Executive Summary of PPCL's Petition for True up of FY 2012-13 , FY 2013-14 and approval of revised estimated for FY 2014-15 and Generation Tariff for FY 2015-16

Introduction

1.1. The Generating Company, Pragati Power Corporation Limited (also referred to as PPCL or Petitioner) has filed petition for determination of Tariff for FY 2015-16, Truing up for FY 2012-13, FY 2013-14 and Approval of revised estimate for FY 2014-15.

1.2. This Executive Summary contains the summary of the Petition filed by PPCL for True up of FY 2012-13, FY 2013-14 and revised estimate for FY 2014-15, and Tariff for FY 2015-16.

Norms of Operation

1.3 Petitioner has taken into consideration actual performance parameters for FY 2012-13 to 2014-15 and based on these, petitioner has projected the parameters for FY 2015-16.

1.4 Petitioner requests the Commission to take lenient and practical view while truing up for the period FY 2012-13 to 2013-14 , approval revised estimates for FY 2014-15 and fixing the operational targets for Control Period FY 2015-16, considering the factors and principles considered by CERC in its tariff regulation for MYT Year From FY 2014-15 to FY 2018-19.

Station Heat Rate

1.5 The Station Heat Rate (SHR) values for Pragati Power Station-I (PPS-I) as achieved during the control period FY 2012-13 to 2013-14 & FY 2014-15 and projected SHR for FY 2015-16.

Table 1: Station Heat Rates (kCal/kWh) for PPS-I

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16
A	Station Heat Rate (Combined Cycle)	1989	1990	2036	2036
B	Station Heat rate (Open Cycle)	3121	3161	3135	3135

1.6 The Petitioner has submitted that it is not always possible to achieve SHR of 2000 kCal/kWh in combined cycle mode and is not at all possible to achieve 2900 kCal/kWh in open cycle mode as specified in the DERC Regulations for MYT control period FY 2012-13 to FY 2014-15. The guaranteed heat rate of these turbines as

given by the manufacturer is 1939 kCal/kWh in combined cycle mode and 2986 kCal/kWh in open cycle mode at 100% PLF. CEA has computed the Combined Cycle heat rate as 1978kCal/kWh.

1.7 The Commission in its Regulations at point 7.3(b) on operational norms for gross heat rate for newly Commissioned projects allowed an additional factor of 5% over the designed heat rate.

1.8 The combined cycle heat rate computes to 2036 kCal/kWh and open cycle heat rate to 3135 kCal/kWh after applying the correction factor of 5%.

1.9 The actual Station Heat Rate in open cycle mode has been varying in the range from 3121-3213 kCal/kWh during the period FY 2012-13 to 2013-14 and to 2014-15 (Provisional). The manufacturer guaranteed heat rate is 2986 kCal/kWh at 100% PLF. It is further submitted that CEA has also considered the open cycle heat rate as 3075.3 kcal/kwh at 100% PLF on Page no. 24 of the report of December, 2004 on technical standards on operational norms for Gas Turbine stations. The Commission has given the reason to disallow the actual heat rate in open cycle mode that the station is expected to run in combined cycle mode most of the time and open cycle operation is rare. In this regard, it is submitted that the station runs in open cycle mode only as and when requisitioned by SLDC, Delhi. It is seen from the table-2 as below that backing down and open cycle generation has been substantially high. The backdown during FY 2012-13, 2013-14 and 2014-15 has been 4.11%, 7.86% and 18.75% respectively. The open cycle generation has also rising trend and same for FY 14-15 (upto Jan.,15) is 5.25%.

Table 2: Details of Back down & Open cycle Generation for PPS-I

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15
1	Station Heat Rate	2008.05	2002.94	2057.85
2	Heat Rate (OC)	3121.18	3161.23	3213.19
3	Heat Rate (CC)	1988.70	1989.94	1992.35
4	Gross Generation(MU)	2508.29	2425.35	1605.12
5	Open Cycle Gen.(MU)	42.343	26.919	84.245
6	Open Cycle Gen.(%)	1.68	1.11	5.25
7	Back down (MU)	107.547	210.437	370.431
8	Back down (%)	4.11	7.86	18.75

1.10 The Petitioner has requested the Commission to approve the open cycle heat rate of 3135 kCal/kWh for FY 2012-13 to FY 2014-15 and allow the actual SHR achieved in open cycle mode during the extended period of current MYT Regulation for FY 2015-16.

Availability

1.11 The Petitioner has submitted the achieved parameter for Availability for PPS-I during the Control period from FY 2012-13 to 2013-14 and 2014-15 (Provisional) and proposed Availability for FY 2015-16 is as follows:

Table 3: Availability (%) for PPS-I

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Plant Availability	90.50%	92.62%	85.00%	85.00%

1.12 The petitioner submits that it will make its all efforts to achieve the target availability of 85% as fixed by the Commission in the extended period of current MYT Regulations, 2011 and has prayed that in case if it is not able to achieve the target availability of 85% due to reasons beyond its control, the Commission may kindly consider and relax the norm of target availability.

Auxiliary Power Consumption (APC):

1.13 The achieved parameter for Auxiliary Power Consumption (%) in combined cycle mode during the control period FY 2012-13, 2013-14 and FY 2014-15 (Provisional) and proposed APC for extended period of current MYT FY 2015-16. The open cycle auxiliary power consumption (%) has been considered as 1%

Table 4: Auxiliary Power Consumption (%) in CC mode

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Auxiliary Consumption	2.65	2.73	3.00	3.00

1.14 The Actual Auxiliary Power Consumption in combined cycle mode for PPS-I is in the range of 3%. PPS-I will continue to perform within the norm of 3% auxiliary power

consumption in combined cycle mode and 1% in open cycle mode during extended period FY 2015-16 of current MYT Regulation.

Gross and Net Generation

1.15 Gross generation of PPS-I for FY 2012-13, 2013-14 and FY 2014-15 (Provisional) is 2508.28 MU, 2425.35, MU and 1605.12 MU (Upto Jan.,'15) respectively. The estimated Gross generation of PPS-I is 2463.91 MU for the FY 2015-16. The Petitioner has submitted that it will endeavor to perform at the target of generation at 85% Availability during FY 2015-16 in accordance with system requirement and provisions of new electricity Grid Code.

1.16 On the basis of Availability and Auxiliary Power Consumption, Gross and Net Generation from the Power Station as submitted by the Petitioner, is as follows:

Table 5: Gross and Net Generation

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Gross Generation (MU)	2508.28	2425.35	2457.18	2463.91
B	Auxiliary Consumption (%)	2.65%	2.73%	3.00%	3.00%
C	Net Generation (MU)	2441.83	2359.11	2383.46	2389.99

Variable Cost for PPS-I

Fuel Consumption:

1.17 Pragati Power Station-I has a long-term agreement with Gas Authority of India Limited (GAIL) for supply of Gas. Initially, PPS-I was having an allocation of 1.75 MMSCMD of APM Gas. This gas was sufficient to run both the Gas Turbines on base load. Due to depleting gas reserves of ONGC, GAIL has been imposing cuts on its supply on day to day basis. The present gas allocation on day to day basis is between 1.1 MMSCMD to 1.2 MMSCMD of APM gas and 0.28 MMSCMD of PMT gas. To meet the short fall in the gas supply, fall back agreement has been signed with GAIL for supply of spot R-LNG gas on take and pay basis. Recently, MoP&NG has allocated 0.02 MMSCMD non-APM ONGC gas whose supply has been commenced from mid October, 2011.

1.18 The Consumption of APM Gas, PMT Gas, R-LNG gas and Spot- Gas during the control period from FY 2012-13, 2013-14 and FY 2014-15 (Provisional) is shown below:

Table 6: Total Consumption of Gas

Sl. No.	Particulars	Unit	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	APM Gas	MMSCM	377.321	358.200	198.475	
B	PMT Gas	MMSCM	49.661	38.965	21.357	
C	R-LNG Gas	MMSCM	92.715	101.424	90.405	
D	NAPM Gas	MMSCM	5.426	6.370	2.671	
	Total Gas Consumption	MMSCM	525.123	504.959	312.909 (Upto Dec. 2014)	517.27

1.19 Based on above, Petitioner has estimated the total Fuel cost of Rs. 1042.82 Crores each for FY 2015-16 for generation on target availability of 85% in combined cycle mode at the heat rate of 2036 kCal/kWh. The Variable Cost is shown below:

Table 7: Total Variable Cost

Sl. No.	Particulars	Unit	Variable Cost
A	Total Gas Consumption	MMSCM	517.27
B	Average Gas Price	Rs./1000SCM	20160.00
C	Total Gas Cost	Rs. Crores	1042.82
D	Net Generation	MU	2389.99
E	**Variable Cost – Combined Cycle**	**Rs./kWh**	**4.36**

Estimation of Fixed Cost

1.20 Total fixed cost of PPS-I for the period FY 2012-13, 2013-14 is based on actual audited accounts, FY 2014-15 is based on provisional accounts up to December, 2014 and pro rata projections thereof and FY 2015-16 is based on estimation.

1.21 Fixed cost calculations include the following components:

a. Operation & Maintenance Expenses
b. Interest on loan
c. Depreciation
d. Advance against Depreciation
e. Return on Equity
f. Interest on Working Capital

Operation & Maintenance Expenses

1.22 O&M expenses comprise of Employees Expenses, Repairs and Maintenance, Administrative and General Expenses, Water Charges, etc. The O&M expenses for FY 2012-13 to 2013-14 are based on the audited accounts and for FY 2014-15 are provisional. Further, for FY 2015-16 O&M expenses are based on the projections for the period.

Table 8: Operation & Maintenance Cost (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Employee expenses	18.03	18.75	20.41	22.22
B	R&M expenses	44.84	23.77	58.33	68.12
C	A&G expenses	12.87	12.51	15.23	16.58
D	**O&M expenses**	**75.74**	**55.03**	**93.97**	**106.91**

Interest on loan

1.23 Petitioner has submitted that it had taken a loan of Rs. 675.3 Crore from Power Finance Corporation Ltd. to fund the project. The loan is repayable over a period of 10 years and the interest rate on the loan varies from 6.25% to 12 % depending on the period of disbursement. The loan has been paid in FY 2013-14.

1.24 Further,it has made certain capital additions in PPS-I during the Control period FY 2012-13, 2013-14 & FY 2014-15. The same has been funded through reserve and surplus. As per Regulations, 70% of the capital additions have been considered to be funded through Loans. Accordingly, interest on this loan has been taken @ 11.00%.

1.25 The Interest Charges during the Control period FY 2012-13 to FY 2014-15 and extended period of FY 2015-16 has been shown below:

Table 9: Interest Charges (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Interest Charges	8.93	2.65	1.15	1.08

Depreciation

1.26 The accumulated depreciation (including advance against depreciation) upto FY 2014-15 is Rs. 777.56 Crore. Further, total gross block for FY 2014-15 as per books is Rs. 1053.66 Crore. Accordingly, allowed depreciation upto 90% is Rs. 948.29 Crore.

Thus, balance depreciation Rs. 170.73 Crore is to be recovered in balance life of twelve years at rate of Rs. 14.23 Crore per years.

1.27 The Petitioner has requested the Commission to approve the actual Depreciation for FY 2012-13 to FY 2014-15 and as projected for extended period 2015-16 of current MYT Regulation as follows:

Table 10: Depreciation (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Depreciation	55.76	55.17	53.83	14.23

Return on Equity

1.28 The Return on equity has been computed on approved equity of Rs. 323.19 Crore of the project and the 30% equivalent amount of the capital additions made during the Control period.

1.29 The Commission has fixed the pre tax base rate of 15.5% in draft Generation Tariff Regulation in line with Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 for the period FY 2009-14. However, the Commission has further reduced the rate of return on equity to 14% in the final "Delhi Electricity Regulatory Commission (Terms and Conditions for Determination of Generation Tariff) Regulations, 2011".

1.30 The petitioner has considered the Return on Equity @ 14% in the present petition as per the rate specified by Commission in its Generation Regulations for the respective period. The taxes on Income shall continue to be reimbursed as per the existing norms of DERC Regulations, 2011. However, Commission while issuing the tariff order for previous years of current MYT period has not grossed up the recoverable Income-tax though the recovery of income-tax from the beneficiary becomes the part of the sales hence the further income-tax is also levied on the base income-tax.

1.31 The details of return on equity is shown below:

Table 11: Return on Equity

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Equity (Opening Balance)	323.78	328.66	328.72	328.75
B	Net additions during the year	4.88	0.06	0.03	0
C	Equity (Closing Balance)	328.66	328.72	328.75	328.75

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
D	Average Equity	326.22	328.69	328.73	328.75
E	Rate of Return on Equity	17.52%	17.71%	17.71%	17.71%
F	Return on Equity	57.15	58.22	58.23	58.23

1.32 The Petitioner has requested the Commission to consider and relax the norm and allow the rate of return on equity@ 15.5% in line with the CERC Regulations."

1.33 Further, revised tax rates with gross as per above provisions for PPS-I will be as follows:

Table 12: Income Tax Grossed up with ROE

Sl. No.	Particulars		FY 2012-13	FY 2013-14	FY 2014-15
A	Average Equity (Rs. Cr.)	A	326.22	328.69	328.73
B	Base Rate of return on equity	B	14%	14%	14%
C	Normal Income tax as considered by Commission	C	20.01%	20.9605%	20.9605%
D	Gross up return on equity	D (B/(1-C)	17.502%	17.7127%	17.7127%
E	Return on equity (Rs. Cr.)	E (AxD)	**57.15**	**58.22**	**58.23**
F	Base Return on Equity (Rs. Cr.)	F (AxB)	45.67	46.02	46.02
G	Income tax component (Rs. Cr.)	G (E-F)	11.48	12.20	12.21
H	Approved in Tariff Order (Rs. Cr.)	H (FxC)	9.07	9.07	9.07
I	Difference (Rs. Cr.)	I	2.41	3.13	3.14

1.34 Accordingly the Income Tax is claimed as follows:

Table 13: Revised Income tax with grossed up ROE for FY 2012-13 to 2014-15 (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15
A	PPS-I	11.48	12.20	12.21

Interest on Working Capital

1.35 The Petitioner has submitted that the fuel cost has increased steeply in FY 2014-15. The Commission has determined the cost of fuel for 1 month and receivables equivalent of 2 months in working capital requirement based upon the initial gas price. This increase in prices of fuel had substantial impact on certain components considered in the computation of working capital and resultantly the interest on working capital has considerably increased in comparison to the interest allowed by the Commission. Accordingly, the petitioner has revised working capital and submitted as follows:

Table 14: Total Working Capital (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Cost of Fuel for 1 month	55.28	64.82	86.66	86.90
B	O&M expenses for 1 month	6.31	4.59	7.83	8.91
C	Receivables equivalent to 2 months average billing	150.69	165.85	217.55	213.60
D	Maintenance Spares	22.72	16.51	28.19	32.07
E	**Total Working Capital**	**235.01**	**251.76**	**340.24**	**341.49**

1.36 The interest on working capital during the Control period from for FY 2012-13, 2013-14 & 2014-15 and for extended period FY 2015-16 is as shown below. The petitioner requested the Commission to true- up the interest on working capital for previous years of current MYT period and allow the estimated interest on working capital for FY 2015-16.

Table 15: Interest on Working Capital (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	Total Working Capital	235.01	251.76	340.24	341.49
B	Rate of Interest	13.50%	13.50%	13.50%	13.50%
C	**Interest on Working capital**	**31.73**	**33.99**	**45.93**	**46.10**

Annual Fixed Cost of Pragati Power Station-I:

1.37 The total actual Fixed Cost for the control period FY 2012-13, 2013-14 & 2014-15 (Estimated) and projection for the FY 2015-16 is as shown below:

Table 16: Total Annual Fixed Cost (in Rs. Cr)

Sl. No.	Particulars	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16 (Estimated)
A	O&M Charges	75.74	55.03	93.97	106.91
B	Depreciation	55.76	55.17	53.83	14.23
C	Interest on Loans	8.93	2.65	1.15	1.08
D	Return on Equity	57.15	58.22	58.23	58.23
E	Income-tax	11.43	12.20	12.20	12.20
F	Interest on Working Capital	31.73	33.99	45.93	46.10
G	**Total Fixed Cost**	**240.74**	**217.26**	**265.32**	**238.76**
H	Net Generation (MU)	2441.83	2359.11	2383.46	2389.99
I	**Fixed Cost Per Unit (Rs/Kwh)**	**0.9859**	**0.9209**	**1.1132**	**0.9990**

Capital Expenditure:

1.38 In this regard, Petitioner has submitted that PPS-I is designated consumer under Perform Achieve and Trade (PAT) Scheme of Bureau of Energy Efficiency, Ministry of Power, GOI, Notification on 30th March, 2012. The PAT framework has been developed considering the legal requirement under EC Act, 2010. The PAT scheme is involved in Order to incentivize industry to achieve better energy efficiency improvement than their specified SEC improvement targets in a cost effective manner. BEE, the nodal agency for implementation of PAT had given target to petitioner to reduce its net specific heat rate (NSHR) from average heat rate of 2068 to 2061 Kcal/kWh during 2012-13 to 2014-15. This has been computed for average annual net generation of 2352 MU. Earlier, the petitioner had submitted energy efficiency improvement scheme of the station of the petitioner. The schemes undertaken for energy efficiency improvement are capital in nature, therefore, schemes like replacement of fan coolers, BFP speed reduction have been approved as capex by Commission and implemented. Due to implementation of above schemes petitioner will be able to achieve target TOE (Tones of Oil Equivalent) of 4939.2 during FY 2012-13 to 2014-15. However, in the next PAT cycle of FY 15-16, 16-17, & 17-18 petitioner needs to implement energy saving schemes to achieve the target set by BEE for the period. Petitioner had framed some action plan for energy efficiency improvement during next PAT cycle before notification for next PAT cycle is issued. Some of such schemes are variable frequency drive in boiler feed pumps to further reduce the auxiliary consumption, LED tube lights and bulbs in place of conventional tube lights and Bulbs. Apart from above, there are certain expenditure required for arresting deterioration in output, reliability of equipments. Such schemes being proposed by the petitioners includes procurement of spare GT and STG generators, GT compressor rotor and IGV, replacement of cooling tower fills, renovation of side steam filtration of CW system. Apart from above, there are some investments required for procuring software for HMI / DAS system of steam turbine control system due to obsolence and non availability of spares and services. Petitioner may further like to submit that Delhi Pollution Control Board have

mandated to provide online pollution monitoring system at main stack of both the HRSGs of PPS-I. This will require an expenditure of Rs.48.16 lacs.

1.39 In view of the above, petitioner has compiled list of Capex schemes along with their cost, year of implementation and possible impact on performance and reliability of the plant. Further schemes approved by the Commission for Implementation during FY 2012-13 , FY 2013-14 and FY 2014-15 will get spilled over next years as per following details:

Table 17: Details of carry over capex schemes

Sr. No.	Scheme	Approval from DERC	Estimate (Rs. In Lacs)	2014-15			2015-16			Status
1	Up-gradation of Mark V control system to Mark Vie control system for GT#1 & 2	Approved	**1040**	628.20	91.96	720.16	576.83	84.70	661.53	PO placed on OEM for both GTs Implemented in GT 1. Shall be implemented in GT 2 during scheduled major overhauling / Major Inspection in Aug. 2015
2	Up-gradation of STG Pro control Progress 3 system for STG.	Approved	**85**	82.00	11.51	93.51	0		0.00	Implemented
3	Retrofitting of generator / transformer protection relay with numerical relays including design, engineering, testing & commissioning for GTs	Approved	**82**	24.25	3.53	27.78	24.25	3.53	27.78	PO placed on ALSTOM for both GTs Implemented in GT 1. Shall be implemented in GT 2 during scheduled major overhauling / Major Inspection in Aug. 2015
4	Procurement of two numbers of high pressure portable pumps for fire fighting	Approved	**16**	14.42	0.33	14.75	0		0.00	Implemented
	TOTAL excluding taxes		**1223**	**748.87**			**601.08**			**1,349.95**
	Taxes				**107.33**			**88.23**		**195.56**
	TOTAL including taxes					**856.20**			**689.31**	**1,545.51**

1.40 The description of major capital additions proposed for FY 2015-16, 2016-17 & 2017-18 are as under:-

Table 18: Details of proposed Capex Schemes

Sl.No	Description (Rs.in lacs)	Estimate	15-16	16-17	17-18	Remarks
1	Procurement of automatic Tan delta test kit in test lab of PPS-I :		49.00			Required for safety & reliability of the station
2	Procurement of automatic portable DGA kit in test lab of PPS-I		36.00			Required for safety & reliability of the station
3	GT spare Generator rotor	1376.00	138.00	--	1238.00	Required for reliability and availability of the station which may be effective due to ageing of present equipment.
4	STG spare Generator rotor	1660.00	166.00	--	1494.00	Required for reliability and availability of the station which may be effective due to ageing of present equipment.
5	GT Generator exciter assembly	325.00	32.00	--	293.00	Required for reliability and availability of the station which may be effective due to ageing of present equipment.
6	GT Compressor rotor & IGV	2900.00	2900.00			Required for reliability and availability of the station which may be effective due to ageing of present equipment.
7	Efficiency restoration of GT-2 during major inspection	6330.00	6330.00			Required for maintaining rated capacity of the Gas Turbine.
8	Further energy saving in BFP by use of VFD/fluid coupling	450.00	450.00			Required for meeting the PAT Target for PAT cycle the FY 2015-16 to 2017-18.
9	Up gradation of HMI / DAS of STG	154.00	154.00			Required for replacement of old obsolete system due to non-availability of spares and up gradation of technology.
10	Up gradation of processor of STG Control system	150.00	150.00			Required for replacement of old obsolete system due to non-availability of spares and upgradation of technology.
11	Providing online fuel gas analyzers for environmental emission monitoring	48.16	48.16			Statutory requirement as per DPCC.
12	Energy efficient lighting in various areas	22.44	22.44			Required for meeting the PAT Target for PAT cycle the FY 2015-16 to 2017-18.
13	Refurbishment of cooling tower cells by replacing fills	40.00	40.00			Required to replace old fills due to heavy scaling resulting in deterioration of heat transfer.
14	Renovation of side stream filteration of CW system	76.30	76.30			Required due to rusting of various parts which are beyond repair.
15	Common lift for HRSG-1 & 2	250.00	50.00	200.00		Required to meet out increased maintenance work and handling of spares at drum level of boilers due to ageing.