rs. 289.00 Crore. As against the same, the actual expenditure incurred up to August 31, 2018 is Rs. 47.96 Crore. The anticipated expenditure up to COD of the station is Rs. 175.37 Crore and the total expenditure projected to be incurred under this head upto cut-off date is Rs. 255.51 Crore, which is lower than the cost estimated in DPR under this head. It is pertinent to mention here that, the project had been conceptualised to have one Ash pond for initial period for disposal of ash from the project and subsequently, the ash would be transported to the captive coal mines for backfilling. However, the above arrangement is subject to approval of the competent authorities. In case, this does not happen, then OPGC may go for additional Ashpond for disposal of ash generated from the power project. In either case, OPGC shall be claiming the additional capitalisation on account of the same as and when it happens.

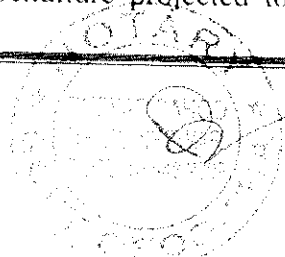
**Table 11: Cost of Ash pond (Rs. Crore)**

Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
Ash pond	289.00	47.96	175.37	80.15	255.51

**Pre-commissioning expenses**

3.34 The pre-commissioning expenses comprises of (i) Site Supervision, (ii) Construction Insurance, and (iii) Start-up power and fuel.

3.35 The pre-commissioning expenses as estimated in the DPR was Rs. 475.00 Crore. As against the same, the actual expenditure incurred up to August 31, 2018 is Rs. 87.00 Crore. The anticipated expenditure up to COD of the station is Rs. 332.92 Crore and the total expenditure projected to be incurred under this head is Rs. 337.18 Crore.



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which is lower than the cost estimated in DPR under this head.

**Table 12: Pre-commissioning expenses (Rs. Crore)**

Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
Site supervision	105.00	39.90	57.19	4.26	61.45
Construction Insurance	70.00	30.74	35.52	0.00	35.52
Start-up expenses	300.00	16.36	240.20	0.00	240.20
<b>Total</b>	<b>475.00</b>	<b>87.00</b>	<b>332.92</b>	<b>4.26</b>	<b>337.18</b>

### Overheads

3.36 The overheads as estimated in the DPR was Rs. 391.00 Crore. As against the same, the actual expenditure incurred up to August 31, 2018 is Rs. 299.08 Crore. The anticipated expenditure up to COD of the station is Rs. 412.35 Crore and the total expenditure projected to be incurred under this head is Rs. 450.05 Crore.

**Table 13: Cost of Overheads (Rs. Crore)**

Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
Overheads	391.00	299.08	412.35	37.70	450.05

### Contribution to Water Conservation Fund

3.37 As per the Resolution of Department of Water Resources, Government of Odisha, dated May 18, 2015, OPGC is required to contribute the amount at the rate of Rs. 2.5 Crore/Cusec towards creation of Water Conservation Fund. The same is required as a statutory compliance and hence considered in the Capital Cost of the project. This is on account of the unforeseen and anticipated expenditure of Rs. 101.80 Crore for the contribution to be made towards Water Conservation Fund. OPGC would like to humbly submit that this cost of contribution towards Water Conservation Fund is statutory cost which is uncontrollable in nature.



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## Hard Cost

3.38 Based on the above, the Hard Cost for Units 3 & 4 is as shown in the Table below:

**Table 14: Hard Cost (Rs. Crore)**

S. No.	Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
1	Land	149.00	131.48	131.71	0.20	131.91
2	BTG	3892.00	3541.76	3868.36	419.28	4287.64
3	BoP	2877.00	1535.65	1713.63	138.81	1852.44
4	MGR	670.00	874.54	1318.08	232.17	1550.25
5	Township & Colony	200.00	135.45	151.30	30.99	182.29
6	Ash pond	289.00	47.96	175.37	80.15	255.51
7	Pre-commissioning expenses	475.00	87.00	332.92	4.26	337.18
8	Overheads	391.00	299.08	412.35	37.70	450.05
9	Water Conservation Fund	0.00	0.00	101.80	0.00	101.80
10	<b>Hard Cost</b>	<b>8943.00</b>	<b>6652.91</b>	<b>8205.52</b>	<b>943.55</b>	<b>9149.07</b>

3.39 As indicated above, the total Hard Cost projected to be incurred is higher than the DPR estimates by a meagre 2%.

## Reasonableness of Hard Cost

3.40 The benchmark Hard Cost determined by the Central Electricity Regulatory Commission (CERC) in its Order dated June 4, 2012 for TPS (2 x 660 MW) with coal as fuel at the December, 2011 price level was Rs. 5.01 crore/MW. This includes Steam Generator/Boiler Island, Turbine Generator Island, associated Auxiliaries, Transformers, Switchgear, cables, cable facilities, Grounding & Lighting Packages, Control & Instrumentation, Initial Spares for BTG, BoP including cooling tower, water system, coal handling Plant, ash handling Plant, fuel oil unloading & storage, Mechanical Miscellaneous Package, switchyard, chimney, and emergency DG Set. It does not include merry-go-round and Railway siding, unloading equipment at jetty, and rolling stock, locomotive, and Transmission Line till the tie point. In more recent CERC Orders on approval of Capital Cost of coal-based TPS (for instance CERC's



*S. S. Chakrabarti* Page 26

Order dated February 1, 2017 in Petition No. 328/GT/2014), the benchmark Hard Cost determined in its Order dated 4 June, 2012 has been escalated upto the actual COD of the respective Generating Stations for analysis of the reasonableness of the actual Hard Cost as on the COD.

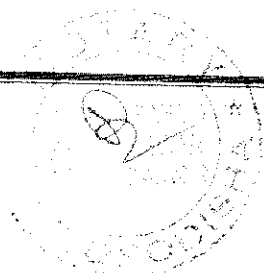
3.41 The benchmark Hard Cost for TPS as per CERC's Order dated June 4, 2012 is dynamic and based on market trends and indices, and is subject to adjustment considering inflation. The indicative benchmark norms for Hard Cost with the December, 2011 index as the base need to be escalated considering the movement of WPI during the intervening period to arrive at the Hard Cost as on COD. As per the data of the Ministry of Commerce and Industry, GoI, the WPI for October, 2018 was 121.7 as against 104.7 in December, 2011, i.e. an increase of 16%. Accordingly, the indicative benchmark Hard Cost works out to Rs. 5.82 crore/MW (5.01 + 16% inflation). The projected Hard Cost for Units 3 & 4 is well within the benchmark Hard Cost as shown below:

**Table 15: Comparison of Hard Cost with CERC benchmark**

Particulars	Units	Projected expenditure upto COD	Total cost
Hard Cost	Rs. Crore	8205.52	9149.07
Less:			
MGR	Rs. Crore	1318.08	1550.25
Overheads	Rs. Crore	412.35	450.05
Hard Cost for comparison purposes	Rs. Crore	6475.08	7148.77
<b>Cost per MW</b>	<b>Rs. Crore/MW</b>	<b>4.91</b>	<b>5.42</b>
CERC Benchmark Hard Cost as on December 2011	Rs. Crore/MW	5.01	5.01
<b>CERC Benchmark Hard Cost escalated with point to point WPI Inflation till October 2018</b>	<b>Rs. Crore/MW</b>	<b>5.82</b>	<b>5.82</b>

#### Commissioning Schedule

3.42 The commissioning schedule as per the timelines agreed upon in the BTG contract is as under:



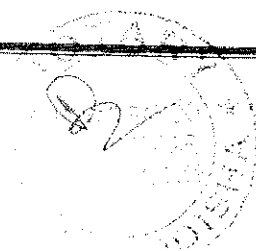
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**Table 16: Scheduled completion date and anticipated completion date**

Particulars	Units	Value
Zero Date (NTP)	Date	26-Mar-14
Scheduled completion period as per the BTG contract	Months	51
Target completion date	Date	26-Jun-18
Anticipated COD	Date	06-Mar-19

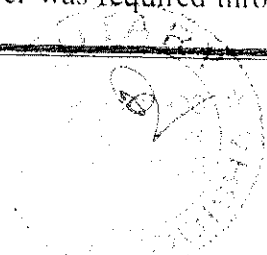
- 3.43 OPGC encountered several hindrances in project execution, since beginning, on account of the events external to OPGC. Despite such external factors affecting the progress of works, OPGC could mitigate the adverse effects to a larger extent by proactive measures and continuous follow up with the contractors for expediting the works. Despite, the best efforts and circumstances as further elaborated hereinafter, the anticipated delay in commissioning is 9 months. The delay is on account of the factors elaborated in the following paragraphs:
- 3.44 **Cancellation of coal block allocation by Supreme Court:** Ministry of Coal, Government of India vide letter dated August 3, 2007 conveyed its in-principle consent to the allocation of Manoharpur and Dipside of Manoharpur coal blocks for meeting the coal requirement of expansion Units of OPGC under the Government Company dispensation in pursuance of the provisions of the Revised Policy on Coal Mining by State Government. OPGC had made substantial progress on land acquisition, forest clearance, environment clearance, R&R etc, for coal mine, MGR and ash pond, committing substantial amounts of money towards these processes. In parallel advancement was made in EPC contracting process for the power plant and clearance was issued for starting construction from March 2014.
- 3.45 Hon'ble Supreme Court of India, vide its Judgment dated August 25, 2014 read with its order dated September 24, 2014 in Writ Petition (Criminal) No. 120 of 2012 (Manohar Lal Sharma vs. Principal Secretary & Ors.) had cancelled allotment of 204 coal blocks. Vide its same order dated September 24, 2014 Hon'ble Supreme Court of India cancelled the allocation of some coal blocks in the State of Odisha. The allocation of Manoharpur and Dipside of Manoharpur coal blocks to OPGC also stood cancelled by the said order of the Hon'ble Supreme Court of India.



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3.46 Subsequent to the Hon'ble Supreme Court of India's above Judgment, the Coal Mines (Special Provisions) Ordinance, 2014 read with Coal Mines (Special Provisions) Second Ordinance, 2014 were promulgated by the Central Government. The Coal Mines (Special Provisions) Rules, 2014 were framed for auction and allotment of all coal blocks which were subject to cancellation pursuant to the Hon'ble Supreme Court of India Judgment. Manoharpur and Dipside of Manoharpur coal blocks were allotted to M/s OCPL vide the Allotment Agreement dated August 31, 2015 for the specific end use of OPGC expansion project. The cancellation of previous allocation of the coal blocks rendered uncertainty on the fuel supply for the project. As a result, for one year, all project activities including construction of the power plant, land acquisition for MGR and ash pond, award of construction contracts for ash pond and MGR, commitment of resources for the entire project etc., took a back seat and primary focus remained on ensuring a source of fuel supply for the expansion Units under construction. The cumulative impact has led to the overall delay in the project.

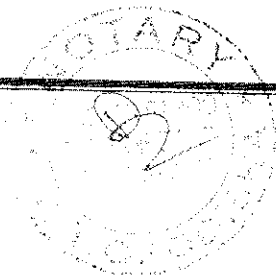
3.47 **Delay in transmission system for start-up power:** As per the EPC contracts back feed power was to be provided by March, 2016 through OPTCL transmission system. However due to delay in construction of 400 kV transmission line by M/s Odisha Power Transmission Corporation Limited (OPTCL), it was decided to draw power through PGCIL line. Hence the 1<sup>st</sup> back feed power was made available in December, 2017 through PGCIL line for Unit 4, resulting in delay of 21 months. After charging PGCIL 400 kV line, it took about one months' time for relay setting and bay commissioning and the start-up power was made available for commissioning on January, 2018. After commissioning power was made available, subsequent works like charging of power transformers commissioning of Raw Water System, Pre-Treatment Plant, CW System, ID & FD fan lube oil flushing, Air Pre-Heater commissioning etc. were completed in the year 2018. The startup power available through the PGCIL line could be used only for commissioning works of Unit 4 which is connected to the CTU, as per applicable CERC Regulations. However, OPGC could use this power to take up commissioning of some of the common system. For commissioning of systems directly associated with Unit 3 which is connected to 400 kV OPTCL transmission line, back charging power was required through OPTCL transmission line. A portion of OPTCL



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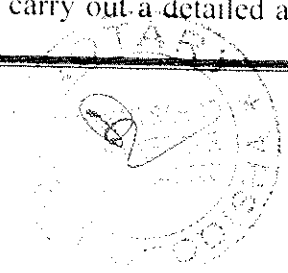
transmission line which was envisaged to be executed by a third party could not be undertaken on account of uncontrollable situation for such third party leading to delay in completion of the Transmission line. The charging of the OPTCL 400 kV line connecting to Lapanga Substation of OPTCL was commissioned and charged on November 3, 2018.

- 3.48 **Delay in land acquisition for ash pond:** Land acquisition for ash pond was delayed due to public resistance. Application for acquisition of land was filed with IDCO in June 2009. After completion of the various processes under Land Acquisition Act 1894, award for release of payment was issued on 20/06/2013, i.e., after about 4 years. However, due to local resistance and demand for higher compensation, there was a 1131 days delay in making payments (after conceding to higher land rates) and hand over of right to start work by IDCO was provided on 25/07/2016. Thereafter, it took another 273 days to obtain physical possession of the land under police support, i.e., on 24/04/2017, before work could be started on the ground.
- 3.49 **Delay in land acquisition for MGR:** Land acquisition for MGR was delayed due to public resistance at separate locations / villages. Major delays were incurred in villages Chhualiberna, Junanimunda and Ghumudasan, where at an average about 700 days delay in each case was experienced on account of taking over physical possession of land and work stoppages during construction. The initial 9.5 km of the MGR corridor from the power plant to MCL mines was required for transportation of commissioning coal and bridge linkage coal for power plant initial years of operation. A patch of 13.63 Ha of land initially considered as belonging to MCL, was identified as forest land in late 2016, for which almost 1 year was taken to receive Stage – I forest clearance, i.e., on 06/07/2017, after which construction work could be commenced on that stretch. Some parts of the MGR line is passing through MCL area and as per MoU executed by OPGC with MCL, the land is to be handed over under right of way, for construction of OPGC MGR. About 39 acres of MCL land falling under Jamkani village limits is still to be handed over by MCL as they have not completed the process of disbursing compensation towards land and R&R benefits to the land oustees. Significant delay is being experienced despite intervention of the State Government at the highest level.



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- 3.50 **Abrupt disturbances causing halting of work at site:** The work of BoP contractor was halted on many instances' due to abrupt agitations by outsiders at the site, which could be resolved only through intervention of the concerned Government departments. Further, the Hud-Hud cyclone during October, 2014 and unprecedented rainfall during November-December 2015 at Chennai hindered the material supply from the works of the BoP contractor and consequently the work at site was halted.
- 3.51 **Enactment of GST:** Goods and Service Tax (GST) was rolled out on July 1, 2017. Major Contracts such as BTG with M/s BHEL, BoP with M/s BGRSEL, MGR with M/s L&T etc. and minor contracts with different suppliers / service providers were awarded before date of roll out of GST Acts. As per section 171 of GST Act, it is mandatory to pass on the benefit due to reduction in rate of tax or from input tax credit to the consumer by way of commensurate reduction in prices. To comply with the above provisions, all the service providers / suppliers of the project were asked to pass on the input tax credit / benefit of reduction in rate of tax. At the same time most of the major Contractors referring to change in law clause in the contract asked for additional amount as a result of impact due to GST. Timely action was taken by both OPGC and the Contractors to conclude impact of GST on contract value but there were number of points in which there were disagreements, which took few months to resolve, although provisionally. During initial period of delay in submission of information by contractors, around 5% of retention was made from the amount payable which was released subsequently and amendment to the contracts made sequentially. Since this involved several rounds of discussions with the contractors on various related issues this consumed considerable time from the targeted project completion period.
- 3.52 OPGC has preliminarily identified the above reasons as major contributors for the delay in project execution. All the above-mentioned reasons for delay are beyond the control of OPGC as they were due to an act of outside agencies / abrupt phenomena on which OPGC had no control. It is pertinent to mention that CERC as well as several SERCs have identified the delay in land acquisition for thermal power projects as an uncontrollable factor. It is also pertinent to mention that with active pursuance of OPGC, the delay could be contained and the anticipated delay is only 9 months. OPGC shall further carry out a detailed analysis of delay including delay under each contract



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to identify the attributability of such delays to the contractor and for taking appropriate action in accordance with the provisions of the contracts. However, this exercise can be completed only at the time of closure of contracts and hence, OPGC craves leave of the Hon'ble Commission to submit the detailed delay analysis after closure of contracts including other reasons for delay in completion of project, if any.

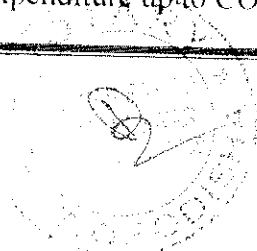
### **Interest During Construction (IDC) & Financing Charges (FC)**

- 3.53 The Debt Equity ratio for the project is 75:25. Equity support has been sourced from the Shareholders' contribution and internal accruals.
- 3.54 OPGC has availed the long-term loans from Power Finance Corporation Ltd. (PFC) and Rural Electrification Corporation Ltd. (REC) amounting to Rs. 7632.87 Crore for debt financing of Units 3 & 4. The copies of long-term loan agreements executed with PFC and REC are enclosed at **Annexures 11 & 12**. Although the loan agreements were executed much earlier, the actual loan drawal commenced from FY 2013-14 only.
- 3.55 The terms and conditions of the long-term loans availed from PFC and REC are as under:

**Table 17: Terms and conditions of long-term loans**

<b>Particulars</b>	<b>Loan 1</b>	<b>Loan 2</b>
Name of the Bank	Power Finance Corporation Ltd	Rural Electrification Corporation Ltd.
Currency	INR	INR
Sanctioned Loan amount	Rs. 3,811.87 Crore	Rs. 3,812.00 Crore
Moratorium Period	6 months from COD	6 months from COD
Repayment effective from	15.10.2019	31.03.2020
Repayment Frequency	Quarterly	Quarterly
Repayment Instalment	Unequal instalment	Rs. 63.53 Crore
Interest Rate (Fixed/Floating)	Floating	Floating
Terms of Interest Rate, if Floating	3 year reset	3 year reset

- 3.56 The IDC & FC as estimated in the DPR was Rs. 1223.00 Crore. As against the same, the actual expenditure incurred up to August 31, 2018 is Rs. 1123.76 Crore. The anticipated expenditure up to COD of the station is Rs. 1521.82 Crore.



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**Table 18: IDC & FC (Rs. Crore)**

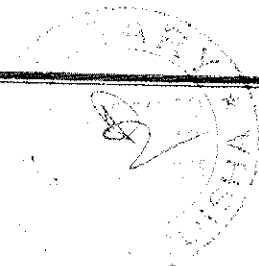
Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
IDC & FC	1223.00	1123.76	1521.82	0.00	1521.82

3.57 The reason for variation in IDC likely to be incurred till COD with respect to IDC estimated in DPR is mainly on account of variation in interest rates from that considered in the DPR estimates. In the DPR, the uniform interest rate of 10.50% was considered whereas in actual the interest rates during the initial years of loan drawal was close to 12%. Subsequently, the interest rates came down and the actual rate of interest incurred during FY 2017-18 was 10.55%. The details of actual loan amounts drawn and the interest expenses incurred during the period of construction are furnished in Format 8.5.

3.58 The other reason for variation in IDC is due to delay in project mainly due to uncontrollable factors as mentioned above. In this regard it is important to note that Hon'ble APTEL in its judgment dated April 27, 2011 in Appeal No. 172 of 2010 has stated that any increase in Project Cost due to delay on account of uncontrollable factors is to be allowed as pass through in the Project Cost. The main abstract of the Judgment is provided as under:

*"The Central Commission has also not laid down any benchmark norms for prudence check, but its Regulations only indicate the area of prudence check including cost overrun and time overrun. The State Commission has not examined the reasons for delay in commissioning of the project and attributed the entire time overrun related cost with respect to the contractual schedule agreed with BHEL to the Appellant. In our view, this is not prudence check. In the absence of specific regulations, we will now find answer to the question raised by us relating prudence check of time overrun related costs.*

*7.4. The delay in execution of a generating project could occur due to following reasons:*



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i) due to factors entirely attributable to the generating company, e.g., imprudence in selecting the contractors/suppliers and in executing contractual agreements including terms and conditions of the contracts, delay in award of contracts, delay in providing inputs like making land available to the contractors, delay in payments to contractors/suppliers as per the terms of contract, mismanagement of finances, slackness in project management like improper co-ordination between the various contractors, etc.

ii) due to factors beyond the control of the generating company e.g. delay caused due to force majeure like natural calamity or any other reasons which clearly establish, beyond any doubt, that there has been no imprudence on the part of the generating company in executing the project.

iii) situation not covered by (i) & (ii) above.

In our opinion in the first case the entire cost due to time over run has to be borne by the generating company. However, the Liquidated Damages (LDs) and insurance proceeds on account of delay, if any, received by the generating company could be retained by the generating company. In the second case the generating company could be given benefit of the additional cost incurred due to time over-run. However, the consumers should get full benefit of the LDs recovered from the contractors/suppliers of the generating company and the insurance proceeds, if any, to reduce the capital cost. In the third case the additional cost due to time overrun including the LDs and insurance proceeds could be shared between the generating company and the consumer. It would also be prudent to consider the delay with respect to some benchmarks rather than depending on the provisions of the contract between the generating company and its contractors/suppliers. If the time schedule is taken as per the terms of the contract, this may result in imprudent time schedule not in accordance with good industry practices.

7.5. in our opinion, the above principles will be in consonance with the provisions of Section 61(d) of the Act, safeguarding the consumers' interest and



*Sanjay Kumar*

*at the same time, ensuring recovery of cost of electricity in a reasonable manner."*

3.59 Considering the variations in actual interest rates vis-à-vis interest rates considered in DPR and reasons for delay as mainly uncontrollable factors, OPGC requests the Hon'ble Commission to approve the total IDC likely to be incurred till COD of the project.

**Inclusion of assets pertaining to Units 1 & 2**

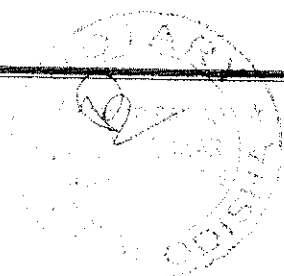
3.60 Clause 2(e) of Schedule 4 of the approved PPA for Units 3 & 4 provides as under:

*"Inclusion of Rupees Seventy Five Crore (Rs. 750,000,000) incurred during construction of Unit-1 and Unit-2 of OPGC and in terms with Clause No. 9 of the Tripartite Agreement; ..."*

3.61 Clause 9 of the Tripartite Agreement provides as under:

*"If the PPA for the units 3 & 4 is entered into with GRIDCO, an amount equal to Rs. 75 crores, being the additional project cost of units 1 & 2 over Rs. 1060 crores included in the PPA for these units, shall be added to the project cost of units 3 & 4."*

3.62 In accordance with the above, OPGC has considered the cost of Rs. 75 Crore, being the additional project cost of Units 1 & 2 over Rs. 1060 Crore, in the Capital Cost of Units 3 & 4. This expenditure of Rs. 75 Crore was part of the total capital expenditure incurred towards creation of common facilities like land for the main plant, common infrastructure like colony, roads, boundary, raw water system, filtered and potable water system, DM plant facility, etc. at the time of setting up of Units 1 & 2. It is pertinent to mention that this capital expenditure of Rs. 75 Crore was not allowed for recovery through the tariff for Units 1 & 2 and was asked to claim as a part of capital cost of Unit 3 & 4.



*J. Kishor Chandra*



## Capital Cost

3.63 Based on the above, the Capital Cost for Units 3 & 4 is as shown in the Table below:

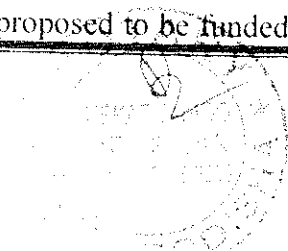
**Table 19: Capital Cost of Units 3 & 4 (Rs. Crore)**

S. No.	Particulars	DPR Cost	Actual expenditure upto 31 August, 2018	Projected expenditure upto COD	Projected expenditure beyond COD	Total Cost
1	Land	149.00	131.48	131.71	0.20	131.91
2	BTG	3892.00	3541.76	3868.36	419.28	4287.64
3	BoP	2877.00	1535.65	1713.63	138.81	1852.44
4	MGR	670.00	874.54	1318.08	232.17	1550.25
5	Township & Colony	200.00	135.45	151.30	30.99	182.29
6	Ashpond	289.00	47.96	175.37	80.15	255.51
7	Pre-commissioning expenses	475.00	87.00	332.92	4.26	337.18
8	Overheads	391.00	299.08	412.35	37.70	450.05
9	Water Conservation Fund	0.00	0.00	101.80	0.00	101.80
10	<b>Hard Cost</b>	<b>8943.00</b>	<b>6652.91</b>	<b>8205.52</b>	<b>943.55</b>	<b>9149.07</b>
11	IDC & FC	1223.00	1123.76	1521.82	0.00	1521.82
12	<b>Total</b>	<b>10165.00</b>	<b>7776.67</b>	<b>9727.34</b>	<b>943.55</b>	<b>10670.90</b>
13	Inclusion of cost pertaining to Units 1 & 2 as per Clause 2(e) of Schedule 4 of the PPA			75.00		75.00
14	<b>Total project cost</b>	<b>10165.00</b>	<b>7776.67</b>	<b>9802.34</b>	<b>943.55</b>	<b>10745.90</b>

3.64 OPGC requests the Hon'ble Commission to approve the projected Capital Cost for Units 3 & 4 as claimed above. The audited annual accounts for FY 2017-18 and the auditor certificate for the actual expenditure incurred upto August 31, 2018 is enclosed at Annexure 13.

## Means of finance

3.65 The projected Capital Cost of Units 3 & 4 (excluding the transferred assets from Units 1 & 2) is proposed to be funded by Debt and Equity in the ratio of 75:25. The amount



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of transferred assets from Units 1 & 2 is considered to be funded by 100% Equity for the reasons as discussed below:

- The total capital expenditure incurred for Units 1 & 2 was Rs. 1135 Crore. Out of the same, the capital expenditure recovered through tariff for Units 1 & 2 was Rs. 1060 Crore. Therefore, the balance expenditure of Rs. 75 Crore pertaining to common facilities is recoverable through tariff for Units 3 & 4.
- The total expenditure of Rs. 1135 Crore was funded by equity portion of Rs. 539 Crore. Out of the same, the equity portion corresponding to the capital cost of Units 1 & 2 for tariff purposes was Rs. 450 Crore. Therefore, the equity funding for setting up of Units 1 & 2 unrecovered through tariff for Units 1 & 2 is Rs. 89 Crore. Accordingly, the funding of capital expenditure of Rs. 75 Crore pertaining to the common facilities is considered as 100% equity.

**Table 20: Means of Finance**

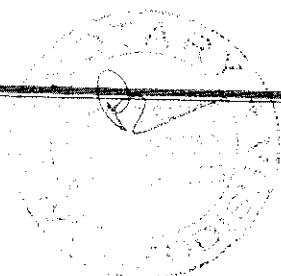
Particulars	Units	Original financial package (DPR)	Actual funding as on March 31, 2018	Anticipated funding as on COD	Anticipated funding of total cost
Total project cost	Rs. Crore	10165.00	7243.18	9802.34	10745.90
Debt	%	75%	75.72%	74.43%	74.48%
Equity	%	25%	24.28%	25.57%	25.52%
Debt	Rs. Crore	7623.87	5484.26	7295.51	8003.17
Equity	Rs. Crore	2541.13	1758.92	2506.84	2742.72

3.66 Regulation 3.6 of OERC Tariff Regulations, 2014 stipulates as under

*“For a project declared under commercial operation on or after 01.04.2014, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:*

*Provided also that in case of a generating station where actual equity employed is less than 30%, the actual debt and equity shall be considered for determination of tariff.”*

3.67 As the total equity upto COD is less than 30%, the actual debt and equity has been considered for determination of tariff.



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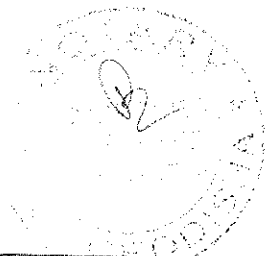
### Asset class wise GFA

3.68 The anticipated capital cost has been provisionally allocated under the asset classes of (i) lease hold land, (ii) Plant & Machinery and (iii) Civil Works. The asset class wise GFA shall be finalised at the time of closure of accounts for the project.

**Table 21: Asset class wise GFA (Rs. Crore)**

<b>Particulars</b>	<b>As on COD</b>	<b>Total Cost</b>
Land-Leasehold	185.53	185.78
Civil works	3294.06	3811.16
Plant & Machinery	6322.75	6748.96
<b>Total</b>	<b>9802.34</b>	<b>10745.90</b>

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## **4 Generation Tariff for FY 2018-19**

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### ***Tariff Regulations***

- 4.1 As discussed in Section 2, the generation tariff for supply of power from Units 3 & 4 under the approved PPA is to be determined in accordance with the OERC Tariff Regulations, 2014. OPGC has computed the tariff for supply of power from Units 3 & 4 from the anticipated COD of Unit 4 upto March 31, 2019 in accordance with the OERC Tariff Regulations, 2014 as detailed in the following paragraphs.
- 4.2 Regulation 2.2 of the OERC Tariff Regulations, 2014 specifies as under:
- “2.2 Tariff in respect of a generating station may be determined for the whole of the generating station or a unit or units of the generating station:  
Provided that the tariff shall be determined unit wise till the time tariff cannot be determined for the whole of the generating station or for the units as per the condition mentioned in the proviso below:  
Provided that the tariff shall be determined for units after the cut-off date of the last unit in the units or after the capital cost of the last unit in the units is finalised, whichever is earlier:  
Provided that tariff shall be determined for the whole of the generating station after the cut-off date of the last unit in the generating plant or after the capital cost of the last unit in the generating plant is finalized, whichever is earlier:  
.....”*
- 4.3 In accordance with the above, OPGC has submitted the tariff for sale of power in two parts: (i) from anticipated COD of Unit 4 upto COD of Unit 3 and (ii) from anticipated COD of Unit 3 i.e., station COD to March 31, 2019.
- 4.4 Regulation 2.3 of the OERC Tariff Regulations, 2014 specifies as under:
- “For the purpose of determination of tariff, the capital cost of the project may be broken up into units and distinct units forming part of the project, if required...”*
- 4.5 In accordance with the above provision of the OERC Tariff Regulations, 2014, the



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anticipated Capital Cost as on COD of Unit 4 has been considered to be 60% of the anticipated capital cost as on COD of the project. This is in line with the industry practice and cost allocation amongst the Units in case of multiple units in the generating station.

- 4.6 In light of the above, the Capital Cost and means of finance considered for tariff computation for FY 2018-19 is as given hereunder:

**Table 22: Capital Cost and means of finance for tariff for FY 2018-19**

Particulars	Units	From COD of Unit 4 to COD of Unit 3	From COD of Unit 4 to March 31, 2019
Installed Capacity	MW	660	1320
Capital Cost	Rs. Crore	5881.41	9802.34
Debt	%	74.43%	74.43%
Equity	%	25.57%	25.57%
Debt	Rs. Crore	4377.30	7295.51
Equity	Rs. Crore	1504.10	2506.84

- 4.7 As per OERC Tariff Regulations, 2014, the tariff for supply of power from a thermal generating station shall comprise of two parts namely, capacity charge (for recovery of annual fixed cost) and energy charge (for recovery of primary and secondary fuel cost).

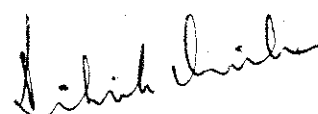
- 4.8 The Annual Fixed Cost (AFC) of a generating station shall consist of the following components:

- i. Return on Equity
- ii. Interest on loan capital
- iii. Depreciation
- iv. Operation and maintenance expenses
- v. Interest on working capital

- 4.9 The components of AFC are discussed in the following paragraphs.

***Return on Equity (RoE)***

- 4.10 Regulation 4.5 of the OERC Tariff Regulations, 2014 specifies the rate of RoE as 16%. Accordingly, the RoE has been computed considering the Equity base and the rate of



16% as under:

**Table 23: RoE for FY 2018-19 (Rs. Crore)**

Particulars	FY 2018-19	
	From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
From	30-Jan-19	06-Mar-19
To	05-Mar-19	31-Mar-19
No. of days of operation	35	26
Equity base	1504.10	2506.84
Rate of RoE	16.00%	16.00%
RoE	23.08	28.57

**Interest on loan**

4.11 The loan amount as on COD of Unit 4 as shown in the Table 22 has been considered as the opening loan balance. The normative repayment has been considered as equivalent to the depreciation in accordance with the provisions of OERC Tariff Regulations, 2014. The outstanding loan as on COD of Unit 3 has been worked out by considering the outstanding normative loan, pertaining to Unit 4, as on COD of Unit 3 and the loan amount corresponding to the Capital Cost of Unit 3. The actual rate of interest of 10.55% (for FY 2017-18) has been provisionally considered as the interest rate. The interest on loan has been calculated on the normative average loan for the respective period by applying the rate of interest. The interest on loan claimed for FY 2018-19 is as shown in the Table below:

**Table 24: Interest on Loan for FY 2018-19 (Rs. Crore)**

Particulars	FY 2018-19	
	From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
From	30-Jan-19	06-Mar-19
To	05-Mar-19	31-Mar-19
No. of days of operation	35	26
Gross loan - Opening	4377.30	7295.51
Cumulative repayments	0.00	26.13
Net loan - Opening	4377.30	7269.37
Receipts during the year	0.00	0.00
Repayment during the year	26.13	32.06
Net loan - Closing	4351.17	7237.32
Average Net Loan	4364.24	7253.34
Rate of Interest on Loan	10.55%	10.55%
Interest on loan	44.15	54.51



*Signature*

### Depreciation

4.12 OERC Tariff Regulations, 2014 specify the rates of depreciation of each asset class. Depreciation has been computed considering the asset class wise GFA and the rates of depreciation specified in the OERC Tariff Regulations, 2014. Accordingly, the depreciation claimed for FY 2018-19 is as under:

**Table 25: Depreciation for FY 2018-19 (Rs. Crore)**

Particulars	FY 2018-19	
	From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
<b>From</b>	<b>30-Jan-19</b>	<b>06-Mar-19</b>
<b>To</b>	<b>05-Mar-19</b>	<b>31-Mar-19</b>
<b>No. of days of operation</b>	<b>35</b>	<b>26</b>
Land-Leasehold	0.36	0.44
Civil works	6.57	7.84
Plant & Machinery	19.21	23.78
<b>Total</b>	<b>26.13</b>	<b>32.06</b>

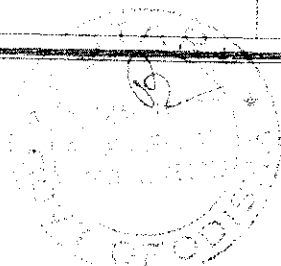
### Operation and Maintenance (O&M) expenses

4.13 Regulation 4.28(a) of the OERC Tariff Regulations, 2014 specify the normative O&M expenses of Rs. 18.38 lakh/MW for the Unit size of 600 MW and above. Clause 4(e) of Schedule 4 of the PPA provides a multiplication factor of 0.9 on the specified normative O&M expenses. Accordingly, the normative O&M expenses have been computed considering the norm specified in the OERC Tariff Regulations, 2014 and applying the multiplication factor of 0.9.

4.14 The O&M expenses claimed for FY 2018-19 is as shown in the Table below:

**Table 26: O&M expenses for FY 2018-19**

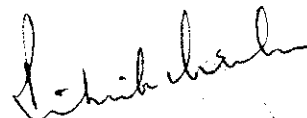
Particulars	Units	FY 2018-19	
		From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
<b>From</b>	<b>Date</b>	<b>30-Jan-19</b>	<b>06-Mar-19</b>
<b>To</b>	<b>Date</b>	<b>05-Mar-19</b>	<b>31-Mar-19</b>
<b>No. of days of operation</b>	<b>Days</b>	<b>35</b>	<b>26</b>
Unit size	MW	660	660
No of Units	No.	1	2
Normative O&M expenses as per Regulation 4.28(a) of OERC Tariff Regulations, 2014	Rs. Lakh/MW	18.38	18.38
Normative O&M expenses as per Clause 4(e) of Schedule 4 of the PPA	Rs. Lakh/MW	16.54	16.54
<b>O&amp;M expenses</b>	<b>Rs. Crore</b>	<b>10.47</b>	<b>15.55</b>



*Signature* Page 42

***Interest on Working Capital (IoWC)***

- 4.15 Regulation 4.24(a) of the OERC Tariff Regulations, 2014 specify the normative working capital requirements corresponding to normative annual plant availability factor for coal based thermal generating station as follows:
- i. Cost of coal for one month for pit-head generating station and two months for non-pit-head generating station.
  - ii. Cost of secondary fuel oil for one month.
  - iii. Maintenance spares @ 20% of O&M expenses.
  - iv. Receivables equivalent to one month of capacity charges and energy charges
  - v. O&M expenses for one month.
- 4.16 Further, Regulation 4.26 specifies the rate of interest on working capital as SBI Base Rate plus 300 basis points as on April 1, 2014 or 1<sup>st</sup> April of the year in which the generating station or a Unit thereof is declared under commercial operation, whichever is later.
- 4.17 The normative working capital requirements have been computed in accordance with the provisions of the OERC Tariff Regulations, 2014 treating the generating station as pit-head generating station. Further, in addition to normative O&M expenses in accordance with Regulation 4.28(a), the water charges in accordance with Regulation 4.28(e) have also been considered in computing the normative working capital requirements. OPGC humbly submits that the OPGC requests the Hon'ble Commission to consider the water charges in addition to normative O&M expenses in estimation of normative working capital requirements.
- 4.18 The rate of interest on working capital has been considered as 11.15% considering the SBI one-year MCLR of 8.15% as on April 1, 2018 +300 basis points in accordance with the OERC Tariff Regulations, 2014. The IoWC claimed for FY 2018-19 is as follows:





**Table 27: IoWC for FY 2018-19 (Rs. Crore)**

Particulars	FY 2018-19	
	From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
<b>From</b>	<b>30-Jan-19</b>	<b>06-Mar-19</b>
<b>To</b>	<b>05-Mar-19</b>	<b>31-Mar-19</b>
<b>No. of days of operation</b>	<b>35</b>	<b>26</b>
Coal Cost	58.72	117.44
Oil Cost	1.06	2.12
O & M expenses	10.09	20.19
Maintenance Spares	2.09	3.11
Receivables	150.82	274.17
Working capital Loan Requirement	222.78	417.03
Rate of Interest	11.15%	11.15%
Interest on Working Capital	2.38	3.31

**Annual Fixed Cost (AFC)**

4.19 Based on the above, the AFC claimed for FY 2018-19 is as shown in the Table below:

**Table 28: AFC for FY 2018-19 (Rs. Crore)**

Particulars	FY 2018-19	
	From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
O & M Expenses	10.47	15.55
Depreciation	26.13	32.06
Interest on Term Loans	44.15	54.51
Interest on Working Capital	2.38	3.31
Return on Equity	23.08	28.57
<b>AFC</b>	<b>106.21</b>	<b>134.01</b>

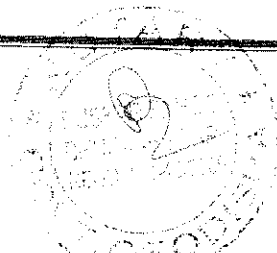
4.20 OPGC requests the Hon'ble Commission to approve the claimed AFC for FY 2018-19.

**Norms of Operation**

4.21 OERC Tariff Regulations, 2014 specify the following norms of operation for a thermal generating station:

- i. Availability
- ii. Plant Load Factor (PLF)
- iii. Gross Station Heat Rate (GSHR)
- iv. Secondary fuel oil consumption (SFOC)

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- v. Auxiliary Energy Consumption (AEC)
- vi. Transit and handling loss

**Availability**

4.22 Regulation 5.3(a) of the OERC Tariff Regulations, 2014 specify the Normative Annual Plant Availability Factor of 85% for recovery of full AFC. The same has been considered as the Availability for FY 2018-19.

**Plant Load Factor (PLF)**

4.23 Regulation 5.3(b) of the OERC Tariff Regulations, 2014 specify the Normative Annual Plant Load Factor of 85% for incentive purposes. The PLF for FY 2018-19 has been considered as 85%.

**Gross Station Heat Rate (GSHR)**

4.24 Regulation 5.3(c)(iii) specifies the methodology for determination of normative GSHR for new thermal generating stations achieving COD after April 1, 2014. The normative GSHR has been determined in accordance with the same considering the guaranteed technical parameters, as shown in the Table below:

**Table 29: Determination of normative GSHR**

Particulars	Units	Value
Pressure Rating	kg/cm <sup>2</sup>	247
SHT/RHT	0 <sup>c</sup>	565/593
Type of Boiler Feed Pump		Turbine Driven
Guaranteed Design Unit Heat Rate	kcal/kWh	2078.00
Maximum Design Unit Heat Rate as per OERC Tariff Regulations, 2014	kcal/kWh	2151.00
Allowable Design Heat Rate	kcal/kWh	2078.00
Allowable Gross Station Heat Rate (1.045xDesign Heat Rate)	kcal/kWh	2171.51

4.25 Accordingly, the GSHR has been claimed as 2171.51 kcal/kWh.

**Secondary fuel oil consumption (SFOC)**

4.26 Regulation 5.3(d) of the OERC Tariff Regulations, 2014 specify the normative SFOC

of 0.5 ml/kWh for new thermal generating stations achieving COD after April 1, 2014. Accordingly, the normative SFOC has been considered as 0.5 ml/kWh.

***Auxiliary Energy Consumption (AEC)***

4.27 Regulation 5.3(e) of the OERC Tariff Regulations, 2014 specify the normative AEC as 5.25% for Unit size of 500 MW and above with steam driven BFP. In addition, the AEC of 0.5% is allowed for generating stations with IDCT. In accordance with the same, the normative AEC has been considered as 5.75%.

***Transit and handling loss***

4.28 Regulation 4.34 of the OERC Tariff Regulations, 2014 specify the normative transit and handling loss of coal as 0.2% for pit-head generating stations. In accordance with the same, the normative transit and handling loss has been considered as 0.2%.

4.29 Based on the above, the norms of operation considered for FY 2018-19 are as under:

**Table 30: Norms of operation for FY 2018-19**

Norm	Value
Availability	85%
Plant Load Factor (PLF)	85%
Gross Station Heat Rate (GSHR)	2171.51 kcal/kWh
Secondary Fuel Oil Consumption (SFOC)	0.5 ml/kWh
Auxiliary Energy Consumption (AEC)	5.75%
Transit and handling loss	0.2%

***Fuel mix***

4.30 The coal requirement for Units 3 & 4 is to be met from the allotted coal blocks of Manoharpur and Dipside of Manoharpur to M/s OCPL. The allotment agreement for the same is enclosed at **Annexure 14**. The coal from the same shall be procured at cost plus rate as determined in accordance with the guidelines of competent authority. The allotted coal blocks are not expected to be operational in FY 2018-19. Therefore, OPGC shall be procuring coal through Bridge Linkage and Flexible utilisation routes for FY 2018-19. The documentary evidences for coal availability under Bridge Linkage and Flexible utilisation routes are enclosed at **Annexure 15 & 16**.



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**Table 31: Fuel mix for FY 2018-19**

Particulars	Units	Value	Basis
GCV of secondary fuel oil	kcal/L	10000	Actual for Units 1 & 2
Price of secondary fuel oil	Rs./kL	52364	IOCL price for October 2018
GCV of coal	kcal/kg	2900	Estimated
Price of coal			
Bridge Linkage coal	Rs./MT	1780	Estimated
Flexible utilisation coal	Rs./MT	2300	Estimated
Bridge Linkage coal	%	69%	Estimated
Flexible utilisation coal	%	31%	Estimated
Weighted average coal price (before transit loss)	Rs./MT	1942	Estimated
Weighted average coal price (after transit loss)	Rs./MT	1946	Estimated

**Energy Charge Rate**

4.31 Based on the norms of operation and fuel mix as discussed above, the Energy Charge Rate computed for FY 2018-19 is as under:

**Table 32: Energy Charge Rate for FY 2018-19**

Particulars	Unit	FY 2018-19
Auxiliary Consumption	%	5.75%
Gross Station Heat Rate	kCal/kWh	2171.51
GCV of Coal	kCal/kg	2900
GCV of Oil	kCal/L	10000
Specific Coal Consumption	kg/kWh	0.75
Specific Oil Consumption	ml/kWh	0.50
Price of Coal	Rs. / MT	1946
Price of Secondary Oil	Rs. / kL	52364
Energy Charge Rate (for estimation of working capital requirement)	Paisa/kWh	157.02

4.32 OPGC requests the Hon'ble Commission to approve the base value of Energy Charge Rate for estimation of Working Capital Requirement as claimed in this Petition. OPGC requests the Hon'ble Commission to allow the billing of Energy Charges on monthly basis considering the actual fuel prices and GCV in accordance with the OERC Tariff Regulations, 2014.

**Generation tariff for FY 2018-19**

4.33 Based on the above, the generation tariff claimed for FY 2018-19 for the entire capacity of Unit 3 and 4 is as shown in the Table below:

**Table 33: Generation Tariff claimed for FY 2018-19**

Particulars	Units	FY 2018-19	
		From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
Annual Fixed Cost	Rs. Crore	106.21	134.01
Energy Charge Rate (Base value)	Paise/kWh	157.02	

4.34 OPGC requests the Hon'ble Commission to approve the generation tariff for FY 2018-19 as claimed in the Petition so as to enable OPGC for billing for the energy supplied under the approved PPA for Units 3 & 4.

**Tariff for sale to GRIDCO for FY 2018-19**

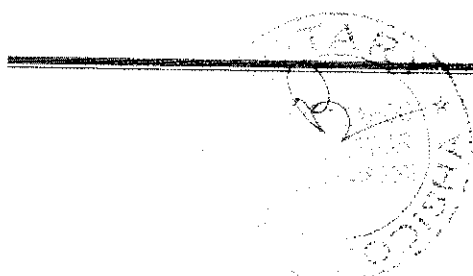
4.35 As per the approved PPA and subsequent GoO Notification dated December 20, 2018, 75% of the installed capacity of Units 3 & 4 is contracted with GRIDCO. In accordance with Regulation 2.2 of the OERC Tariff Regulations, 2014, 75% of the AFC corresponding to total Capital Cost shall be applicable for sale to GRIDCO under the approved PPA. The tariff for sale of power to GRIDCO under the approved PPA is as shown in Table below:

**Table 34: Generation Tariff for sale to GRIDCO for FY 2018-19**

Particulars	Units	FY 2018-19	
		From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
Annual Fixed Cost	Rs. Crore	79.66	100.50
Energy Charge Rate (Base value)	Rs./kWh	157.02	

**Reimbursement of Other charges**

4.36 Regulations 7.10, 7.11 and 7.12 of the OERC Tariff Regulations, 2014 specify as under:



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***"REIMBURSEMENT OF FEES, CHARGES AND EXPENSES***

*7.10 Fees and charges paid by the generating companies under the prevailing Regulation/ Notification on Fees for filing of petitions or applications before the Commission, as amended from time to time, shall be reimbursed directly by the beneficiaries in proportion of their allocation in the generating stations.*

*7.11 The generating company shall be entitled to recover the fees and charges as mentioned in Regulation 7.10 of this regulation which have been paid till the notification of these regulations.*

*7.12 The Commission may, in its discretion and for the reasons to be recorded in writing and after hearing the affected parties, allow reimbursement of any fee or expenses as may be considered necessary."*

4.37 Clause 7(a) and 7(b) of Schedule 4 of the approved PPA specifies as under:

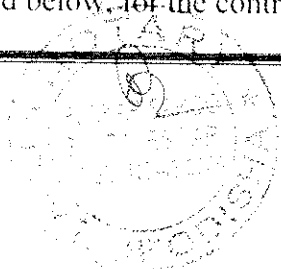
*(a) Tax on income*

*Tax on the income stream of OPGC shall not be recovered from GRIDCO, other than as provided by the Appropriate Commission from time to time.*

*(b) Other taxes / duties / levies / cess*

*Statutory taxes, levies, duties, royalty, cess or any other kind of imposition(s) imposed/ charged by any Government (central / state) and / or any other local bodies / authorities on generation of electricity including auxiliary consumption or any other type of consumption including water, environment protection, sale or on supply of power / electricity and/ or in respect of any of its installations associated with the Power Station payable by OPGC to the authorities concerned shall be computed as per the provisions of the prevailing Tariff norms of the Tariff Regulations and shall be borne and additionally paid by GRIDCO on a proportionate basis with other beneficiary(ies) in a proportionate manner. Provided however that any charge in respect of the energy sent outside the State of Orissa out of capacity not allocated to GRIDCO, shall not be charged to GRIDCO in any manner."*

4.38 In accordance with the provisions of the OERC Tariff Regulations, 2014 and the approved PPA reproduced above, the other charges for FY 2018-19 have been claimed, as detailed below, for the contracted capacity with GRIDCO.



*Debi Prasad*

### ***Electricity Duty***

4.39 Electricity Duty is payable on the auxiliary consumption of the generating station at the prevailing rates, which is currently Rs. 0.55/kWh. Accordingly, the total estimated electricity duty based on the auxiliary consumption @ 5.75% of the gross generation is Rs. 3.70 Crore.

### ***Water charges***

4.40 Regulation 4.28(e) of the OERC Tariff Regulations, 2014 provide the water charges in addition to normative O&M expenses specified in the Regulation 4.28(a). Accordingly, the water charges have been estimated for FY 2018-19 as Rs. 1.31 Crore considering the agreement executed with the Water Resources Department.

### ***Energy Compensation Charge payable to OHPC***

4.41 OPGC is required to pay the energy compensation charge to OHPC as per the bills raised by OHPC for the same. The energy compensation charge payable for Units 3 & 4 is estimated based on the latest bills raised by OHPC, for Units 1 & 2, as Rs. 0.29 Crore for FY 2018-19.

### ***System Operation Charges (SOC) & Market Operation Charges (MOC) for SLDC/RLDC***

4.42 OPGC has claimed the total SOC and MOC charges of Rs. 0.10 Crore towards SOC and MOC charges to be paid to RLDC for Unit 4 and SLDC for Unit 3 for FY 2018-19.

### ***Income tax***

4.43 Regulation 4.7 of the OERC Tariff Regulations, 2014 specifies that the income tax shall be recovered from the beneficiaries. Accordingly, the tax on RoE has been computed considering the Minimum Alternate Tax (MAT) Rate of 21.55% at this stage. OPGC would try its level best to ensure that after taking the benefits under the provisions of Income Tax Act, OPGC is liable to pay only MAT for Unit 3 and Unit 4. However, in case, due to certain reasons, if income tax benefits to OPGC are denied and OPGC have to pay Corporate Tax Rate, OPGC will approach the Commission for consideration of Corporate Tax Rate at the time of final tariff determination after COD of the Project. Accordingly, income tax for FY 2018-19 works out to Rs. 14.19 Crore.



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***Recovery of ARR & Tariff Petition Fee and Publication Expenses***

4.44 Regulation 7.11 specify that the generating company is entitled to recover the fees and charges paid by the generating company under the prevailing Regulation/ Notification on Fees for filing of petitions or applications before the Commission. Accordingly, OPGC requests the Hon'ble Commission to approve the reimbursement of Petition Fee estimated publication expenses for the instant Petition.

4.45 In accordance with the OERC Tariff Regulations, 2014, the total estimated other charges for FY 2018-19 and GRIDCO share corresponding the contracted capacity of 75% of the installed capacity for FY 2018-19 is shown in the Table below:

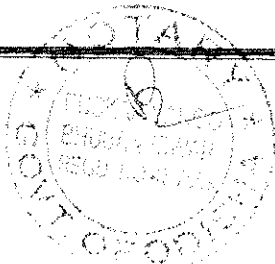
**Table 35: Other charges for FY 2018-19 (Rs. Crore)**

S. No.	Particulars	FY 2018-19 (Total estimated)	FY 2018-19 (Reimbursable by GRIDCO)
1	Electricity Duty	3.70	2.78
2	Water Charges	1.31	0.98
3	Energy compensation charge payable to OHPG	0.29	0.22
4	SOC and MOC of SLDC/RLDC	0.05	0.03
5	Income Tax	14.19	10.64
6	ARR & Tariff Petition fee and publication expenses	0.81	0.61
7	<b>Total</b>	<b>20.35</b>	<b>15.26</b>

4.46 OPGC requests the Hon'ble Commission to provisionally approve the other charges of Rs. 15.26 Crore. OPGC further requests the Hon'ble Commission to direct GRIDCO Ltd. to reimburse the other charges on actual basis incurred during the year. Further, OPGC requests for reimbursement of any other charges as per the above stated provisions of PPA and Regulations as and when applicable.

***Interim tariff till disposal of the instant Petition***

4.47 The Units 3 & 4 are in advanced stages of completion with the anticipated CODs of March 6, 2019 and January 30, 2019 respectively. OPGC requests the Hon'ble Commission to approve the interim tariff as claimed by OPGC, till the disposal of the



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instant Petition.

***Provisional tariff till determination of final capital cost and tariff***

4.48 The anticipated CODs of Units 3 & 4 are March 6, 2019 and January 30, 2019 respectively. The Petition for approval of final capital cost and tariff determination shall be filed based on the actual expenditure incurred upto COD in due course of time. OPGC requests the Hon'ble Commission to continue the applicability of the AFC approved for the period from March 6, 2019 to March 31, 2019 prorating the same for a period of one year and accordingly allow the billing of monthly capacity charge for sale of power to GRIDCO from April 1, 2019 till approval of final capital cost and tariff determination by the Hon'ble Commission. OPGC further requests the Hon'ble Commission to allow billing of Energy Charges in accordance with the provisions of the OERC Tariff Regulations, 2014.

*S. S. Singh*



## 5 Prayers

OPGC respectfully prays that the Hon'ble OERC may:

- i. Admit the instant Petition;
- ii. Grant an expeditious hearing in the matter;
- iii. Approve the Capital Cost as claimed in the Petition;
- iv. Approve the tariff for FY 2018-19 as claimed in the Petition;
- v. Approve the recovery of other charges on actual basis as incurred during the year;
- vi. Approve the billing of Capacity Charges and Energy Charges for FY 2018-19 in accordance with the provisions of the PPA/OERC Tariff Regulations, 2014;
- vii. Approve the billing of Infirm Power to be supplied by OPGC to GRIDCO as per the provisions of the OERC Tariff Regulations, 2014;
- viii. Approve the interim tariff to be applicable from anticipated COD of Unit 4 upto disposal of the instant Petition and continue the same for the next control period till the tariff is decided by the Commission;
- ix. Approve the billing of monthly Capacity Charge and Energy Charge determined in the instant Petition till determination of final capital cost and tariff by the Hon'ble Commission
- x. Condone any inadvertent omissions, errors, shortcomings and permit OPGC to add/ change/ modify/ alter this filing and make further submissions as may be required at a future date; and
- xi. Pass such other and further Orders as deemed fit and proper in the facts and circumstances of the case.

Bhubaneswar  
January 17, 2019



*Puskar Sahoo*  
17.1.2019  
PUSKAR SAHOO  
NOTARY, BHUBANESWAR  
GOVT. OF ODISHA  
MOB: 9330129137

MOB: 9330129137  
GOVT. OF ODISHA  
NOTARY, BHUBANESWAR  
PUSKAR SAHOO

*Pratik Chik*

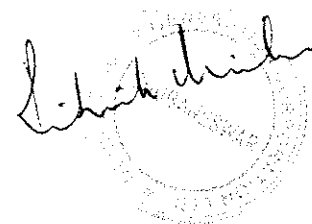
Petitioner

**Checklist of Forms and other information/ documents for tariff filing for IB TPS Units 3 & 4**

Name of Utility / Company: **Odisha Power Generation Corporation Limited**

Form No.	Title of Tariff Filing Form	Tick
Form 1.1	Summary of Tariff Proposal(Thermal)	✓
Form 1.2	Summary of Tariff Proposal(Hydro)	NA
Form 2.1	Plant Characteristics	✓
Form 2.2	Details of COD, Type of hydro station, Capacity Index, Primary energy rate	NA
Form 2.3	Salient Features of Hydroelectric Project	NA
Form 3.1	Planned & Forced Outages	NA
Form 4.1	Revenue from Sale of Power (Previous year actual)	NA
Form 5.1	Non Tariff Income	NA
Form 6.1	O&M Expenses	✓
Form 6.2	Fixed Assets and Depreciation	✓
Form 6.3	Calculation of Interest on Loans	✓
Form 6.4	Calculation of Interest on Working Capital Loan	✓
Form 7.1 ( C )	Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges for FPA(Coal)	NA
Form 7.1 ( O )	Details/Information to be Submitted in respect of Fuel for Computation of Energy Charges for FPA(Oil)	NA
Form 7.2	Energy Charges for Thermal Generation	✓
Form 8.1	Break-up of Capital Cost for Coal based projects	✓
Form 8.2	Break up of Capital cost for hydro power generating station	NA
Form 8.3	Break up of Capital Cost for Plant & Equipment(Hydro)	NA
Form 8.4	Statement of Additional Capitalisation after COD	✓
Form 8.5	IDC Planned and actual	✓
Form 8.6	Details of Foreign loans / Equity	NA
Form 8.7	Design energy and peaking capability (monthwise)- ROR with Pondage/Storage type new stations	NA
Form 8.8	Design energy and MW Continuous (monthwise)- ROR type new stations	NA
<b>Other Information/ Documents</b>		
Sl. No.	Information/Document	Tick
1	Certificate of incorporation, Certificate for Commencement of Business, Memorandum of Association, & Articles of Association ( For New Station setup by a company making tariff application for the first time to OERC)	NA
2	Stationwise and Corporate audited Balance Sheet and Profit & Loss Accounts with all the Schedules & annexures on COD of the Station or the new station for the relevant years.	NA
3	Copies of relevant loan Agreements	✓
4	Copies of the approval of Competent Authority for the Capital Cost and Financial package.	✓
5	Copies of the Equity participation agreements and necessary approval for the foreign equity	NA
7	Copies of the BPSA/PPA with the beneficiaries, if any	✓
8	Detailed note giving reasons for time and cost over run, if applicable	✓
9	Details of SBI Base rate taken for calculation	NA
10	Any other relevant information, in any to be specified	✓

Note: Electronic copy in the form of CD/Floppy disc shall also be furnished.



Summary of Tariff Proposal (Generation Thermal)				
Name of the Utility / Company : Odisha Power Generation Corporation Limited				
Name of the Thermal Power Station: IB TPS Units 3 & 4				
(Rs. In Crore)				
S.No.	Particulars	Reference	FY 2018-19	
			From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
1	2	3	4	5
<b>A</b>	<b>Fixed Charge</b>			
1	O & M Expenses	Form 6.1	10.47	15.55
2	Depreciation	Form 6.2	26.13	32.06
3	Interest on Term Loans & Fin. Charges	Form 6.3	44.15	54.51
4	Interest on Working Capital Loans	Form 6.4	2.38	3.31
5	Return on Equity		23.08	28.57
<b>6</b>	<b>AFC</b>		<b>106.21</b>	<b>134.01</b>
	<b>GRIDCO Share in AFC</b>		79.66	100.50
<b>B</b>	<b>Other Charges (GRIDCO Share)</b>		15.26	
<b>C</b>	<b>Energy Charge Rate (Paisa/kwh)</b>	Form 7.2	<b>157.02</b>	

The image shows a handwritten signature in black ink over a circular official stamp. The stamp contains the text 'ODISHA POWER GENERATION CORPORATION LIMITED' around the perimeter and 'CHIEF EXECUTIVE OFFICER' in the center. The signature appears to be 'A. K. Mishra'.

Name of the Utility / Company : Odisha Power Generation Corporation Limited		Plant Characteristics (Generation)		FORM 2.1	
Name of the Thermal Power Station: IB TPS Units 3 & 4		Cool Based Thermal Power Plant (conventional steam generator)			
Basic characteristics of the plant <sup>1</sup>		Special Features of the Plant			
Site Specific Features <sup>2</sup>		MCR system for coal transportation. Ash Pond for ash disposal through HCSD system for FA and lean slurry for BA. Ash Pipe lines for 12 KM to the ash pond away from plant			
Special Technological Features <sup>3</sup>		Supercritical Technology			
Environmental Regulation related features <sup>4</sup>		ESP with 40 electrical fields, zero liquid effluent based plant with RO for waste water recovery system. Disposal of FA by HCSD system.			
Any other special features					
Fuel Details <sup>5</sup>		Primary Fuel		Secondary Fuel	
		COAL		HFO, HSD & LDO	
Details		Module number or Unit number			
1		2	3		
Installed Capacity (IC) MW		Unit : 3	Unit : 4		
Date of Commercial Operation (COD)		660	660		
Type of cooling system <sup>6</sup>		Closed circuit cooling system (HDC T)			
Type of Boiler Feed Pump <sup>7</sup>		2X50% steam turbine driven BFP and 1X35% motor driven BFP			
Pressure (kg/cm <sup>2</sup> )		247 ata			
Temperature (oC)					
-AI Superheater Outlet		565 degC			
-AI Reheater Outlet		593 degC			
Guaranteed Design Heat rate (kCal/kWh)		2078			
Conditions on which guaranteed					
% MCR		100			
% Makeup		0			
Design Fuel		Yes			
Design cooling water Temperature (oC)		33			
Back Pressure		0.1015			

<sup>1</sup> Describe the basic characteristics of the plant e.g. in the case of a coal based plant whether it is a conventional steam generator or circulating fluidized bed combustion generator or sub-critical once through steam generator etc.

<sup>2</sup> Any site specific feature such as Merry-Go-Round, Vicinity to sea, Intake makeup water systems etc. scrubbers etc. Specify all such features.

<sup>3</sup> Any Special Technological feature like Advanced class FA technology in Gas Turbines, etc

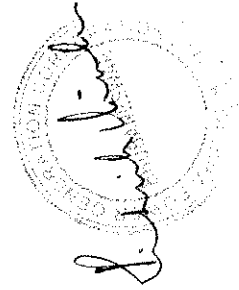
<sup>4</sup> Environmental regulation related features like FGD, ESP etc.

<sup>5</sup> Coal, oil etc

<sup>6</sup> Closed circuit cooling, once through cooling, sea cooling etc

<sup>7</sup> Motor driven, Steam turbine driven etc.

<sup>8</sup> In case guaranteed unit heat rate is not available then furnish the guaranteed turbine cycle heat rate and guaranteed boiler efficiency separately along with condition of guarantee



Name of the Utility / Company : Odisha Power Generation Corporation Limited		O&M Expenses		FORM-6.1	
				(Rs. In Crore)	
S.No.	Particulars	Units	FY 2018-19		
			From COD of Unit 3 to COD of Unit 4	From COD of Unit 3 to March 31, 2019	
1	2	3	4	5	
	From	Date	30-Jan-19	06-Mar-19	
	To	Date	05-Mar-19	31-Mar-19	
	No. of days of operation	Days	35	26	
1	Unit size	MW	660	660	
2	No of Units	No.	1	2	
3	Normative O&M expenses as per Regulation 4.28(a) of OERC Tariff Regulations, 2014	Rs. Lakh/MW	18.38	18.38	
4	Normative O&M expenses as per Clause 4(e) of Schedule 4 of the PPA	Rs. Lakh/MW	16.54	16.54	
5	<b>O&amp;M expenses</b>		<b>10.47</b>	<b>15.55</b>	

#### Water Charges

Particulars	Units	Value
Daily water requirement for both the Units	Cum	99625.552
Water Rate	Rs./Cum	7.5
No. of operational Units		From COD of Unit 3 to March 31, 2019
No. of days		4 to COD of Unit 3
Water charges	Rs. Crore	1.31
		1.94

**Fixed Assets and Depreciation**  
**Name of the Utility / Company : Odisha Power Generation Corporation Limited**      **FORM-6.2**

**Name of the Thermal Power Station: IB TPS Units 1 & 2**

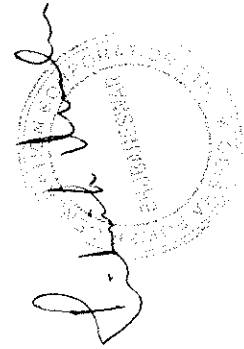
(Rs. In Crore)

**GFA**

Particulars	FY 2018-19		Total Cost
	From COD of Unit 3 to COD of Unit 4	From COD of Unit 3 to March 31, 2019	
Land-Leasehold	111.32	185.53	185.78
Civil works	2051.44	3294.06	3811.16
Plant & Machinery	3793.65	6322.75	6748.96
<b>Total</b>	<b>5956.41</b>	<b>9802.34</b>	<b>10745.90</b>

**Depreciation**

Particulars	Rate of depreciation	FY 2018-19	
		From COD of Unit 3 to COD of Unit 4	From COD of Unit 3 to March 31, 2019
From		30-Jan-19	06-Mar-19
To		05-Mar-19	31-Mar-19
<b>No. of days of operation</b>		<b>35</b>	<b>26</b>
Land-Leasehold	3.34%	0.36	0.44
Civil works	3.34%	6.57	7.84
Plant & Machinery	5.28%	19.21	23.78
<b>Total</b>		<b>26.13</b>	<b>32.06</b>



## FORM- 6.3

## Calculation of Interest on Loans

Name of the Utility / Company: Odisha Power Generation Corporation Limited  
 Name of the Thermal Power Station: IB TPS Units 3 & 4

Sl. No	Particulars	FY 2018-19	
		From COD of Unit 4 to COD of Unit 3 3	From COD of Unit 3 to March 31, 2019 4
1	2		
	From	30-Jan-19	06-Mar-19
	To	05-Mar-19	31-Mar-19
	No. of days of operation	35	26
1	Gross loan - Opening	4377.30	7295.51
2	Cumulative repayments of Loans upto previous year	0.00	26.13
3	Net loan - Opening	4377.30	7269.37
4	Receipts during the year	0.00	0.00
5	Repayment during the year	26.13	32.06
6	Net loan - Closing	4351.17	7237.32
7	Average Net Loan	4364.24	7253.34
8	Rate of Interest on Loan	10.55%	10.55%
9	Interest on loan	44.15	54.51
10	Add : Finance Charges	0.00	0.00
11	Interest and finance charges	44.15	54.51

The image shows a handwritten signature in black ink over a circular official stamp. The stamp contains the text 'ODISHA POWER GENERATION CORPORATION LIMITED' around the perimeter and 'IB TPS UNIT 3 & 4' in the center. The signature appears to be 'D. K. Mishra'.



Sl. No.		Particulars	FY 2018-19	
			From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
		From	30-Jan-19	06-Mar-19
		To	05-Mar-19	31-Mar-19
		No. of days of operation	35	26
1		Coal Cost	58.72	117.44
2		Oil Cost	1.06	2.12
3		O & M expenses	10.09	20.19
4		Maintenance Spares	2.09	3.11
5		Receivables	150.82	274.17
6		Working capital Loan Requirement	222.78	417.03
7		Rate of Interest	11.15%	11.15%
8		Interest on Working Capital	2.38	3.31

FORM-6.4

## Calculation of Interest on Working Capital Loan

Name of the Utility / Company: Odisha Power Generation Corporation Limited

Name of the Thermal Power Station: IB TPS Units 3 &amp; 4

(Rs. In Crore)

Handwritten signature: *D. K. Mishra*  
Circular stamp: ODISHA POWER GENERATION CORPORATION LIMITED, Bhubaneswar, Odisha

## Energy Charges for Thermal Generation

Name of the Utility / Company : Odisha Power Generation Corporation Limited

FORM-7.2

Name of the Thermal Power Station: IB TPS Units 3 &amp; 4

Particulars	Units	Reference	FY 2018-19	
			From COD of Unit 4 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
<b>From</b>	<b>Date</b>		<b>30-Jan-19</b>	<b>06-Mar-19</b>
<b>To</b>	<b>Date</b>		<b>05-Mar-19</b>	<b>31-Mar-19</b>
<b>No. of days of operation</b>	<b>Days</b>		<b>35</b>	<b>26</b>
<b>Operational Parameter</b>				
<b>Number of Units</b>			1	2
<i>Upto 250 MW</i>				
<i>More than 250 MW</i>	MW		660	660
Total Capacity	MW		660	1320
Availability	%		85%	85%
PLF	%		85%	85%
Gross Generation	MU		471.24	700.13
Auxiliary Energy Consumption	%		5.75%	5.75%
Auxiliary Energy Consumption	MU		27.10	40.26
Net Generation	MU		444.14	659.87
Heat Rate	kcal/kwh		2171.51	2171.51
<b>Fuel Parameters</b>				
<b>Calorific Value for Different Fuels</b>				
Fuel 5 (Indigenous Coal)	kcal/Kg		2900	2900
Fuel 4 (Imported Coal)	kcal/Kg			
Fuel 1 (HFO)	kcal/Ltr.			
Fuel 2(HSD)	kcal/Ltr.			
Fuel 3 (LDO)	kcal/l.tr.		10000	10000
<b>Landed Fuel Price for different fuels</b>				
Fuel 5 (Indigenous Coal)	Rs/MT		1946	1946
Fuel 4 (Imported Coal)	Rs/MT			
Fuel 1 (LDO)	Rs/KL			
Fuel 2(HSD)	Rs/KL			
Fuel 3 (HFO)	Rs/KL		52364.00	52364.00
<b>Specific Fuel Consumption</b>				
Fuel 5 (Indigenous Coal)	Kg/kWh		0.75	0.75
Fuel 4 (Imported Coal)	Kg/kWh			
Fuel 1 (LDO)	ml/kWh			
Fuel 2(HSD)	ml/kWh			
Fuel 3 (HFO)	ml/kWh		0.5	0.5
<b>Total Fuel Consumption</b>				
Fuel 5 (Indigenous Coal)	MT		352050	523046
Fuel 4 (Imported Coal)	MT			
Fuel 1 (LDO)	KL			
Fuel 2(HSD)	KL			
Fuel 3 (HFO)	KL		236	350
<b>Heat Content (each fuel separately)</b>				
Fuel 5 (Indigenous Coal)	Million kcal		1020946	1516834
Fuel 4 (Imported Coal)	Million kcal			
Fuel 1 (LDO)	Million kcal			
Fuel 2(HSD)	Million kcal			
Fuel 3 (HFO)	Million kcal		2356	3501
<b>Total Fuel Cost</b>				
Fuel 5 (Indigenous Coal)	Rs Crore		68.51	101.78
Fuel 4 (Imported Coal)	Rs Crore			
Fuel 1 (LDO)	Rs Crore			
Fuel 2(HSD)	Rs Crore			
Fuel 3 (HFO)	Rs Crore		1.23	1.83
Total fuel Cost			<b>69.74</b>	<b>103.61</b>
<b>Energy Charges per unit</b>	<b>Paise/kWh</b>		<b>157.02</b>	<b>157.02</b>

*Sirish Chandra*  
 Sirish Chandra  
 Director (Finance)  
 Odisha Power Generation Corporation Limited

## Return on Equity (Rs. Crore)

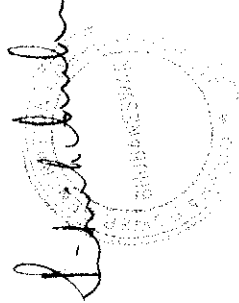
Particulars	FY 2018-19	
	From COD of Unit 3 to COD of Unit 3	From COD of Unit 3 to March 31, 2019
From	30-Jan-19	06-Mar-19
To	05-Mar-19	31-Mar-19
No. of days of operation	35	26
Opening Equity for Units 3 & 4	1504.10	2506.84
Equity pertaining to additional capitalisation	0.00	0.00
Total Equity base	1504.10	2506.84
Base Rate of RoE	16.00%	16.00%
RoE	23.08	28.57

*[Handwritten Signature]*

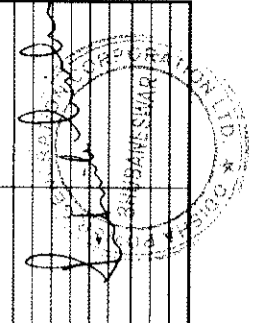
*[Circular Stamp]*

**Other Charges (Rs. Crore)**

S. No.	Particulars	FY 2018-19	
		Estimated for full capacity	Estimated GRIDCO share
1	Electricity Duty	3.70	2.78
2	Water Charges	1.31	0.98
3	Energy Compensation Charge payable to OHPC	0.29	0.22
4	SOC and MOC of SLDC/RLDC	0.05	0.03
5	Income Tax	14.19	10.64
6	ARR & Tariff Petition fee and publication expenses	0.81	0.61
7	<b>Total</b>	<b>20.35</b>	<b>15.26</b>

*[Handwritten Signature]*  


Sl.No.	Break Down	Cost as per original Estimate	Work Order Number	Name of the company to which order is placed	Mode of Award (DCB/EI/Invited Tender etc.)	No. of bids received	Value of contract awarded in Rs. Cr.	Actual Expenditure upto March 31, 2018	Actual expenditure 01.04.2018 to 31.03.2018	Anticipated Expenditure from 01.04.2018 upto COD of the Station	Anticipated Expenditure beyond COD of the Station	Total In C.O.D.	Variation (Rs. Cr.)	Reasons for Variation
1	Cost of Land & Site Development	3	NA	NA	NA	-	-	0	0	11	12	13	14	15
1.1	Acquisition of land													
1.2	Regulation & Resettlement (RRR)	149						123.00	3.49	0.23	0.20	131.91		
1.3	Preliminary Investigation & Site Development							0.00	0.00	0.00	0.00	0.00		
1.4	Total Land & Site Development	149						123.00	3.49	0.23	0.20	131.91		
2	Plant & Equipment													
2.1	Steam Generator Island	3892	Contract dated April 27, 2011	BHEL	ICB (Open Tender)	4	3698.97	3171.49	0.06	243.91	29.42	3685.89		
2.2	Boiler Mechanical													
2.2.1	Control water supply system													
2.2.2	CV system													
2.2.3	D/Water Plant													
2.2.4	Chlorination Plant													
2.2.5	Chlorination Plant													
2.2.6	Feed Handling & Storage system													
2.2.7	Ash Handling System													
2.2.8	Coal Handling Plant													
2.2.9	Rolling Stock and Accessories													
2.2.10	MGR													
2.2.11	Air Compressor System													
2.2.12	Air Condition & Ventilation System													
2.2.13	Fire fighting System													
2.2.14	BP L.P.Piping													
2.3	Total BOP Mechanical													
2.4	BOP Electrical													
2.4.1	Switch Yard Package													
2.4.2	Transformers Package													
2.4.3	Switch gear Package													
2.4.4	Cables, Cable facilities & grounding													
2.4.5	Lighting													
2.4.6	Emergency D/G set													
2.4.7	Total BOP Electrical													
2.5	C & I Package													
2.5.1	AWRS Package													
2.5.2	Total Plant & Equipment excluding taxes & Duties													
2.6	Taxes and Duties													
2.6.1	Custom Duty													
2.6.2	Other Taxes & Duties													
2.6.3	Total Taxes & Duties													
2.7	Total Plant & Equipment	6769						4029.04	40.75	398.80	337.76	4926.35		
3	Initial spares													
3.0	Initial spares													
4	Civil Works													
4.1	Main plant Ash Building													
4.2	CV system													
4.3	Cooling Towers													
4.4	D/Water Plant													
4.5	Chlorination plant													
4.6	Chlorination plant													
4.7	Feed Handling & Storage system													
4.8	Coal Handling Plant													
4.9	Ash Handling System													
4.10	MGR & Maralling Yard													
4.11	Ash disposal area development													
4.12	Fire fighting System													
4.13	Workshop & Canteen													
4.14	Temp construction & enabling works													
4.15	Road & Drainage													
4.16	Ash Pond/Contract													
4.17	Total Civil works	1159						1508.23	167.13	609.88	407.98	2695.03		
5	Construction & Pre-Commissioning Expenses													
5.1	Pre-commissioning & commissioning													
5.2	Site supervision													
5.3	Operator's Training													
5.4	Construction Insurance													
5.5	Tools and Plant													
5.6	Temp Construction													
5.7	Temp Construction													
5.8	Temp Construction													
5.9	Total Construction & Pre-Commissioning Expenses	175						409.24	47.96	324.62	158.12	943.93		
6	Overheads													
6.1	Establishment	69						240.81	57.48	113.01	37.76	449.06		
6.2	Design & Engineering													
6.3	Audit & Accounts													
6.4	Contingency	325						0.68	0.10	0.26	0.99	1.05		
6.5	Total Overheads	391						241.50	57.59	113.27	37.76	450.05		
7	Water Conservation Fund													
8	Capital cost excluding IDC & FC													
8.1	Interest During Construction (IDC)	1223						907.13	216.57	398.07	1199	1521.76		
8.2	Finance Charges (FC)							0.96	0.00	0.00	0.00	0.06		
8.3	Total Capital cost excluding IDC & FC							907.13	216.57	398.07	1199	1521.76		
9	Capital cost including IDC & FC	40165						7243.18	533.49	1980.68	943.55	10670.90		



Statement of Additional Capitalisation after COD						FORM-8.4
Name of the Utility / Company : Odisha Power Generation Corporation Limited						
Name of the Thermal Power Station: HB FPS Units 3 & 4						Cost in Rs. Crores
Sl.No.	Year	Work/Equipment added after COD up to Cut off Date / Beyond Cut off Date'	Amount Capitalised / Proposed to be capitalised	Justification	Admitted Cost'	
(1)	(2)	(3)	(4)	(5)	(6)	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
Total						

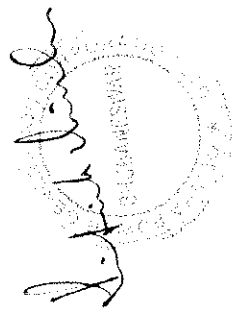
**Details furnished in Form 8.1**

1. Separate Statement of Additional capitalisation for (1) after COD and upto Cut off Date, and (2) beyond Cut off Date are to be furnished

2. In case the project has been completed and any tariff notification(s) has / have already been issued in the past by GOI or any other authority, fill column 6 giving the cost as admitted for the purpose of tariff notification already issued by (Name of the authority) (Enclose copy of the tariff Order)

Note:

1. Fill the form in chronological order year wise along with detailed justification and clearly
2. In case initial spares are purchased alongwith any equipment, then the cost of such spares should be indicated separately e.g. Rotor - 50 Cts, Initial spares- 5 Cts, etc



**IDC Planned and actual**

Name of the Utility / Company : Odisha Power Generation Corporation Limited

FORM-8.5

Name of the Thermal Power Station: HB TPS Units 3 & 4

Rs. Crores

Planned as per original Estimate	Interest rate	FY 2011-12 (as at March 31)	FY 2012-13 (as at March 31)	FY 2013-14 (as at March 31)	FY 2014-15 (as at March 31)	FY 2015-16 (as on COD)	
Equity 25%	-	229	630	1512	2171	2541	
Debt 75%	10.50%	687	1890	4537	6513	7623	
Total	-	916	2520	6049	8684	10165	
Cumulative IDC	-	48	148	474	1041	1224	
<b>Actual</b>	<b>Interest rate</b>	<b>FY 2007-08 (as at March 31)</b>	<b>FY 2008-09 (as at March 31)</b>	<b>FY 2009-10 (as at March 31)</b>	<b>FY 2010-11 (as at March 31)</b>	<b>FY 2011-12 (as at March 31)</b>	<b>FY 2012-13 (as at March 31)</b>
Equity	-	2.68	3.39	8.55	13.62	25.53	66.86
Debt	-	-	-	-	-	-	-
Loan 1 (PFC)	-	-	-	-	-	-	-
Loan 2 (REC)	-	-	-	-	-	-	-
Total	-	2.68	3.39	8.55	13.62	25.53	66.86
Cumulative IDC	-	-	-	-	-	-	-
<b>Actual</b>	<b>Interest rate</b>	<b>FY 2013-14 (as at March 31)</b>	<b>FY 2014-15 (as at March 31)</b>	<b>FY 2015-16 (as at March 31)</b>	<b>FY 2016-17 (as at March 31)</b>	<b>FY 2017-18 (as at March 31)</b>	<b>FY 2018-19 (as on COD)</b>
Equity	-	143.58	220.28	540.72	1175.26	1758.92	2431.84
Debt	-	-	-	-	-	-	-
Loan 1 (PFC)	Actual	187.11	358.56	858.40	1998.08	2679.50	3647.75
Loan 2 (REC)	Actual	170.00	398.76	677.06	1691.33	2804.76	3647.75
Total	-	500.69	977.61	2076.17	4864.67	7243.18	9727.34
Cumulative IDC	-	5.86	75.12	201.19	464.41	967.23	1521.76

### LIST OF ANNEXURES

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5	Supply Contract of M/s BHEL	456
6	Services Contract of M/s BHEL	513
7	Supply Contract of M/s BGRSEL	614
8	Services Contract of M/s BGRSEL	634
9	MGR Contract of M/s L&T	669
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11	Loan Agreement executed with PFC	709
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13	Audited Annual Accounts for FY 2017-18 & Auditor Certificate for actual capital expenditure upto August 31, 2018	750
14	Allotment Agreement for Manoharpur and Dipside of Manoharpur Coal Blocks to M/s OCPL	838
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