GOVERNMENT OF SINDH
ENERGY DEPARTMENT

NOTIFICATION

No.SO(COORD)/ED(Coal)/4-3/2015: The Government of Sindh has been pleased to notify the following "Determination of Reference Contract Stage Tariff" for development of mine expansion 7.6 mtpa at Thar coalfield block-II, against the petition of M/s Sindh Engro Coal Mining Company Limited dated December 28, 2017, under the Thar Coal Tariff Determination Rules 2014, with immediate effect:

Table I – Determined 7.6 MTPA Tariff

Project Tariff	Year 1- 10 Average	Year 11-30 Average	Year 1-30 Levelized
Total Production Payment Tariff Components	14.92	15.29	15.10
Total Capacity Payment Tariff Components	28.28	19.34	25.56
Total Project Tariff	**43.20**	**34.63**	**40.66**

All amount in USD per Tonne

Table II – Production Payment Component 7.6 MTPA

Production Payment Tariff	Year 1- 10 Average	Year 11-30 Average	Year 1-30 Levelized
Fuel Coal	4.78	5.85	5.06
Variable O&M			
Tyers	1.15	1.45	1.23
Spare & Consumable	2.87	3.39	3.00
Asset Replacement Cost	3.11	2.18	2.97
Royalty	3.01	2.42	2.84
Total Production Payment Tariff Component	**14.92**	**15.29**	**15.10**

All amount in USD per Tonne

Table III – Capacity Payment Component

Capacity Payment Tariff	Year 1- 10 Average	Year 11-30 Average	Year 1-30 Levelized
Fixed O&M-Foreign	5.21	6.24	5.48
Fixed O&M-Local	3.09	2.52	2.96
Insurance	0.69	0.69	0.69
Power Cost-By Grid (80%)	0.75	0.75	0.75
Power Cost-By Diesel (20%)	0.39	0.39	0.39
Cost of Working Capital	0.41	0.42	0.41
Debt Principle payment	7.04	0.00	4.72
Debt Interest Payment	2.39	0.00	1.83
Equity Returns	8.33	8.33	8.33
Total Capacity Payment tariff Components	**28.28**	**19.34**	**25.56**

All amount in USD per Tonne

2.   The detail determination of reference tariff along with general conditions is appended for further guidelines.

(MUSADDIQ AHMED KHAN)
SECRETARY TO GOVERNMENT OF SINDH

No.SO(COORD)/ED(Coal)/4-3/2015   Karachi, dated: May 23, 2019

Copy forwarded for information and necessary action to;

1. The Chairman P&D Board, GoS, Karachi
2. The Secretary, Ministry of Water and Power, Govt. of Pakistan, Islamabad
3. The Chairman, NEPRA, Govt. of Pakistan, Islamabad
4. The Secretary, Finance Department, Government of Sindh, Karachi

5. The Administrative Secretaries to Government of Sindh (all)
6. The Principal Secretary to Chief Minister Sindh, Karachi
7. The Principal Secretary to Governor, Sindh, Karachi
8. The Managing Director, Thar Coal and Energy Board, Karachi
9. The Accountant General, Sindh, Karachi
10. The Deputy Commissioners in Sindh (all)
11. The Director General, Coal Mines Development, Govt. of Sindh, Karachi
12. The Director General, Sindh Coal Authority, Karachi
13. The Chief Inspector, Inspectorate of Coal Mines, Govt. of Sindh, Karachi
14. The Deputy Secretary (Staff) to Chief Secretary, Sindh, Karachi
15. The Superintendent Sindh Government Press for publication in the next Government Gazette (extra ordinary) with a request to provide 50 copies thereof to this Department.
16. The Chief Executive Officer, Sindh Engro Coal Mining Company, Karachi.
17. The Chief Executive Officer, Sino Sindh Coal Resources, Karachi.
18. The Chief Executive Officer, Sindh Carbon Energy Limited, Karachi.
19. PS to Secretary, Energy Department, Sindh, Karachi
20. Office copy/related file.

(SHARIQ RAZA)
SENIOR TECHNICAL OFFICER

Thar Coal & Energy Board
Government of Sindh

No TCEB/Registrar/2-1/2014
September 25, 2018

DETERMINATION OF THAR COAL & ENERGY BOARD IN THE MATTER OF REFERENCE CONTRACT STAGE TARIFF FOR SINDH ENGRO COAL MINING COMPANY MINE FOR DEVELOPMENT OF MINE EXPANSION TO 7.6 MTPA AT BLOCK II THAR COALFIELDS, DISTRICT THARPARKAR, SINDH, PAKISTAN

Thar Coal & Energy Board
Government of Sindh

Determination of Reference Contract Stage Tariff for Sindh Engro Coal Mining Company Mine of 7.6 MTPA at Block II Thar Coalfields, District Tharparkar, Sindh, Pakistan

Thar Coal Tariff Determination Committee
Constituted in Pursuance of Rule 3(1) of Thar Coal Tariff Determination Rules, 2014

Dr Abdul Ghani Pathan
Member

Mr Sultan Farooq Ahmed Khan
Member

Mr. Rashid Hussain Kazi
Member / Presiding Officer

Thar Coal & Energy Board
Government of Sindh

In pursuance of the Rule 10(5) of the Thar Coal Tariff Determination Rules, 2014, it is certified that the Thar Coal & Energy Board, on the recommendation of the Thar Coal Tariff Determination Committee, has approved the Determination of Contract Stage Tariff for Sindh Engro Coal Mining Company for Development of Mine Expansion to 7.6 MTPA at Block II Thar Coalfields, District Tharparkar, Sindh, Pakistan, appended in the following pages.

05/10/2018

Rashid Hussain Kazi
Managing Director
Thar Coal & Energy Board

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Thar Coal & Energy Board

Government of Sindh

BCM	Bank Cubic Meter
CAR	Contractors' All Risk
COD	Commercial Operations Date
CPI	Consumer Price Index
CSA	Coal Supply Agreement
ECC	Economic Coordination Committee
EPC	Engineering, Procurement & Construction
EPP	Energy Purchase Price
GCV	Gross Calorific Value
GoS	Government of Sindh
HSE	Health, Safety & Environment
IA	Implementation Agreement
ICB	International Competitive Bidding
ICC	In-pit Crushing & Conveying
IDC	Interest During Construction
IRR	Internal Rate of Return
KIBOR	Karachi Inter-Bank Offer Rate
LC	Letter of Credit
LDs	Liquidated Damages
LHV	Lower Heating Value
LIBOR	London Inter-Bank Offer Rate
MJ / Kg	Mega Joules per Kilogram
MSF	Mine Service Facilities
MTPA	Million Tons Per Annum
MW	Megawatt
MT	Million Tons
MYT	Multi Year Tariff
NCV	Net Calorific Value
NEPRA	National Electric Power Regulatory Authority
NOC	No Objection Certificate
NTDC	National Transmission & Despatch Company
O&M	Operations & Maintenance
OGRA	Oil & Gas Regulatory Authority
PKR	Pakistani Rupee
PPA	Power Purchase Agreement
RCOD	Required Commercial Operations Date
RMB	Chinese Renminbi
RoE	Return on Equity
RoEDC	Return on Equity During Construction
SBLC	Stand By Letter of Credit
SBP	State Bank of Pakistan
SCOD	Scheduled Commercial Operations Date
SECMC	Sindh Engro Coal Mining Company
SEPA	Sindh Environmental Protection Agency
TCEB	Thar Coal & Energy Board
TT & OD	Telegraphic Transfer & On Demand
US	United States
USD	United States Dollar

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
Case No TCEB/Registrar/2-1/2014

Thar Coal & Energy Board
Government of Sindh

The Thar Coal & Energy Board, as per the respective notifications of the Government of Sindh and Government of Pakistan is the coal-pricing agency, in accordance with Section 5(m) of Thar Coal & Energy Board Act, 2011. This determination is conducted in accordance with the authority vested with TCEB and pertains to the Petition of Sindh Engro Coal Mining Company for Determination of Reference Contract Stage Tariff for SECMC's Mine of 7.6 MPTA at Block II Thar Coalfields, District Tharparkar, Sindh, Pakistan, dated December 28, 2017 The coal tariff determination relates to the specific mine lease of Block II Thar Coalfields. The Petition has been assessed and reviewed in accordance with the parameters and guidelines established under the Thar Coal Tariff Determination Rules, 2014 dated November 27, 2014 as notified by Government of Sindh. The coal tariff, so determined, shall form the basis of fuel cost for downstream power generation to be determined by NEPRA.

1. TARIFF SOUGHT BY PETITIONER

The Petitioner has submitted a request for determination of levelized tariff of USD 46.84 per Ton for development & operations of 7.6 MTPA mining capacity. Concurrently the Petitioner has stated that it be also facilitated by determining an intermediate Tariff for 5.7 MTPA mine capacity for an interim period of three months prior to the planned COD of the 7.6 MTPA mine. The Petitioned Tariff for 5.7 MTPA intermediate stage tariff is and USD 49.93 per Ton The submittal is based upon one composite computation for a 7.6 MTPA mine capacity. In computing the intermediate stage Tariff the Petitioner has factored in all capital expenditure for the 7.6 MTPA mine with a variation that the Production Payment Tariff is calculated for a capacity for 5.7 MTPA. The mine expansion (incremental) cost for reaching a 7.6 MTPA capacity incurred over a period of 33 months is USD 235.20. The details of the petitioned tariffs and costs are provided in Tables 1 to 8 here below:

Table 01 – Petitioned Project Tariff for 7.6 MTPA Mining Capacity

Project Tariff for 7.6 MTPA	Year 1 – 10	Year 11 – 30	Year 1 – 30
Total Production Payment Tariff Components	16.27	16.42	16.37
Total Capacity Payment Tariff Components	33.96	23.13	30.47
Total Project Tariff	**50.22**	**39.55**	**46.84**

All amounts in USD per Ton

Table 02 – Petitioned Production Payment Tariff for 7.6 MTPA Mining Capacity

Production Payment Tariff Components for 7.6 MTPA	Year 1 – 10	Year 11 – 30	Year 1 – 30
Fuel Cost	5.20	6.28	5.48
Variable O&M – Foreign	4.35	5.23	4.58
Asset Replacement Cost	3.21	2.15	3.04
Royalty	3.50	2.76	3.27
Total Production Payment Tariff Components	**16.27**	**16.42**	**16.37**

All amounts in USD per Ton

Table 03 – Petitioned Capacity Payment Tariff for 7.6 MTPA Mining Capacity

Capacity Payment Tariff Components for 7.6 MTPA	Year 1 – 10 (Avg)	Year 11 – 30 (Avg)	Year 1 – 30 (Lev)
Fixed O&M – Foreign	6.69	8.02	7.04
Fixed O&M – Local	3.80	3.15	3.65
Insurance	0.93	0.93	0.93
Power Cost - By Grid	0.75	0.75	0.75
Power Cost - By Diesel + Solar	0.39	0.39	0.39
Cost of Working Capital	0.44	0.45	0.45
Debt Principal Repayment	8.42	-	5.49
Debt Interest Payment	3.10	-	2.34
Return on Equity	6.16	6.16	6.16
Return on Equity During Construction	3.29	3.29	3.29
Total Capacity Payment Tariff Components	**33.97**	**23.13**	**30.47**

All amounts in USD per Ton

Table 04 – Petitioned Project Cost for Development of 7.6 MTPA Mining Capacity

Petitioned Project Cost for 7.6 MTPA	Amount
EPC Cost	128.30
Non EPC Cost	75.20
Insurance Cost (1.35% of EPC)	1.70
Financing Fee, LC Charges, Sinosure Fees etc.	7.60
Interest During Construction	22.40
Total Project Cost	**235.20**

All amounts in USD Million

Table 05 – Petitioned Project Tariff for 5.7 MTPA Mining Capacity

Petitioned Tariff for 5.7 MTPA	Year 1 – 10 (Avg)	Year 11 – 30 (Avg)	Year 1 – 30 (Lev)
Total Production Payment Tariff Components	16.27	16.42	16.37
Total Capacity Payment Tariff Components	45.27	30.85	40.63
Total Project Tariff	**61.54**	**47.26**	**57.00**

All amounts in USD per Ton

Table 06 – Petitioned Production Payment Tariff for 5.7 MTPA Mining Capacity

Production Payment Tariff Components for 5.7 MTPA	Year 1 – 10 (Avg)	Year 11 – 30 (Avg)	Year 1 – 30 (Lev)
Fuel Cost	5.20	6.28	5.48
Variable O&M – Foreign	4.35	5.32	4.85
Asset Replacement Cost	3.21	2.15	3.04
Royalty	3.50	2.76	3.27
Total Production Payment Tariff Components	**16.27**	**16.42**	**16.27**

All amounts in USD per Ton

Table 07 – Petitioned Capacity Payment Tariff for 5.7 MTPA Mining Capacity

Capacity Payment Tariff Components for 5.7 MTPA	Year 1 – 10 (Avg)	Year 11 – 30 (Avg)	Year 1 – 30 (Lev)
Fixed O&M – Foreign	8.92	10.70	9.38
Fixed O&M – Local	5.07	4.20	4.87
Insurance	1.24	1.24	1.24
Power Cost - By Grid	1.00	1.00	1.00
Power Cost - By Diesel + Solar	0.52	0.52	0.52
Cost of Working Capital	0.59	0.60	0.60
Debt Principal Repayment	11.23	-	7.32
Debt Interest Payment	4.13	-	3.12
Return on Equity	8.21	8.21	8.21
Return on Equity During Construction	4.38	4.38	4.38
Total Capacity Payment Tariff Components	**45.27**	**30.85**	**40.63**

All amounts in USD per Ton

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
Case No TCEB/Registrar/2-1/2014

Table 08 – Petitioned Project Cost for Enhancement to 5.7 MTPA Mining Capacity

Petitioned Project Cost for 5.7 MTPA	Amount	NOTE:
EPC Cost		The Petitioner has not
Non EPC Cost		segregated the mine
Insurance Cost		expansion costs for the 5.7
Financing Fee, LC Charges, Sinosure Fees etc.		MTPA expansion.
Interest During Construction		
Total Project Cost		

All amounts in USD Million

The amounts illustrated above are petitioned on the basis of certain assumptions which are detailed in the following sections. The key assumptions and basis of the Petition are summarized hereunder.

i.	Price of Diesel	PKR 88.08 per Litre
ii.	PKR to USD Exchange Rate Parity	PKR 110.40 per USD
iii.	RMB to USD Exchange Rate Parity	RMB 6.85 per USD
iv.	Cost of Foreign Financing	LIBOR + 3.30%
v.	Cost of Local Financing	KIBOR + 1.75%
vi.	LIBOR Assumption	1.45%
vii.	KIBOR Assumption	6.15%
viii.	Debt to Equity Ratio	75:25
ix.	Debt Repayment Period	10 Years
x.	Equity IRR	20.00%
xi.	Mining Technology	Truck & Shovel
xii.	Construction Period for Development of 3.8 MTPA Capacity	42 Months
xiii.	Construction Period for Enhancement to 7.6 MTPA Capacity	33 Months
xiv.	Overburden Removal for development of 3.8 MTPA Capacity	113 Million BCM
xv.	Overburden Removal for enhancement to 7.6 MTPA Capacity	51.50 Million BCM
xvi.	Average Slope Angle of the Mine	24° (Degrees)
xvii.	Average Rate of Dewatering	30 Cusecs

2. PUBLIC HEARING

The Board, through the Thar Coal Tariff Determination Committee, conducted a hearing in the matter of the tariff petition filed by the Petitioner on September 13, 2018. In response to the notice, the Board received written comments from only one entity, i.e. Syed Akhtar Ali, ex Member Energy, Planning Commission of Pakistan. The comments and corresponding clarifications / explanations are detailed in the following Table:

S. No.	Intervenor Comments	SECMC Response
1	**International Costs comparison.** Table below shows that SECMC production Costs are almost double the international prices. The issue, however, is as to what is the right reference price: mine-mouth price of Lignite because it is not usually traded and the case in point is of Mine-mouth costs. However, the petitioner is taking U.S. coal price Index CERA which relates to a different Bituminous/sub-Bituminous coal. Also Lignite is not only different but inferior coal. It has high moisture and low CV which results in lower Thermal efficiency by several percentage points. The petitioner's coal power plant data is a testimony. Thus, it is concluded that Mine-Mouth prices of Lignite mines may be an appropriate reference to compare the production costs.	The costs mentioned in the table to which SECMC's coal price has been benchmarked against are of mines that are mature and have different production capacities, which significantly effects the cost of coal produced. In the case of Block II, the mine has not achieved a level of maturity to benefit from scale economies and bring the cost down. Cost of doing business is higher owing to the remoteness of where Block II is located in Pakistan. The Block II mine has been compared to mines operated by NLC in India, most of which use the BWE technology and are mature mines of capacities much larger than that of Block II's petitioned capacity. With respect to the comparison drawn for SECMC's mine to NLC's mine with cost of USD ~13.21/t as mentioned

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
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above. The subject mine has a stripping ratio of 4.5, vs an overall stripping ratio of 8.4 at the mine size of 7.6 Mt/a for Block II. Resulting in lower cost of production for NLC as it has to remove ~86% less waste to excavate coal as compared to Block II, which brings the cost down.

Comparative Lignite Cost/Prices in various Jurisdictions					
Countries	**Price Basis**			**Stripping Ratio**	**CV**
	Per Ton	USD/Ton	Tons/M³		Kcal/kg
Indonesia-ICI5	28.69 USD	28.69	FOB		3000-3400
NLC India	755-988 Irs	13.21	ex-mine	5.5-7	2460-2970
GMDC-India	690-1140	18.46	ex-mine	9.5	2881-4195
Germany	16.495 Euro	19.3	ex-mine	5.6	1863-2747
SECMC-	46.84	46.84	ex-mine	6.6	2769
1 USD=66 Irs=105					

Source: Compiled by the Author, Argus Media, Ernst Young, GMDC, NLC, CERC India

Another favourable factor for NLC mines (eg. Barsingsar) is that the mineable coal seam is located at a depth of ~44 meters vs ~161 meters for Block II. Due to this, the haulage distance is reduced as the trucks travel a shorter distance to excavate the coal from the earth. Also, owing to this the mine design could be made as such that the dump site may have a lower height and may be located closer to the pit, which will further reduce the distance for the trucks to complete their operation cycle.

Amalgamating the lower stripping ratio and lower hauling distance, the overall cost of production is much lower for NLCs mine because a lesser number of equipment will be required and subsequently the OPEX cost is lower as well vs Block II mine. Hence, a direct comparison on a per ton basis cannot be drawn with the NLC mine as a benchmark for rationalizing the cost of the Block II mine without accounting for the above-mentioned differences.

Table 2 :Sub-Bituminous and Lignite Prices

	Sub-Coal	Lignite-International	Lignite-Thar	
Price-USD/t	100	20-25	46	65
CV-MMBtu ton	25.5	10.5	10.5	10.5
Price-USD/MMBtu	3.92	2.38	4.38	6.19

Source: IEA, Argus Media, NLC India, GMDC India, Ernst Young

4. High Financial Cost

TCEB allowed an interest rate of LIBOR+ 4%, which was probably reduced to LIBOR plus 3.3% later, which appears to be still too high. Under CPEC, Sovereign loans for transport sector have been given at 2%. China EXIM Bank itself provided loans for NJHPP at a rate of LIBOR plus 2.8%, 8 yrs grace and 20 yrs repayment. From other sources, loans for NJHPP were at 1.5 % to 2% and for 20 yrs repayment. Jamshoro coal power plant loans are at under 2% and 20 yrs repayment. What is so wrong with SECMC and Thar coal? There is no reason that Thar coal mine loan of 700 million USD should not be at the same rate. LIBOR at the time of loaning was 0.5 % which now has gone beyond 2% and may pass 3% in near future. This would greatly upset the tariff to become unaffordable and unsustainable. And the least that could have been done was to negotiate a longer repayment period of 20-25 yrs which is not uncommon in such projects. Longer repayment period would have smoothened the unit product costs variations along with lowering the foreign exchange outflow. It is suggested that possibilities of renegotiations and refinance in this respect under CPEC framework be pursued. There are other issues in CPEC terms and practices that Federal government has been urged to take up with Chinese government.

Table 3. Comparative Financing Terms under Sovereign Guarantees

	interest %	Grace yrs	Repay-yrs	Lender
NJHPP	2.80%	8	20	ChinaExim
NJHPP	1.5-2%	8	20	KFD,IDB
Jamshoro coal Power Plant	under 2%	5	25	ADB
CPEC-Roads	2%		20	China AIIB World
World Bank General	under 2%		20	Bank
ADB General	under 2%		20	ADB
SECMC	3.30%		12	CPEC-?

Source: NEPRA, Planning Commission, ADB, World Bank

Note: Higher risk in NJHPP, War Zone, disputed area, high seismicity, Climate Risk

Inaccurate comparison of the financing for the coal project with the loans provided by China Eximp. Bank for Transport Infrastructure projects at 2% to Government of Pakistan (GoP). This presents an incorrect view and over-simplifies the argument for two main reasons:

1. Firstly, loans made by China Eximp. Bank were made under policy loans which were provided only for transport infrastructure projects being undertaken by GoP. For remaining projects under the CPEC framework, projects were referred to commercial banks being led by China Development Bank (CDB). The mining project was treated as an integrated project given the power projects associated with it; however, it was still offered a lower rate of 3.3% due to the Sovereign Guarantee vs. the 4.5% offered to various power plants. It should be noted that since it was a Sovereign Guarantee loan, final rate negotiation was led by GoP directly with CDB.

2. Secondly, as mentioned above, the loan by Eximp. Bank is not the correct reference point since it was policy loan which is offered at a discount as compared to going rates in the market. A better benchmark would be the Eurobond issued by GoP in September 2015, which was backed by a similar Sovereign Guarantee as that provided for SECMC's debt. The coupon rate for that 10-year bond was 8.25% at the time when Libor was 0.5%. Even after accounting for Sinosure and a spread of 3.3%, SECMC's Chinese loans all-inclusive cost at the time was 5.16%. At that time Libor Swap rate was 1.5% which means that fixed rate would have been ~6.19% and hence SECMC was able to secure a much better Sovereign Debt deal.

6. High CAPEX: Low vs modern Technology

Despite low CAPEX Shovel and Truck technology, SECMC CAPEX is more than twice higher than NLC India.NLC employs the most modern mechanized and capital-intensive system of BWE-Conveyors- Spreaders. Thus no cost savings seem to have been obtained apparently in adopting low technology. However, High operating cost has been resulted by adopting low technology. Manual Mining is still more expensive. Technology is cheaper. Suzuki is cheaper than Gadha Gari.

The use of BWE were analysed during the feasibility stage of the project. SECMC's German consultants, RWE who have been operating bucket wheel excavators for the past 50 years in German mines as well as providing technical support for the BWE operations in various parts of the world, including Indian & European mines, recommended against the use of the BWE in Thar owing to the geological conditions present in the region. Also, BWE work best in mature mines where not take place as often as planned by SECMC. In SECMC's phased approach to expansion, the use of BWE proves to be a much more expensive model than the use of

Table 5: Mining and Coal Power Plant Costs:NLC India vs SECMC Pakistan			
	Mine Cap	Mine CAPEX	MineUnCPX
	MTPA	MnUSD	USD/ton
JayamKondam,TN	13.5	595	44
Valia Gujarat	8	375	47
Mine-III,TN	8	390	49
SECMC	7.6	966	127

Source: Authors Estimates , NLC,SECMC data

shovel/truck owing to a higher lead time of BWE, non-availability of a stable supply of electricity in the region. All these translate into a higher OPEX cost as the ROEDC and IDC components during the construction phase set off any savings arising from the lower OPEX of the BWE.

With respect to the mines mentioned above, Valia Gujarat is operated using the truck and shovel method, however their coal seams are at a depth between 30-60 meters as compared to Block II mine's coal seam depth which is at 161 meters. Since Valia Gujarat mine's coal seam is at a relatively shallower depth, this enables them to create a smaller mine design which translates into less OB volume to be capitalized, bringing down the construction cost of the mine.

Jayam Kondam, TN & Mine-III, TN mines have their coal seams at a depth of ~44 meters, which is significantly lower than Block II's main coal seam, this results in lower OB volume to be capitalized. In Block II's case, installing the BWE technology will cost a lot more than NLC mines as the length of the

conveyor will be substantially longer owing to the higher depth of the Block II mine. During feasibility, it was analyzed that installing conveyor belts around the pit to take the waste and coal out of the mine had a higher cost as compared to the bucket wheel machines itself. Also, due to the high depth of the mine, the conveyors will be installed at a greater elevation, which would require more energy to transport the waste up and out of the mine onto the dump. Currently, there is no stable supply of energy at a cheaper rate than that of Gen sets to undertake the load that such a technology would require. Such a high construction cost would translate into a higher debt servicing and ROE component which would offset any savings realized in OPEX.

NLC mines already have an established conveyor belt system for which they just replace the bucket wheel head to continue their operations, this realized substantial cost savings as compared to installing a conveyor belt system and relevant power system from scratch.

9. Is CAPEX Necessary for marginal expansion?

Mining Experts have indicated that the expansion of BOX may not be necessary and that the same Box could be utilized for mine expansion. Higher speed equipment could have provided the same result. There is a tendency in Pakistani projects to maximize CAPEX unduly. It may be desirable that TCEB examines such possibilities.

The CAPEX requirement is calculated after careful mining engineering to match the production schedule to cater to the annual demand by the IPPs. While calculating equipment, an 85% utilization factor was used to reduce the redundancy in equipment.

With respect to the expansion of the boxcut, the reason to expand the width of the boxcut instead of moving the mine forward faster to excavate more OB volume is that the walls of the mine will have to be rebuilt more frequently causing a dent in productivity. This will cause a lot more OB volume to be re-handled, which will increase the operational cost of the mine. Also, keeping the width of the mine the same and introducing more equipment into the pit, would cause issues of congestion which is a big safety concern for mining operations.

SECMC's consultants, have recommended that the advancement rate should be a maximum of 250 meter per annum as per industry practice, without expanding the boxcut and excavating annual capacity of 7.6 Mt/a would exceed the 250 meter per annum mark. To optimize the production from the reserves available, the box-cut of the mine should be expanded to achieve the required annual production capacity.

Moreover, additional capital would either ways be required, as to excavate a higher annual production capacity, a higher quantity of equipment is required as well. If this cost doesn't not get capitalized, it will get translated into the operational cost for that year and subsequently into the coal tariff making it higher.

11. Appropriate Technology or lack of it

One wonders, why SECMC production costs are high, much higher than elsewhere# .IRR and interest rates have been identified earlier. There is a remaining issue of technology. There are three technologies of excavation and coals handling that are available:
1. Shovel and Truck, as are being employed by SECMC.
2. Draglines, spreader and conveyors
3. Bucket Wheel Excavators and conveyors

Truck Shovel are the most expensive in terms of production cost and possibly least capital intensive and least technology intensive and simple. NLC India has been using BWE for the last 50 years from the very start of their Lignite mining operations. In Europe, also BWE are ubiquitous in Lignite mines in Germany and lesser countries like Poland, Czech, Greece etc. There are 34 BWEs currently employed by NLC.

There is a scaring misunderstanding in Pakistan circles that BWE are unaffordable & expensive. BWEs come in all sizes and capacities; the largest one of 240,000 M3 per day in output costing around 80 million USD. But there are lesser of 8-10,000 M3 per hour that cost one-tenth of that amount. For a project with a foreign loan of 700 million USD CAPEX, buying

During the feasibility studies, SECMC analysed the use of BWE technology for it's mine as opposed to using shovel and trucks. As stated, BWE come in different size and shapes. However, for the geological conditions present in Block II the use of BWE, designed for the strata present comes off as more expensive than using the truck and shovel technology. In SECMC's phased approach to expansion, the use of BWE proves to be a much more expensive model than the use of shovel/truck owing to a higher lead time of BWE, non-availability of a stable supply of electricity in the region. All these translate into a higher OPEX cost as the ROEDC and IDC components during the construction phase set off any savings arising from the lower OPEX of the BWE.

For SECMC's mine design and size, installing the BWE technology will cost much higher than anticipated as the length of the conveyor required is ~35 Km owing to the high depth of the Block II mine. During feasibility, it was analysed that installing conveyor belts in and around the pit to take the waste

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
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a few of them would not have been unfeasible. Moreover, alternative technologies like electric Draglines and spreader and conveyors would offer possibilities of utilizing electricity should also be examined to replace imported Diesel. This will improve project economics, save foreign exchange and foster independence. It is therefore requested that the petitioner be required to undertake such a technology evaluation or share the same with stakeholders, if it has already conducted such an evaluation.

Also of interest is that Senhua, perhaps the largest company in this sector, offered a tariff of 5 Usc per kWh, some ten or more years earlier. In the meantime, machinery costs appear to have come down due to market conditions created by coals near-exit projections. International rates for Lignite based electricity are also around the same and even lower. Obviously, Senhua was not making a charity offer. CPEC was not there and advent of CPEC should have resulted in better terms.

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and coal out of the mine had a higher procurement cost as compared to the bucket wheel machines itself. Also, due to the high depth of the mine, the conveyors will be installed at a greater elevation, which would require energy as high as 55 MW of installed capacity to transport the waste up and out of the mine onto the dump. Currently, there is no stable supply of energy at a cheaper rate than that of Gen sets to undertake the load that such a technology would require. Such a high construction cost would translate into a higher debt servicing and ROE component which would offset any savings realized in OPEX. SECMC's consultants RWE, who have a massive experience in operating BWE all around the world, have recommended that BWE is not a viable option for SECMC for its mine right now. Once the mine has reached its ultimate potential, the use of such equipment can be analyzed and may implemented at that stage.

As for the argument presented that Senhua offered a much lower tariff, the argument seems invalid as the project was proposed by Senhua in 2002 which was never materialized and no real ground realities relating to the bankability of that project were seen to judge whether it can be used as a plausible benchmark.

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12.

Diesel Trucks vs Conveyor variable Costs:

Diesel is a major cost element of the Shovel-Truck technology that has been employed. It is costing 180 million USD in CAPEX or perhaps even more and 5.84 USD per ton in terms of variable fuel cost. And petitioner has quoted a cost rate of 0.23 USD per Ton-kms for Diesel, while Conveyor Electricity based costs are 0.05 USD per Ton kms. This is based on 0.5 kwh per ton-kms and 0.1 USD per kWh electricity rate for conveyor electricity consumption. Thus, it comes out that, Conveyors Cost one-fifth than Diesel Trucks in terms of energy cost. Any alternative that does away with Diesel may reduce cost of production, also reducing foreign dependence and foreign exchange costs.

As suggested above, continuous mining technology (BWE) is not viable owing to the aggressive expansion plans for SECMC as the position of the conveyor will have to be rapidly changed to cater for the moving walls for expansion. Additionally, during feasibility, it was analysed that installing conveyor belts around the pit to take the waste and coal out of the mine had a very high CAPEX cost. Also, due to the high depth of the mine, the conveyors will be installed at a greater elevation, which would require more energy to transport the waste up and out of the mine onto the dump. Currently, there is no stable supply of energy available to provide the required load for the conveyor belt system. There is no stable source of energy available at the rates mentioned above to achieve such cost savings utilizing the belt conveyors. Such a high construction cost would translate into a higher debt servicing and ROE component which would offset any savings realized in OPEX.

13.

CAPEX of Alternative Technology

Capex of alternative technology of BWE-Conveyors and Spreaders does not appear to be prohibitive as is indicated by our cost estimates in the following. These cost estimates are based on purchase prices in India for similar equipment in the last few years. Conveyor costs have been taken from local credible manufacturers who make similar equipment for Cement Industry. These are P2 Cost estimates having a 50% chance of variations upwards.

Table 8: SECMC Mining Eqpmt and Cost Estimates

		Unit Price Mn.USD	Total Mn.USD
Mine Capcity-MTPA	7.6		
Stripping Ratio-M3/ton	6		
Capacity Factor	0.8		
Material Throughput-M3/hr	7000		
BWE Capacity-M3/hr	2250		
No of BWE Reqd-2250 M3/hr	3	25	75
Spreader-2250M3/hr	3	5	15
Conveyor-kms	15	1500000	22.5
Power Generator	3000	1500	4.5
Other Eqpmt			10
Total			122.5

1 USD=127 PkRs, 1 Euro=140 PkRs
Source: Authors Estimate

The above assumption to calculate the cost of procuring BWE is an over simplistic one, as mentioned by the author that these costs have a 50% chance of upward variation. BWE is a set of complex machinery that comes along with a large number of ancillary equipment to support its operations, USD 10 Mn seems like an overly optimistic cost for ancillary equipment for such a complex machine. Without adding the adequate cost of such ancillaries, one cannot clearly estimate the cost of such technology. In addition to the absence of ancillary equipment's cost, the depth of the Block II mine is much higher, which would require a lot more than 15 Kms, ~35 Kms in case of Block II of conveyor belts to be installed with a power requirement of ~55 MW. Having accounted for that and the ancillary equipment, the cost of procuring the BWE will look much different than what has been presented above.

The relevant comments/observations of the intervenor and responses of SECMC are appropriately weighted for consideration in this determination.

MATERIAL ASPECTS OF THE PETITION - ANALYSIS & DECISIONS

Subsequent to the award of Contract Stage Tariff for a 3.8 MTPA /6.5 MTPA capacity the Petitioner is seeking a tariff for mine expansion capacities of 7.6 MTPA.

The following is a summary of the salient aspects of the 7.6 MTPA Contract Stage tariff Petition:

3. CAPITAL STRUCTURE – DEBT TO EQUITY RATIO

The 3.8 MTPA tariff is based upon a Debt/Equity ratio of 75:25. The Petitioner states that the Project is being financed under a Sovereign Guarantee of USD 700 million and a situation triggered by requirements of "contingencies and certain macro-economic variables" may require additional capital requirements. Consequently, it is petitioned that this may necessitate the raising of up to USD 15 million dollars, beyond the cover provided by the Sovereign Guarantee. Accordingly, the Petitioner seeks to raise these additional funds (if required) through Equity injection and solicits the raising of Equity ratio from 25% to 30% resulting in reconfiguring of Debt to Equity ratio to 70:30.

The plea is premised upon guesstimates and assumptions. Furthermore, the Tariff of 3.8 MTPA would be required to be adjusted by rationalised costs and eminently shorter construction period. The shorter construction period results in reduction in costs heads like IDC, ROEDC, Operating costs, etc. The adjusted cost scenario is not available with TCTDC and insufficiency of updated data restricts an informed decision in this respect. In short, we are not able to determine whether there actually would be a justifiable need for additional capital or not, and if so, what would be its quantum.

In light of above, the Petitioners request to; (a) acknowledge the configuration of additional capital requirements; and, (b) to regulate a mechanism for treatment of this additional requirement is considered unwarranted.

Notwithstanding, the lack of basis for such a request a maximum cap of 25% Equity is established under this Determination. Any additional (approved) capital injections shall be treated as Project Debt on Terms and Conditions to be established in accordance with approved debt terms.

4. ADDITIONAL COST OUTLAY & MISCELLANEOUS ITEMS

In addition to cost directly associated with mine development, SECMC has petitioned for incorporation of additional costs on account of certain external / non-EPC Costs. The following summary table outlines the specifics of the petitioned anticipated costs.

S. No.	Description	Estimated Cost	Petitioned Rationale
1	Allowance of 2% Project EPC Cost as a cost head for CSR Projects	USD 20 million (approximately)	SECMC is quoting a directive from the Honourable Chief Minister whereby mine development companies are directed to spend the equivalent of 2% of Project Costs as CSR spend.
2	Construction of waste	USD 17.5 million	The contracted work is running

S. No.	Description	Estimated Cost	Petitioned Rationale
	water reservoir at Gorano		behind schedule, hence SECMC considers the need to execute the project from its resources on behalf of Government of Sindh
3	Cost of completion of LBOD water supply	Costs are indeterminate. SECMC seeks a tentative approval for coverage of such costs.	This demand for inclusion in coal tariff stems from a hypothetical scenario wherein, fearing delays in execution of LBOD scheme, the SECMC may have to step in to complete the scheme.

CSR

CSR spend is a global phenomenon and is sourced from funds drawn from corporations. Claiming CSR spend in the tariff regime and applying a 20% IRR fundamentally contravenes the very concept under which "Corporate Social Responsibility" originates.

TCEB is not aware of nor in receipt of any directive from the Chief Minister as is being quoted by the Petitioner. Should there be (in future) a mandated inclusion of any development-oriented costs in the EPC Cost, it would be categorised as a "Surcharge" and cannot be categorised as CSR Activity. Also, if such surcharge if applicable under a Policy it shall be treated similar to a Royalty levy and would not merit any returns for the Petitioner.

GORANO RESERVOIR

It is purportedly the outcome of a certain default outside of the main mine development activity. Also, the Detailed Feasibility of the mine had identified Dukkan Chow as a site for discharge of the effluent. In a later day development SECMC identified Gorano as the discharge site apparently citing inadequacy of Dukkan Chow site.

Claim for these costs is predicated upon:

- a reported contract default for agreements outside the ambit of mining services
- a supposed mis-calculation in the Feasibility Study with respect to an optimum site for effluent discharge.

In the later instance, the effect of inadequacies of Feasibility Studies cannot be loaded in the tariff. Also, the tariff regime is not liable for defaults in peripheral contracts which need to be addressed and resolved by a redress mechanism outside the ambit of the tariff regime.

Additionally, the peripheral projects though critical for mine operations are not governed by Government Policies and incentives for mining operations. The locus standi for claiming this cost under a tariff regime which offers a 20% Equity IRR does not exist. The Policy of offering 20% IRR is to incentivise mining operations and cannot be applied across-the-board to normal civil works projects that are outside the "battery limits" of the mining activities.

POTENTIAL COSTS ASSOCIATED WITH OD SCHEME

In line with explanations hereabove, this cost proposition for inclusion in tariff is also rejected.

5. CATEGORIZATION OF COSTS – CONTROLLABLE / UNCONTROLLABLE

SECMC petitions that the cost categorizations and disciplines enforced in the Contract Stage Tariff Determination, particularly in terms of individual item costs may be lifted. It is petitioned that while the control on overall cap of aggregate costs may be maintained, the capping of individual cost heads may be removed. It is also petitioned that the categorization of Security Costs as controllable may be lifted and that this cost head may be categorized as uncontrollable cost.

TCEB considers that the costs under consideration related to estimates as at that stage no contractual commitments were in place. Accordingly, the Determination at Contract Stage had permitted these estimated costs within the tariff regime subject to maximum caps in specific cases. TCEB would like to maintain structured controls and caps over these estimated costs heads.

Security Costs are a case-in-point because of the peculiar scenario where the spectre of security assumes unparalleled proportions. The security firms are extracting rates and tariffs disproportionate to the prevailing market benchmarks. As an example, the salary claims of "retired" SSG personnel are a multiplier of the salaries which these personnel were earning while in active service. Clearly these factors need to be rationalised and also with the increased commercial activities in adjoining mines and power projects the overall costs of the security cover is expected to reduce on a per project basis. Providing an uncapped cost-run will adversely impact the security economics and is not prudent. The parameters defined for these costs under the Contract Stage Determination stand to remain in place. The petitioned relief and /or change is not permitted.

6. CONCEPT OF TWO COD'S

SECMC has petitioned that due to change in completion schedules of the two off-takers of the enhanced mine production, two tariffs' may be determined in the ambit of the tariff for 7.6 MTPA mine capacity. A separate Tariff Table has been petitioned for 5.7 MTPA capacity for an approximate period of three months prior to the final commissioning of the 7.6 MTPA mine.

This plea is unique for a regulated cost-plus tariff regime especially when capex and other associated costs for mine development cannot be segregated for 5.7 MTPA & 7.6 MTPA production streams. The prospective variations in production outputs stem from market conditions and typically fall within the realm of "market risk". A moot point here is whether the rate payer should be subjected to bear the risks of uncertainties of a Business Plan? The policy structure and associated incentives are benchmarked factoring in all such variables and such risks are exclusive to the Project Developer and cannot be passed on to the rate payer.

Notwithstanding the above, the Petitioner is still not fully firmed up with respect to the off-taker's schedules etc. A plea at this stage is perceived as seeking an insurance against a probability of such a happening. This approach does not fit in to the genre of cost-plus tariff determinations and cannot be accommodated per se. In the event of more compelling reasoning and data the Petitioner may (if appropriate) submit later a review petition in support of their plea.

7. PRE-COD REVENUES

The 3.8 MTPA Determination had established that revenues from pre-COD sales be used for substituting equivalent capital requirements for future mine expansion. SECMC seeks to offset the use of pre-COD revenues for use as reserve fund for asset replacement instead. One does not see any conflict in timelines of revenue generation and funds requirement for mine expansion. Accordingly, the Determination maintains the earlier adjudication of using pre-COD sale revenues for reducing capex requirements for mine expansion. This applicable for both pre-COD sales of 3.8 MTPA mine as well as of the 7.6 MTPA mine.

8. ADJUSTMENT IN TARIFF DUE TO VARIATIONS IN HEATING VALUE OF LIGNITE

SECMC has presented a case whereby, they anticipate a reduced value in LCV of Coal. The original field and laboratory tests had determined an LCV of 11.6 MJ/Kg. Now, (according to SECMC) a new set of laboratory analysis reveals an LCV of 10.84 MJ/Kg. Accordingly, the Petition seeks an (upward) adjustment of coal price.

TCTDC has examined the supporting information and has the following observations:

- Coal analysis is reportedly conducted by reputed institutions in both cases
- The variation between earlier tests and later day analysis is reported to be due to errors in test methodology and sample handling, thus the later sample tests reflecting a higher moisture content than before
- The methodology for respective tests and the protocols followed are not presented – the variations of results are sort of conjectural and not based upon exact records.
- The calibration of test laboratories at various locations is bound to vary and hence reflect differing values.
- It is not clear whether sample collection and transportation protocols for the two tests were similar and, if different, then the variations cannot be compared for serious consideration

In continuation of above the plea of the Petitioner is presumably clearing an opening in the earlier Determination which had fixed a margin of variation to 5%. The explanations and information presented does not warrant a reconsideration of the earlier determined acceptability band. The plea for reopening the earlier determined boundaries of variability acceptance does not hold ground.

9. WAIVER OF PENALTY APPLICABLE TO DEFAULT IN CAPACITY ENHANCEMENT

While determining tariff petition for 3.8 MTPA there was a strong emphasis that the Petitioner's Business Plan must strive and factor optimal production quantities so that a market competitive coal tariff emerges. In line with this SECMC petitioned for a tariff that harmonised with coordinated increase in mining capacities. The plan reflected an initially higher cost of coal at 3.8 MTPA that fused in to a lower tariff regime with enhanced production of 6.5 MTPA.

To ensure a concerted discipline in moving towards optimum capacities a notional penalty of 1% reduction in Equity IRR was agreed with SECMC, in case progress towards reduced tariff regimes is impacted by a delay beyond twenty-four months of achieving the COD of 3.8 MTPA. It is prudent to

maintain this discipline in the overall quest for achieving optimum level of production quantities. In light of revised mine development plan this notional penalty, if and when applicable, shall be activated twenty-four months after 3.8 MTPA COD and cease at the proposed production level of 5.7 MTPA as and when applicable.

10. MINING TECHNOLOGY

7 m3 shovel and 60 ton capacity trucks are being used for waste removal and lignite extraction in Phase-I for the production of 3.8 MTPA. However, in expansion Phase-II (7.6 MTPA), 15 m^3 shovel and 100 ton capacity truck will be introduced in 2024 for the removal of sub-recent formation.

As per equipment replacement schedule of SECMC, 22 shovels of 15 m^3 capacity and 220 trucks of 100 ton capacity will be required in phase-II. TCTDC have recalculated the requirement of 15 m^3 shovels and 100 ton capacity trucks as 18 and 165 respectively.

Total requirement of 7 m^3 shovels and 60 ton capacity trucks, for Phase-I & II (combined) are 48 shovels and 945 trucks against SECMC requirement of 70 shovels and 996 trucks.

11. NON-EPC COSTS

The Petition claims non-EPC costs of USD 75.2 million. These estimated costs are rationalised after due considerations of their rationale and market benchmarks. The determined EPC costs are to the value of USD 45.6 million. Notable aspects of the cost determination are:

- Additional Staff at site not considered necessary. The EPC Contractor is carrying out complete works and for "Supervisory Duties" the existing staffing is considered adequate.
- Civil works and construction costs are rationalised as per market benchmarks. The initial estimates for such costs were high, however with increased construction activities at site the claimed premium in costs is not justified.
- Travel, Consultancy, Operating Expenses, Project Development Costs rationalised as per market benchmarks.
- Insurance is capped at 1% of EPC Costs. This is consistent with insurance costs incurred thus far for the 3.8 MTPA mine.

High level details as per the following tables:

Budgeted & Petitioned Non-EPC Costs				
Budget Heads	USD-M	Year 1	Year 2	Year 3
Capital Items	**41.91**	**15.59**	**8.12**	**18.21**
Coal Handling System	7.51			7.51
Dust Protection Barrier	3.06		3.06	
Power Supply from 500kv line	6.13	6.13		
Development of Additional Disposal Site for	5.64			5.64
Additional Buildings (Office Extension + Dormitory)	4.71	4.71		
Additional Workshop/Warehouse	0.83	0.83		
Additional Dewatering	3.32	3.32		
Roads	9.85		4.93	4.93
Mobile Equipment Machinery	0.47	0.47		
Additional Software/Hardware	0.39	0.13	0.13	0.13
Security	**3.34**	**3.34**	**0.00**	**0.00**
Capital Items	2.50	2.50		

Budgeted & Petitioned Non-EPC Costs				
Budget Heads	**USD-M**	**Year 1**	**Year 2**	**Year 3**
Operating Expenses	0.84	0.84		
Salaries, Wager & Benefits	**4.90**	**1.52**	**1.79**	**1.59**
SWB , Rota travel, Bonus	4.90	1.52	1.79	1.59
Operating Expenses	**9.42**	**2.85**	**3.50**	**3.06**
Site Running Expenses	0.41	0.15	0.15	0.11
Office Running Expenses	0.45	0.15	0.15	0.15
Travel	2.87	1.04	1.04	0.78
Dewatering Opex	3.51	1.28	1.28	0.96
Training	1.61	0.09	0.76	0.76
Media Management & Communications	0.57	0.14	0.13	0.31
Consultancy & Studies	**2.31**	**0.84**	**0.84**	**0.63**
RWE	0.48	0.17	0.17	0.13
Plant Co.	0.35	0.13	0.13	0.09
Mining Consultant - I (Dr. Marcos)	0.12	0.04	0.04	0.03
Mining Consultant - II (Dr. Ludwig)	0.13	0.05	0.05	0.04
Hydrogeology Consultant (Dr. Thomas)	0.11	0.04	0.04	0.03
EMP Consultants	0.33	0.12	0.12	0.09
HSE Consultancy	0.79	0.29	0.29	0.22
Legal & Professional Charges	**0.98**	**0.28**	**0.28**	**0.42**
Relocation Costs	**8.46**	**2.55**	**2.12**	**3.79**
Relocation Costs (Compensation to PAPs)	6.17	1.71	1.29	3.17
Mitigation Wells	2.29	0.83	0.83	0.63
Project Development Cost	**3.88**	**3.88**		
Total	75.20	30.85	16.65	27.69

Determined Non-EPC Costs				
Budget Heads	**USD-M**	**Year 1**	**Year 2**	**Year 3**
Capital Items	**26.04**	**11.32**	**5.14**	**9.59**
Coal Handling System	7.51			7.51
Dust Protection Barrier	3.06		3.06	
Power Supply from 500kv line	6.13	6.13		
Development of Additional Disposal Site for Dewatering	0.00			0.00
Additional Buildings (Office Extension + Dormitory)	2.54	2.54		
Additional Workshop/Warehouse	0.41	0.41		
Additional Dewatering	1.66	1.66		
Roads	3.94		1.97	1.97
Mobile Equipment Machinery	0.47	0.47		
Additional Software/Hardware	0.31	0.10	0.10	0.10
Security	**3.34**	**3.34**	**0.00**	**0.00**
Capital Items	2.50	2.50		
Operating Expenses	0.84	0.84		
Salaries, Wager & Benefits	**0.00**	**0.00**	**0.00**	**0.00**
SWB , Rota travel, Bonus	0.00	0.00	0.00	0.00
Operating Expenses	**9.27**	**2.80**	**3.45**	**3.02**
Site Running Expenses	0.41	0.15	0.15	0.11
Office Running Expenses	0.31	0.10	0.10	0.10
Travel	2.87	1.04	1.04	0.78
Dewatering Opex	3.51	1.28	1.28	0.96
Training	1.61	0.09	0.76	0.76
Media Management & Communications	0.57	0.14	0.13	0.31
Consultancy & Studies	**2.31**	**0.84**	**0.84**	**0.63**
RWE	0.48	0.17	0.17	0.13
Plant Co.	0.35	0.13	0.13	0.09
Mining Consultant - I (Dr. Marcos)	0.12	0.04	0.04	0.03

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Determined Non-EPC Costs				
Budget Heads	USD-M	Year 1	Year 2	Year 3
Mining Consultant - II (Dr. Ludwig)	0.13	0.05	0.05	0.04
Hydrogeology Consultant (Dr. Thomas)	0.11	0.04	0.04	0.03
EMP Consultants	0.33	0.12	0.12	0.09
HSE Consultancy	0.79	0.29	0.29	0.22
Legal & Professional Charges	**0.76**	**0.22**	**0.22**	**0.32**
Relocation Costs	**2.29**	**0.83**	**0.83**	**0.63**
Relocation Costs (Compensation to PAPs)	0.00	0.00	0.00	0.00
Mitigation Wells	2.29	0.83	0.83	0.63
Project Development Cost	**1.59**	**1.59**		
Total	45.60	20.94	10.48	14.18

12. ESCALATIONS SOUGHT IN THE FINANCIAL MODEL

The main Petition does not have details of escalations sought over the 3.8 MTPA benchmark cost. However, the Financial Model for 7.6 MTPA had incorporated the following escalations under various heads.

O&M Local Increment	For 7.6Mt/a
Salaries, Wages and Benefits	20%
Site expenses	33%
Consultancy	33%
Effluent Disposal	50%
Head Office Running Expenses	20%
Capital Item (Leasing, Maintenance Cost, rental, Shared Services)	33%
Land Rehab & Water	50%
Legal and Professional Services	20%

These escalations are not permitted and indexation of costs as per CPI etc. shall remain applicable.

13. SUMMARY OF INCREMENTAL COSTS FOR EXPANSION TO 7.6 MTPA

Project Cost Heads	USD M Petitioned	USD M Determined
EPC Costs (Based upon EPC Contract)	128.3	128.3
Non-EPC Costs	75.2	45.6
Insurance Costs	1.72	1.28
Financial Charges	7.6	4.18
Interest During Construction	22.4	12.43
Total Project Cost	**235.2**	**191.79**

Thar Coal & Energy Board
Government of Sindh

COAL TARIFF DETERMINATION ORDER

No TCEB/Registrar/2-1/2014: This determination is conducted in accordance with the authority vested with Thar Coal Energy Board and pertains to the Petition dated December 28, 2017 of Sindh Engro Coal Mining Company for Determination of Reference Contract Stage Tariff for SECMC's Mine at Block II Thar Coalfields, District Tharparkar, Sindh, Pakistan. The Petition is assessed and reviewed in accordance with the parameters and guidelines established under the Thar Coal Tariff Determination Rules, 2014.

The Petitioner has submitted a request for determination of levelized tariff of USD 46.84 per Ton for development & operations of 7.6 MTPA mining capacity and USD 57.00 per Ton for development & operations of 5.7 MTPA mining capacity. The submittal is based upon one common Project Implementation Plan and an intermediate tariff for 5.7 MTPA is sought, without any delineation of costs for respective capacities of 5.7 MTPA and 7.6 MTPA.

The Tariff Determination only recognises the production and expansion stream of 7.6 MTPA. For the 5.7 MTPA capacity there is insufficient data and development plan timelines. The determination is based upon an initial production of 3.8 MTPA lignite, which is ramped up to 7.6 MTPA as per the mine expansion plan, submitted by the Petitioner.

Pursuant to Rule 10 of the Thar Coal Tariff Determination Rules 2014, Sindh Engro Coal Mining Company is allowed to charge the following ex mine mouth tariff for the production of 7.6 MTPA:

Table I – Determined 7.6 MTPA Tariff

Project Tariff	Year 1 – 10 Average	Year 11 – 30 Average	Year 1 – 30 Levelized
Total Production Payment Tariff Components	14.92	15.29	15.10
Total Capacity Payment Tariff Components	28.28	19.34	25.56
Total Project Tariff	**43. 20**	**34.63**	**40.66**

All amounts in USD per Ton

Table II – Production Payment Component 7.6 MTPA

Production Payment Tariff	Year 1 – 10 Average	Year 11 – 30 Average	Year 1 – 30 Levelized
Fuel Cost	4.78	5.85	5.06
Variable O&M			
Tyres	1.15	1.45	1.23
Spares & Consumables	2.87	3.39	3.00
Asset Replacement Cost	3.11	2.18	2.97
Royalty	3.01	2.42	2.84
Total Production Payment Tariff Components	**14.92**	**15.29**	**15.10**

All amounts in USD per Ton

Table III –Capacity Payment Component

Capacity Payment Tariff	Year 1 – 10 Average	Year 11 – 30 Average	Year 1 – 30 Levelized
Fixed O&M – Foreign	5.21	6.24	5.48
Fixed O&M – Local	3.09	2.52	2.96
Insurance	0.69	0.69	0.69
Power Cost - By Grid (80%)	0.75	0.75	0.75
Power Cost - By Diesel (20%)	0.39	0.39	0.39
Cost of Working Capital	0.41	0.42	0.41
Debt Principal Repayment	7.04	0.00	4.72
Debt Interest Payment	2.39	0.00	1.83
Equity Returns	8.33	8.33	8.33
Total Capacity Payment Tariff Components	**28.28**	**19.34**	**25.56**

All amounts in USD per Ton

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
Case No TCEB/Registrar/2-1/2014

Thar Coal & Energy Board
Government of Sindh

GENERAL CONDITIONS

i. The reference tariff is computed on the basis of net capacity of 7.6 MTPA for thirty years.

ii. The above tariff is applicable for a period of 30 years on BOO basis commencing from Commercial Operations Date of the 7.6 MTPA mine.

iii. The transportation cost to the power plant on trucking mode will be USD 0.27/Ton-Km – this shall be re-determined at the time of 3.8 MTPA COD Tariff. The Petitioner is advised to submit a comprehensive plan for transportation of coal from mine yard to the power complex. A default option of truck haulage cannot be permitted to linger on. A cut-off point in deployment of more efficient conveyor belt system needs to be worked upon now, lest the inertia of legacy systems inhibits deployment of efficient technologies.

iv. The Petitioner shall achieve financial close by or before December 31, 2018 for the tariff to remain valid.

v. The cost of financing is based upon KIBOR (6.15%) + 1.75%. Tariff is computed on basis of 100% Rupee Debt. In case, the Petitioner reverts to a mix of Foreign and Local Debt, the tariff will be computed according to the final Terms Sheets for debt financing. The impact of better financing terms and the accruing gain will be computed towards applicable reduction in tariff.

vi. The basis of this determination is a Debt to Equity ratio of 75:25. Equity quantum in excess of 25% will be treated as commercial debt to the project at the prevailing rates but not to exceed KIBOR plus 3%.

vii. Tariff is configured on upfront initial equity drawdowns up to a maximum of 25% followed by pro-rata drawdowns of debt and equity.

viii. Debt servicing shall be paid during the first 10 years of each capacity establishment, i.e. first 10 years for 3.8 MTPA capacity, and from 1.5 to 11.5 years for 7.6 MTPA capacity for the incremental amount of debt.

ix. Pre-COD sale of lignite will be priced at the full first year tariff of coal as per this Determination. The proceeds of this sale will be utilized to finance the capital for expansion of mine to 7.6 MTPA capacity.

x. Working Capital facility and the resultant cost is permitted for a maximum of 30 days of receivables on production payment tariff, 30 days of coal inventory, 21 days of diesel inventory, 30 days of (foreign) O&M advance, 6 months of spares inventory. The financing cost of the working capital facility is permitted at a maximum of 1 Month KIBOR + 2.00%.

xi. Project Tariff is based on a reference exchange rate of PKR 110.6 per USD, diesel price of PKR 88.08 per Litre. An incremental project cost of USD 191.79 Million for enhancement to 7.6 MTPA.

xii. Construction period for the development of 7.6 MTPA mine is 33 months from achievement of financial close for enhancement to 7.6 MTPA capacity. The scheduled

COD of 7.6 MTPA mine capacity is 33 months beyond the 3.8 MTPA mine. An extension of up to three-month beyond the stipulated construction period is allowed on account of impact of overburden volumes & hard rock strata during which only Interest During Construction and indexations & escalations (detailed in 'REFERENCE TARIFF ADJUSTMENTS & ESCALATIONS' section) is permitted to be adjusted.

xiii. The Petitioner is entitled to adjustment of costs in accordance with the adjustments listed in detail below under 'REFERENCE TARIFF ADJUSTMENTS & ESCALATIONS' section of this document and also indexations in accordance with the mechanisms laid down under the 'REFERENCE TARIFF INDEXATIONS' section of this document.

xiv. The detailed cost components of tariff are tabulated in Annexure-A appended to the end of this Order.

REFERENCE TARIFF ADJUSTMENTS & ESCALATIONS

The reference tariff shall be subject to the following indexations and escalations only, at COD of respective capacities.

i. Cumulative adjustment in EPC Cost relating to overburden removal and/or hard rock strata up to 5% of the assessed cost in this regard, subject to provision of sufficient documentary evidence and technical review conducted by a reputable party acceptable to the Board. Any cost in excess of this would not be acceptable for adjustment.

ii. The impact of dewatering if any on EPC Cost and Cost of Power is capped to a maximum variation equal to 10 % of assessed cost, subject to provision of sufficient documentary evidence and technical review conducted by a reputable party acceptable to the Board. Any cost in excess of this would not be acceptable for adjustment.

iii. Cumulative adjustment in O&M Cost relating to overburden removal and blasting of hard strata up to 5% of the assessed cost in this regard, subject to provision of sufficient documentary evidence and technical review conducted by a reputable party acceptable to the Board. Any cost in excess of this would not be acceptable for adjustment.

iv. Adjustment in Cost of Power (operational period) related to dewatering maximum variations equal to 10% of assessed cost in this regard, subject to provision of sufficient documentary evidence and technical review conducted by a reputable party acceptable to the Board. Any cost in excess of this would not be acceptable for adjustment.

v. EPC Cost components including Overburden Removal Services (Manpower), Overburden Removal Services (Spare Parts), Overburden Removal Services (Tyres), and Lignite Production Services (Non-Diesel & Non-Overhead) shall be allowed to be

escalated using US CPI as benchmark. Cost of Diesel shall be escalated using price of diesel, as notified by OGRA for Islamkot, District Mithi, as benchmark. EPC Cost other than Cost of Diesel shall be escalated using both USD / PKR exchange rate and RMB / USD exchange rate as benchmarks. These costs, or portions thereof, shall be escalated from the date of determination order till the respective of date of invoicing, subject to a maximum period of 33 months for development of 7.6 MTPA capacity.

vi.   Adjustment in Non EPC Cost for Land Acquisition & Village Relocation to be adjusted to actual incurred till commencement of commercial operations for the Non EPC component thereof, and at actual incurred for the O&M component thereof.

vii. Insurance cost during the construction and operations shall be adjusted to actual incurred subject to a maximum of 1.00% of EPC Cost and allowed on submission of documentary evidence.

viii. Financing & LC Charges shall be adjusted to actual costs incurred till achievement of Commercial Operations Date, subject to a maximum allowable cost equal to 4.0% of debt secured by the project.

ix.   Interest During Construction shall be adjusted to actual costs incurred subject to maximum spread of 1.75% over KIBOR, 75% debt secured, and prorate drawdowns subsequent to 25% upfront equity injection over the maximum allowable construction period of 33 months for the development of 7.6 MTPA mining capacity.

x.   Equity Returns shall be allowed to be adjusted on the basis of the drawdown profile, which is permitted to be on a prorate basis subsequent to maximum upfront equity drawdown of 25%, during a construction period of 33 months for the development of 7.6 MTPA mining capacity.

xi.   No provision for income tax, workers profit participation fund and workers welfare fund, any other tax, custom/excise duty or other duty, levy, charge, surcharge or other governmental impositions, payable by the Project has been accounted for in the tariff. If the Petitioner is obligated to pay any of the above tax the exact amount will be reimbursed by the off taker on production of original receipts. However, withholding tax on dividend will not be pass though under the tariff.

Reference Tariff Indexations

The indexations shall be applicable on the reference tariff shall only be as detailed hereunder.

i.   **Fuel Cost**

$$\text{Fuel Cost}_{(rev)} = \text{Fuel Cost}_x \times \frac{\text{Diesel Price}_{(rev)}}{82.50}$$

Where,

Fuel Cost$_{(rev)}$ is the revised Fuel Cost Component

Fuel Cost$_x$ is the Fuel Cost of xth year of operations

Diesel Price$_{(rev)}$ is the Delivered Diesel Price in terms of PKR per Litre notified by OGRA for Islamkot, District Mithi adjusted for NCV-GCV factor (Reference – 1.0574), Specific gravity (Reference – 0.84), and Calorific Value (Gross) (Reference – 44.2MJ/kg)

Frequency of indexation shall be as and when notified by Oil & Gas Regulatory Authority

ii. Variable O&M

$$\text{Variable O\&M}_{(rev)} = \text{Variable O\&M}_x \times \frac{\text{US CPI}_{(rev)}}{238.031} \times \frac{\text{PKR/USD}_{(rev)}}{101.75} \times \frac{6.10}{\text{RMB/USD}_{(rev)}}$$

Where,

Variable O&M$_{(rev)}$ is the revised Variable O&M Component

Variable O&M$_x$ is the Variable O&M Component of xth year of operations

US CPI$_{(rev)}$ is the latest United States Consumer Price Index for All Urban Consumers (CPI-U) notified by the US Bureau of Labor Statistics

PKR/USD $_{(rev)}$ is the revised TT & OD selling rate of US Dollars as on the date on which the indexation is applicable, as notified by the National Bank of Pakistan

RMB/USD$_{(rev)}$ is the revised TT & OD selling rate of Chinese RMB as on the date on which the indexation is applicable, as notified by the People's Bank of China

Frequency of indexation shall be quarterly

iii. Asset Replacement

$$\text{Asset Replacement}_{(rev)} = \text{Asset Replacement}_x \times \frac{\text{US CPI}_{(rev)}}{238.031} \times \frac{\text{PKR/USD}_{(rev)}}{101.75} \times \frac{6.10}{\text{RMB/USD}_{(rev)}}$$

Where,

Asset Replacement$_{(rev)}$ is the revised Asset Replacement Component

Asset Replacement$_x$ is the Asset Replacement Component of xth year of operations

US CPI$_{(rev)}$ is the latest United States Consumer Price Index for All Urban Consumers (CPI-U) notified by the US Bureau of Labor Statistics

PKR/USD $_{(rev)}$ is the revised TT & OD selling rate of US Dollars as on the date on which the indexation is applicable, as notified by the National Bank of Pakistan

RMB/USD$_{(rev)}$ is the revised TT & OD selling rate of Chinese RMB as on the date on which the indexation is applicable, as notified by the People's Bank of China

Frequency of indexation shall be quarterly

iv.   Royalty

$$Royalty_{(rev)} = Coal\ Price_y \times Royalty$$

Where,

Royalty$_{(rev)}$ is the revised Royalty Component

Coal Price$_y$ is the Price of Coal (excluding Royalty) in y^{th} month of operations

Royalty is the minimum of 7.5% of Production Payment Price of Coal (excluding Royalty) or PKR 150 per Ton or as otherwise notified by GoS for Royalty in Thar Coalfields

Frequency of Indexation shall be as and when notified by GoS

v.   Fixed O&M – Local

$$Fixed\ O\&M - Local_{(rev)} = Fixed\ O\&M - Local_x \times \frac{Local\ CPI_{(rev)}}{206.11}$$

Where,

Fixed O&M – Local$_{(rev)}$ is the revised Fixed O&M – Local Component

Fixed O&M – Local$_x$ is the Fixed O&M – Local Component in x^{th} year of operations

Local CPI$_{(rev)}$ is the latest is Consumer Price Index of Pakistan as notified by the Pakistan Bureau of Statistics

Frequency of Indexation shall be quarterly

vi.   Fixed O&M – Foreign

$$Fixed\ O\&M\ Foreign_{(rev)} = Fixed\ O\&M\ Foreign_x \times \frac{US\ CPI_{(rev)}}{238.031} \times \frac{PKR/USD_{(rev)}}{101.75} \times \frac{6.10}{RMB/USD_{(rev)}}$$

Where,

Fixed O&M – Foreign$_{(rev)}$ is the revised Variable O&M Component

Fixed O&M – Foreign $_x$ is the Variable O&M Component of xth year of operations

US CPI$_{(rev)}$ is the latest United States Consumer Price Index for All Urban Consumers (CPI-U) notified by the US Bureau of Labor Statistics

PKR/USD $_{(rev)}$ is the revised TT & OD selling rate of US Dollars as on the date on which the indexation is applicable, as notified by the National Bank of Pakistan

RMB/USD$_{(rev)}$ is the revised TT & OD selling rate of Chinese RMB as on the date on which the indexation is applicable, as notified by the People's Bank of China

Frequency of indexation shall be quarterly

vii. Power Cost – By Grid

$$\text{Power Cost} - \text{By Grid}_{(rev)} = \text{Power Cost} - \text{By Grid}_x \times \frac{\text{Grid Rate}_{(rev)}}{16.28} \times \frac{\% \text{ of Grid}_{(rev)}}{80\%}$$

Where,

Power Cost – By Grid$_{(rev)}$ is the revised Power Cost – By Grid Component

Power Cost – By Grid$_x$ is the Power Cost – By Grid Component in x^{th} year of operations

Grid Power Rate$_{(rev)}$ is the revised industrial rate of power cost as notified by HESCO

% of Grid$_{(rev)}$ is the percentage of power acquired from grid in x^{th} year of operations

Frequency of indexation shall be as and when notified by HESCO

viii. Power Cost – By Diesel

$$\text{Power Cost} - \text{By Diesel}_{(rev)} = \text{Power Cost} - \text{By Diesel}_x \times \frac{\text{Diesel Price}_{(rev)}}{82.50} \times \frac{\% \text{ of Diesel}_{(rev)}}{80\%}$$

Where,

Power Cost – By Diesel Diesel$_{(rev)}$ is the revised Power Cost – By Diesel Component

Power Cost – By Diesel$_x$ is the Power Cost – Diesel Component in x^{th} year of operations

Diesel Price$_{(rev)}$ is the Delivered Diesel Price in terms of PKR per Litre notified by OGRA for Islamkot, District Mithi adjusted for NCV-GCV factor (Reference – 1.0574), Specific gravity (Reference – 0.84), and Calorific Value (Gross) (Reference – 44.2MJ/kg)

% of Diesel$_{(rev)}$ is the percentage of power generated by Diesel in x^{th} year of operations

Frequency of indexation shall be as and when notified by OGRA

ix. Cost of Working Capital

$$WC_{(rev)} = WC_x \times \left(a_x \frac{\text{Prod Pmt}_{(rev)}}{\text{Prod Pmt}_x} + b_x \frac{\text{Coal}_{(rev)}}{\text{Coal}_x} + c_x \frac{\text{Diesel}_{(rev)}}{82.50} + d_x \frac{\text{US CPI}_{(rev)} \times \text{PKR/USD}_{(rev)} \times 6.10}{238.031 \times 101.75 \times \text{RMB/USD}_{(rev)}} \right) \times \frac{\text{KIBOR}_{(rev)} + 2.00\%}{10.00\%}$$

Where,

Cost of WC$_{(rev)}$ is the revised Cost of Working Capital Component

Cost of WC$_x$ is the Cost of Working Capital in x^{th} year of operations

a_x is the proportion of Coal Inventory Cost for 30 days calculated at Production Payment Price to amount of working capital facility in x^{th} year of operations

b_x is the proportion of Production Payment Price for 60 days to amount of working capital facility in x^{th} year of operations

c_x is the proportion of Fuel Cost for 21 days to amount of working capital facility in x^{th} year of operations

Prod Pmt$_{(rev)}$ is the Production Payment Price as determined by TCEB after incorporating indexations till latest month

Prod Pmt$_x$ is the Production Payment Price as determined by TCEB for x^{th} year of operations

Coal$_{(rev)}$ is the Coal Price (excluding Working Capital Component) as determined by TCEB after incorporating indexations till latest month

Coal$_x$ is the Coal Price (excluding Working Capital Component) as determined by TCEB at COD for x^{th} year of operations

Diesel Price$_{(rev)}$ is the Delivered Diesel Price in terms of PKR per Litre notified by OGRA for Islamkot, District Mithi adjusted for NCV-GCV factor (Reference – 1.0574), Specific gravity (Reference – 0.84), and Calorific Value (Gross) (Reference – 44.2MJ/kg)

KIBOR$_{(rev)}$ is 1-Month KIBOR rate at the end of the 1 month period prior to the month in which indexation is applicable, as notified by the State Bank of Pakistan

Frequency of Indexation shall be monthly

x. Interest Payments

$$\text{Interest} - \text{Local}_{(rev)} = \text{Interest} - \text{Local}_x \times \frac{\text{KIBOR}_{(rev)} + 1.75\%}{9.71\%}$$

Where,

Interest – Local$_{(rev)}$ is the Interest Payment – Local Component

Interest – Local$_x$ is Interest Payment – Local Component determined by TCEB for x^{th} year of operations, subject to adjustment on account of escalations till COD.

KIBOR$_{(rev)}$ is the relevant KIBOR rate prevailing for x^{th} year of operations, as notified by State Bank of Pakistan

Frequency of Indexation shall be semi-annually or as repayments are agreed with lender

xi. Equity Returns

$$\text{Equity Returns}_{(rev)} = \text{Equity Returns}_x \times \frac{\text{PKR/USD}_{(rev)}}{101.75}$$

Where,

Equity Returns$_{(rev)}$ is the revised Equity Returns Component

Equity Returns$_x$ is the Equity Returns component determined by TCEB for x^{th} period of operations

PKR/USD $_{(rev)}$ is the revised TT & OD selling rate of US Dollars as on the date on which the indexation is applicable, as notified by the National Bank of Pakistan

Frequency of Indexation shall quarterly

xii. Cost of Transportation

$$\text{Cost of Transportation}_{(rev)} = \text{Cost of Transportation}_x \times \frac{\text{Diesel Price}_{(rev)}}{82.50}$$

Where,

Cost of Transportation$_{(rev)}$ is the revised Cost of Transportation applicable on tariff

Cost of Transportation$_x$ is the Cost of Transportation applicable on tariff as determined by TCEB for x^{th} period of operations

Diesel Price$_{(rev)}$ is the Delivered Diesel Price in terms of PKR per Litre notified by OGRA for Islamkot, District Mithi adjusted for NCV-GCV factor (Reference – 1.0574), Specific gravity (Reference – 0.84), and Calorific Value (Gross) (Reference – 44.2MJ/kg)

Frequency of Indexation shall be as notified by OGRA

xiii. **Heat Content Adjustment**

$$\text{Adjusted Prod Pmt}_{(rev)} = \text{Prod Pmt}_x \times \frac{\text{Heating Value}_{(ref)}}{\text{Heating Value}_{(rev)}}$$

Where

Adjusted Prod Pmt$_{(rev)}$ is the Production Payment Price adjusted for heating value (LHV)

Indexed Prod Pmt$_x$ is the reference Production Payment Price in x^{th} year of operations

Heating Value$_{(ref)}$ is the heat content of coal, which for Year 1 – 8 is equal to 11.30 MJ / kg (LHV) and for Year 9 – 30 is equal to 11.61 MJ / kg (LHV)

Heating Value$_{(rev)}$ is the actual average heating value (LHV) during the relevant quarter of xth of operations subject to a minimum heating value (LHV) permitted for Year 1 – 8 of 11.0175 MJ / Kg and for Year 9 – 3 of 11.31975 MJ / Kg

Indexation shall be computed annually.

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
Case No TCEB/Registrar/2-1/2014

Thar Coal & Energy Board
Government of Sindh

ANNEXURE A – TARIFF TABLE 7.6 MTPA MINE

Yearly Profile for Coal Price of 7.6 MTPA Mine Capacity in (USD/ton)

| | PRODUCTION (VARIABLE) PAYMENTS | | | | | | CAPACITY (FIXED) PAYMENTS | | | | | | | | | | | |
Year	Fuel Cost	Var. O&M Tyres	Variable O&M - Spares/Consumables	Asset Replacement Cost	Royalty	Total Production Payments	Fixed O & M - Foreign	Fixed O & M Local	Insurance	Power Cost - By Grid	Power Cost - By Diesel	Cost of Working Capital	Principal Debt Repayment	Interest Payment	ROE	ROEDC	Total Capacity Payments	Total
1	4.61	1.11	2.78	3.71	3.22	15.43	5.03	3.83	0.69	0.75	0.39	0.42	6.52	4.76	5.39	2.94	30.71	46.14
2	4.61	1.11	2.78	3.71	3.21	15.42	5.03	3.74	0.69	0.75	0.39	0.42	6.97	4.31	5.39	2.94	30.61	46.04
3	4.61	1.11	2.78	3.71	3.20	15.41	5.03	3.62	0.69	0.75	0.39	0.42	7.45	3.83	5.39	2.94	30.49	45.91
4	4.85	1.17	2.90	3.71	3.20	15.84	5.28	2.91	0.69	0.75	0.39	0.42	7.97	3.31	5.39	2.94	30.04	45.88
5	4.85	1.17	2.90	2.71	3.12	14.76	5.28	2.91	0.69	0.75	0.39	0.41	8.52	2.76	5.39	2.94	30.02	44.78
6	4.85	1.17	2.90	2.71	3.12	14.76	5.28	2.91	0.69	0.75	0.39	0.41	9.12	2.16	5.39	2.94	30.02	44.78
7	4.85	1.17	2.90	2.71	3.12	14.76	5.28	2.91	0.69	0.75	0.39	0.41	9.76	1.52	5.39	2.94	30.02	44.78
8	4.85	1.17	2.90	2.71	3.12	14.76	5.28	2.91	0.69	0.75	0.39	0.41	10.44	0.83	5.39	2.94	30.02	44.78
9	4.85	1.17	2.90	2.71	2.40	14.04	5.28	2.58	0.69	0.75	0.39	0.40	1.76	0.25	5.39	2.94	20.42	34.46
10	4.85	1.17	2.90	2.71	2.40	14.04	5.28	2.58	0.69	0.75	0.39	0.40	1.90	0.11	5.39	2.94	20.42	34.46
11	4.86	1.18	2.91	2.71	2.25	13.90	5.28	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	18.35	32.25
12	4.86	1.18	2.91	2.71	2.25	13.90	5.28	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	18.35	32.25
13	4.86	1.18	2.91	2.71	2.25	13.90	5.28	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	18.35	32.25
14	4.86	1.18	2.91	2.71	2.25	13.90	5.28	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	18.35	32.25
15	6.04	1.50	3.48	2.71	2.50	16.22	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.81
16	6.04	1.50	3.48	2.74	2.50	16.26	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.85
17	6.04	1.50	3.48	2.74	2.50	16.26	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.85
18	6.04	1.50	3.48	2.74	2.50	16.26	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.85
19	6.04	1.50	3.48	2.74	2.50	16.26	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.85
20	6.04	1.50	3.48	2.74	2.50	16.26	6.49	2.52	0.69	0.75	0.39	0.43	0.00	0.00	5.39	2.94	19.59	35.85
21	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05
22	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05
23	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05
24	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05

Determination of the Board
7.6 MTPA Contract Stage Tariff – SECMC Thar Block II
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Thar Coal & Energy Board
Government of Sindh

Yearly Profile for Coal Price of 7.6 MTPA Mine Capacity in (USD/ton)

Year	PRODUCTION (VARIABLE) PAYMENTS						CAPACITY (FIXED) PAYMENTS											Total
	Fuel Cost	Var. O&M Tyres	Variable O&M - Spares/Consumables	Asset Replacement Cost	Royalty	Total Production Payments	Fixed O&M - Foreign	Fixed O&M Local	Insurance	Power Cost - By Grid	Power Cost - By Diesel	Cost of Working Capital	Principal Debt Repayment	Interest Payment	ROE	ROEDC	Total Capacity Payments	
25	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05
26	6.14	1.53	3.53	2.74	2.52	16.46	6.49	2.52	0.69	0.75	0.39	0.44	0.00	0.00	5.39	2.94	19.60	36.05
27	6.14	1.53	3.53	0.00	2.31	13.51	6.49	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	19.56	33.07
28	6.14	1.53	3.53	0.00	2.31	13.51	6.49	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	19.56	33.07
29	6.14	1.53	3.53	0.00	2.31	13.51	6.49	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	19.56	33.07
30	6.14	1.53	3.53	0.00	2.31	13.51	6.49	2.52	0.69	0.75	0.39	0.40	0.00	0.00	5.39	2.94	19.56	33.07
Average																		
1-10 Years	4.78	1.15	2.87	3.11	3.01	14.92	5.21	3.09	0.69	0.75	0.39	0.41	7.04	2.39	5.39	2.94	28.28	43.20
11-30 Years	5.85	1.45	3.39	2.18	2.42	15.29	6.24	2.52	0.69	0.75	0.39	0.42	0.00	0.00	5.39	2.94	19.34	34.63
1-30 Years	5.49	1.35	3.22	2.49	2.62	15.17	5.90	2.71	0.69	0.75	0.39	0.42	2.35	0.80	5.39	2.94	22.32	37.49
Levelized																		
1-10 Years	4.75	1.15	2.85	3.23	3.07	15.05	5.18	3.20	0.69	0.75	0.39	0.41	7.24	2.81	5.39	2.94	29.00	44.05
11-30 Years	5.63	1.39	3.28	2.50	2.39	15.19	6.04	2.52	0.69	0.75	0.39	0.42	-	-	5.39	2.94	19.13	34.32
1-30 Years	5.06	1.23	3.00	2.97	2.84	15.10	5.48	2.96	0.69	0.75	0.39	0.41	4.72	1.83	5.39	2.94	25.56	40.66

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