

Letter No. TEPL/NEPRA/06012023-01 Dated: 11th January, 2023

Registrar National Electric Power Regulatory Authority NEPRA Tower Attaturk Avenue (East), Sector G-5/1, Islamabad.

Subject: Tariff Petition of Trans Atlantic Energy (Private) Limited 49.5 MW Wind Power Project

Dear Sir,

Kindly accept the Company's Tariff Petition, along with the fee as determined by the National Electric Power Regulatory Authority ("NEPRA" or the Authority-) for kind consideration and favorable approval by the Authority in accordance, inter alia, with section-31 of the Regulation of Generation. Transmission and Distribution of Electric Power Act, 1997 read with Rule 3 of the NEPRA tariff Standards and Procedure Rules, 1998 and other applicable provisions of NEPRA law.

The Tariff Petition (including its Annexures) is submitted in triplicate together with:

- The Bank Draft No. 04452436 dated 04-01-2023, amounting to PKR 747,777.00 (Seven lacs Forty-seven thousand, seven hundred seventy-seven rupees) as requisite for fee for Tariff Petition as communicated by NEPRA.
- b. Board Resolution of Transatlantic Energy Private Limited
- c. Affidavit of Mr. Mustafa Tapal GM Regulatory Affairs

Thanking you & best regards,

Yours sincerely, For & On behalf of

Transatiantic Energy Private Limited Mustafa Tapal GM Regulatory Affairs

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Transatlantic Energy Private Limited Office No. 1002 10th Floor, Emerald Tower Near 2 Talwar, Clifton, Karachi Ph# 35147573 - 35147574

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Before

National Electric Power Regulatory Authority

Tariff Petition

by Trans Atlantic Energy (Private) Limited for 49.5 MW Wind Power Project at Jhimpir, District Thatta, Sindh, Pakistan

11^m January 2023

Trans Atlantic Energy (Private) Limited Office No. 1002, 10th Floor, Emerald Tower Near 2 Talwar, Clifton, Karachi.



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1.1.1

01 Petitioner's Information

1.1 Name and Address

Trans Atlantic Energy (Private) Limited Office No. 1002, 10th Floor, Emerald Tower Near 2 Talwar, Clifton, Karachi

Tel: + 92-21-3514573 Email: mustafa.tapal@avs.com.pk

1.2 Authorized Representative

Mr. Mustafa Tapal General Manager – Regulatory Affairs Trans Atlantic Energy (Private) Limited



02 Grounds for the Petition

2.1 Basis for Tariff Petition

Under the Regulation for Generation, Transmission and Distribution of Electric Power Act (XL of) 1997 (the NEPRA Act), the National Electric Power Regulatory Authority (NEPRA or Authority) is responsible, inter alia, for determining tariffs and other terms and conditions for the supply of electricity through generation, transmission and distribution. NEPRA is also responsible for determining the process and procedures for reviewing tariffs and recommending tariff adjustments. Further, pursuant to the enabling provisions of the NEPRA Act, the procedure for tariff determination has been prescribed in the NEPRA (Tariff Standards and Procedure) Rules, 1998 (the NEPRA Rules). Moreover, under the NEPRA Act, NEPRA is responsible for determining tariffs, rates and other terms and conditions for the supply of electric power services by the generation, transmission and distribution companies and recommending them for notification in the official gazette.

2.2 About the Petitioner – Brief

Trans Atlantic Energy (Private) Limited ("**TAEL**" or "**Petitioner**" or "**Company**") was incorporated with Securities and Exchange Commission of Pakistan on 17th May, 2005 to develop and operate a Wind Power Project. Alternative Energy Development Board ("**AEDB**") issued a Letter of Intent ("**LOI**") to TAEL on 13th April 2016 for establishing a 50 MW wind power generation project. On 21st November 2017, the validity of the said LOI was extended till 3rd February 2019, which was later extend till 17th January 2023.

TAEL was granted a Generation License No. WPGL/43/2017 on 18th April 2017 (the "Generation License") by NEPRA with 20 years of expected life from Commercial Operation Date ("COD"). On 18th February 2021 the Company applied for a Licensee Proposed Modification ("LPM") in its existing Generation License upon which NEPRA granted Modification on Generation License No. WPGL/43/2017 ("Modification-I") on 16th August 2022. Based on the latest market conditions, the WTGs for the Project has been revised from Vestas (V126 – 3.45 MW) to Goldwind GW155-4.5MW. On 12th October 2022 TAEL has filed for a modification request in Generation License to incorporate this change of WTG and corresponding changes in Capacity Factor and other aspects.

2.3 Background of Previous Tariff Petitions and Determinations

TAEL filed its initial tariff petition to NEPRA on 16th March 2018 under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 ("**NEPRA Act**") and NEPRA (Tariff Standards & Procedure) Rules, 1998 for determination of reference generation tariff in respect of its 48.3 MW wind power project (the "**Project**") to be set up at Jhimpir, District Thatta, Sindh. NEPRA admitted the tariff petition on 14th June 2018 and issued an admission notice highlighting the hearing schedule and issues framed for hearing. The hearing for this purpose was held on 27th June 2018 and NEPRA determined the tariff of US Cents 4.3464/kWh (PKR 5.2157/kWh) for TEAL on 20th November 2018 ("**Determination**").

The Determination required TAEL to achieve Financing Close ("FC") within one year, i.e. not later than 19th November 2019, however, TAEL filed a motion for leave for review to NEPRA on 14th November 2019 under rule 16(6) of the NEPRA (Tariff Standards and Procedure) Rules and NEPRA (Review Procedure) Regulations. Under the review motion, TAEL submitted that it was conveyed by AEDB on 07th November 2019 to submit Performance Guarantee and processing/legal fee for the issuance of LOS. TAEPL further submitted that the intimation for issuance of LOS was received after lapse of almost 1 year after tariff due to which TAEL was left with only nine (9) working days to achieve FC including negotiations and execution of the Implementation Agreement, Energy Purchase Agreement and Financing Documents. TAEL therefore requested that the



requirement to achieve FC within year be extended for a period of six (06) months. The review motion was admitted by the Authority on 11th December 2019 and a hearing was conducted on 23rd June 2020. The Authority dismissed the review motion based on the view that the Petitioner may consider filing of a new tariff petition before NEPRA for a new determination. Accordingly, a new petition was submitted for NERPA's consideration on 18th February 2021, which was also returned on 11th March 2021 due to pending queries on the LPM application at that time.

Thereafter, the sponsors have engaged an experienced management team that comprises of very qualified personnel in the field of development, construction and operations of wind power plants in Pakistan. The sponsors have also entered into an agreement to bring in the management team as majority shareholders. This tariff petition is now being submitted with all requisites being in full compliance.

2.4 Process Leading to Tariff Petition

TAEL hereby submits petition before NEPRA for determination of tariff, keeping in view the following:

- (a) The revised feasibility study of the Project was submitted to AEDB on 02nd November 2022 (Annexure I)
- (b) Revised Initial Environmental Examination ("IEE") report was submitted to Sindh Environmental Protection Agency (SEPA) on 24th October 2022 and Addendum of NOC was issued on 01st November, 2022 (Annexure II)
- (c) Grid interconnection study was conducted by NTDC dated 01st December, 2016 and its consent of its validity under latest Project conditions has been issued by NTDC on 16th September 2022 (Annexure III)
- (d) Generation License was issued by NEPRA on 18th April 2017 and modification II in Generation License was submitted on 12th October 2022 (Annexure IV)
- (e) Consent from CPPAG for purchase of power issued on 08th October, 2019 (Annexure V)
- (f) Land for the Project have been obtained on lease from Government of Sindh, Land Utilization department on 13th November 2013.(Annexure VI)
- (g) Binding EPC arrangement for design, supply, construction, erection and commissioning of the Project has been secured through signed contracts and are being submitted with this tariff petition. (Annexure VII)
- (h) Term sheet for Project debt has been arranged from Meezan Bank Limited ("MBL") and Bank AL Habib Limited ("BAHL") (Annexure VIII), and sponsors have committed the required equity for the Project.



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03 Submissions for Authority's Consideration

As explained above, the Company was granted a tariff by the Authority on 20th November 2018 and was unable to achieve financial close within the required time frame. This petition primarily focuses on revisions in project parameters, i.e. (i) change in WTG technology to adapt to latest market dynamics and to work with a leading turbine supplier who has a strong presence in the country, (ii) achieve a competitive capacity factor, (iii) change in Project financing parameters and (iv) obtain pricing that is in line with market conditions. The Authority is therefore requested to kindly consider the information as submitted by the Company in its previous tariff petition dated 16th March 2018, and the Authority's Determination thereon dated 20th November 2018.

The issues discussed under this Section are requested to be considered by the Authority, keeping in view amongst others, the following facts:

- a) COVID-19 pandemic and the Ukraine war has caused the overall global investment risk profile to deteriorate significantly.
- b) Substantial increase in commodity, materials, transport and energy prices in the recent past
- c) Cost of funds, i.e. cost of debt and cost of equity, has increased manyfold in the last one year.

In order to assist the Authority in analyzing the increase in costs as requested by the Petitioner as compared to costs allowed in the Determination, the following paragraphs discuss the current wind turbine equipment prices, substation equipment prices and other factors impacting construction, project development and operating costs.

3.1 Wind Turbines Generators (WTG's)

Since the Determination of the Authority on 20th November 2018, the COVID-19 pandemic resulted in multiple lockdowns around the globe which affected the entire supply chain of manufacturing including the wind industry. Especially due to lockdowns in China, the supply demand balance has deteriorated significantly. As the global economy started to recover with the support of substantial monetary and fiscal expansions, commodity and energy prices have skyrocketed. This has had a significant impact on the prices of wind turbines, which are substantially dependent on the commodity prices such as steel, copper, rare earth materials, resin etc.

Wind turbine suppliers such as Vestas Wind Systems A/S, General Electric Co, Siemens Gamesa Renewable Energy SA (SGRE) and Goldwind are reeling from high raw material and logistics costs, changes in key clean-power subsidies, years of pressure on turbine prices and an expensive race to build ever-bigger machines. The pandemic rattled the wind industry, leading to major supply-chain disruptions and a surge in costs for materials and shipping. The cost increases span commodities, materials, energy, freight, labor, and geopolitical risk among other things. Turbine manufacturers are facing significant cost pressures and other challenges at a time when the fundamentals for renewable energy including wind have never been stronger. Rising material costs of steel, aluminum, copper, fiber glass, resins, and more have played a prominent role. The higher raw material prices are resulting in pricier bills for nearly all critical components, including towers, blades, power electronics, and foundations.

The decreasing trend of wind turbine prices prior to the pandemic was reversed and supply chain pressures, rising materials, labor, transport and energy prices, saw turbine prices increase significantly in 2021-22. Wind turbine prices are expected to increase by up to 10% over the next 12 to 18 months due to increases in commodity prices, logistics costs, and coronavirus-related challenges, according to new analysis from



Wood Mackenzie, a Verisk business (Nasdaq: VRSK). a rise in steel, copper, aluminum, and fiber prices, coupled with a four-fold increase in logistics costs, have increased turbine prices over the last six months.





Sources: Berkeley Lab, annual financial reports, forecast providers

The above graph indicates that WTG pricing is showing an increasing trend. Recent supply-chain pressures and rising commodity, labour and energy prices led to increased turbine prices in 2021 and 2022. Regional differences in average project costs are also apparent and may occur due to variations in labor costs, development costs, transportation costs, siting and permitting requirements and timeframes, and other balance-of-plant and construction expenditures as well as variations in average project size and the turbines deployed in different regions.

Wind turbine manufacturers are raising prices after years of decline and are facing problems such as Siemens Gamesa scrapped its full-year guidance and said it was tracking toward a profit margin of minus 4% which is unsustainable and have therefore drastically increased pricing. Similarly, Wind segment troubles caused GE Renewable Energy to push back its goal of returning to break-even this year, after the division posted some \$2.3 billion in operating losses since 2019. GE now expects the division to be "approaching break-even" in 2023, with the onshore wind business, the largest by revenue, reaching low single-digit profit margins. Accordingly, last year, Vestas raised prices by over 20% on average for its turbines. GE has also been boosting prices, raising them by double-digit percentages since late last year.

As reported by BloombergNEF, WTG prices will stav elevated in 2022 and 2023

"We expect turbine prices will remain high through 2022, after enduring the second largest price increase of the decade in 2021. As the world grapples with the continuing supply chain chaos and the new Covid-19 variants, the market sees little indication that port congestion, container shortages, and lack of labor will ease in the near term. Several turbine makers expect the supply chain challenge to last a few more quarters. Rising commodity and transportation costs are eroding years of cost reductions gained through technological advancement. High shipping costs will keep pressuring turbine makers to raise, or at least not to cut prices."



Owing to increasing costs, significant market disruption events have occurred in the recent past where many WTG OEMs have decided to shut down/sell their manufacturing facilities, some such event are listed below;

- SGRE is to temporarily shut two American facilities as the number three-ranked wind turbine manufacturer battles internal, US-specific, and industry-wide headwinds. The company is the latest top-three original equipment manufacturer (OEM) to ramp down US operations or consolidate its supply chain.
- In June 2021, top-ranked Vestas sold a tower manufacturing facility in Pueblo, Colorado, to South Korean firm CS Wind for \$150 million. In addition to this, Vestas closed its Brighton, Colorado, blade factory, LM Wind Power (owned by the US' top-ranked turbine supplier GE Renewable Energy) closed a blade factory in Arkansas, and TPI Composites shut its blade factory in Newton, Iowa.
- Mothballing of SGRE's blade manufacturing plant in Fort Madison, Iowa, and nacelle assembly plant in Hutchinson, Kansas, will take place in 2022 and July 2022, respectively.
- SGRE continued to mull its US onshore options, a sector where the company sees prospects undercut by supply chain problems and Congress' failure to advance a climate bill with vital extensions for subsidies.

All OEMs are facing similar issues which has resulted in overall increase in costs and logistics constraints. After significant due diligence, research and studies the Project Company has chosen the Goldwind 4.5MW turbine with a rotor diameter of 151m, the largest swept area to date in Pakistan. This turbine was carefully selected so that there is minimal increase in the turbine prices. Despite the significant increase in raw material and rare earth materials, the cost of the GW4.5 turbines (including towers) have only increase by USD 1.4m.

3.2 Steel Prices

Top of the material costs list is the increase in steel prices. Steel accounts significant portion of the total mass of an onshore and offshore wind system, respectively, according to IHS Markit.

Steel prices have jumped because of a resurgence of demand following pandemic; shipping disruptions; reduced feedstock availability due to shipping delays and production outages; increased energy prices and energy/power outages, particularly in mainland China; and, trade tariffs and bans, such as the 25% tariff on steel imported to the US or a ban on Chinese imports of Australian coal. The below charts shows the increased price of Cold Rolled Steel since the last Determination of TAEL:



Cold Rolled Steel is used for towers, and as can be seen the price has increased from approx. USD 246 per ton in November 2018 to approx. USD 356 per ton as of November 2022, showing an increase of 45%.



3.3 Transportation

The supply chain instability caused by the pandemic and followed by global recession has led to increasing transportation and logistics costs. These increased transportation costs are expected to continue to affect the wind power industry throughout 2022 and 2023. Due to the lack of availability of cargo ships and more importantly open bulk cargo, there are bottlenecks and huge price increases in the transportation of wind turbine equipment. OEMs are struggling not just to get smaller components to their manufacturing facilities, mostly via containerized cargo but also in getting their finished components to project sites. Port congestion continues to significantly slow the circulatory movement of ships, containers, and other assets. Container shipping and open bulk cargo supply chain remains in the "deepest crisis". "As 2022 in ending, the situation is not improving. Spot container freight rates and open bulk cargo rates are still three to five times those of a year ago, depending on the trade lane. Global container freight rates index has increased from US\$ 1,632 to US\$ 2,168 from November 2018 to January 2023. This shows a 33% increase in freight rates since earlier Determination of the Authority. The above can be clearly seen from the below table (Source - Statista 2022):

Global container freight rate index (USD)



Source: freightos

Further to this open bulk cargo has increased even further and availability of vessels is still a matter of concern. Open Bulk Cargo is used for all WTG and tower transportation which consists of 70% of transport costs. Transportation costs have increased significantly and although the number of turbines have reduced from the earlier determined Goldwind project (20 x 2.2MW) to 11 x 4.5 MW, the net volume of WTGs and towers have increased slightly as per the below sheet:



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Major Item Comparison Table of Freight Quantity for GW155-4.5HH95 and GW 2.5MW-121									
Item	Туре	LENGTH (m)	WIDTH (m)	HEIGHT (m)	NET WEIGHT (ton	Volume (m3)	Unit	Total CBM(m3)	Total Weight (Ton)
BLADE	GW 2.5MW-121	59.50	3.10	2.90	14.70	534,91	60.00	32,094.30	381.82
	GW 4.5MW	76.29	4.95	3.40	22.20	1,282.71	33.00	42,329.57	732.6
NACELLE	GW 2.5MW-121	8.07	4.31	4.05	30.00	140.70	20.00	2,813.97	600
	GW 4.5MW	10.15	4.46	4.17	41.40	188.61	11.00	2,074.68	455.4
Generator	GW 2.5MW-121	4.94	4.94	1.60	54.81	38,84	20.00	776.90	1096.28
	GW 4.5MW	5.50	5.50	3.43	98.00	103.71	11.00	1,140.84	1078
Middle Section A		18.83	4.00	4.00	31.32	301.28	20.00	6,025.60	626.44
Middle Section B	CIN 2 SNAW 131	16.40	4.30	4.30	34.83	303.24	20.00	6,064.72	696.54
Middle Section C	GVV 2.510100-121	17.87	4.30	4.30	45.76	330.42	20.00	6,608.33	915.1
Tower sum	$H_{1}^{1}(2^{\frac{1}{2}}) = \int_{-\infty}^{\infty} \int_{-\infty}^{\infty} (A_{1}^{-1})^{-\frac{1}{2}} \int_{-\infty}^{\infty} \int_{-$	1997 (N. 19						18,698.65	2238.08
Tower Top Section-Bottomo tier		26.75	3.88	4.08	44.86	424.32	11.00	4,667.47	493.405
Tower Mid-upper Section-Bottom tier	1.1.1	28.50	4.50	4.70	66.27	602.78	11.00	6,630.53	728.915
Tower Mid Section-Bottom tier	GW 4.5MW	25.70	4.50	4.70	82.46	543.56	11.00	5,979.11	907.082
Tower Bottom Section		13.00	4.50	4.70	63.80	274.95	11.00	3,024.45	701.745
Tower sum			·					20,301.55	2831.147

	Sum CBM for above major items(m3)	Sum Weight for above major items(Tons)
GW 2.5MW-121	54,383.82	4,816.18
GW 4.5MW	65,846.63	5,097.15

As can be seen from the above, the total cubic meters major items for 11x4.5MW turbines (including towers) is 65,846 cubic meters and that of 20x2.5MW turbines (including towers) is 54,383 cubic meters, an increase of 11,463 cubic meters. Due to this, and the fact that current transportation costs are significantly higher than that of 2019, the transportation costs have increased significantly (USD 2.1 million) for the Project.

3.4 Foundation Works/Civil Works

Foundation and civil work costs of wind power projects have increased due to increase in prices for steel cement, and labor and HSD in local market. As depicted in the graph below, steel price increased from PKR 160,000 per MT at the time of earlier Determination to PKR 222,000 per MT. This shows an increase of 39% in steel prices which comprises a major part of the civil works. Similarly, cement and labor prices increased since the date of earlier Determination form PKR 600 per bag to PKR 1,050 per bag and PKR 500 per day to 1,000 per day respectively. Hence, there is 75% increase in prices of cement and 100% increase in the prices of labor, which are also major component of civil work costs of the Project. In addition to this High-Speed Diesel (HSD) prices have increased form PKR 114 per liter at the time of earlier Determination to PKR 228 per liter showing a 100% increase in price. Graphs below shows a comparison of these prices from the date of earlier Determination to today's prices.



While comparing the civil costs for the earlier determined Goldwind projects (20 x 2.5MW), it can be noted that due to the fewer number of turbines proposed for TAEL (11 x 4.5MW) a portion of the WTG related civil cost have been offset. While a larger amount of material (concrete and rebar) is required for



one 4.5MW turbine compared to the 2.5MW turbine, the reduced number of 4.5MW turbines has reduced the overall civil materials for the WTGs. However as most of these input costs have doubled, the net impact has been a marginal increase (USD 1.2m) in the civil costs.

3.5 Electrical Balance of System

In addition to the increased cross sections and material usage for Cables, the increase in commodity prices (especially copper prices) is another major driver for increase in the cost of cables. As shown in the graph below copper prices increased from USD 2.7422 US\$/lbs in November 2018 to 4.0059 US\$/lbs in January 2023. This shows a 46% increase in copper prices since earlier Determination by authority.



Furthermore, the Project also requires aluminum cabling. There has also been a sharp increase in global aluminum prices since the previous Determination of TAEL which has significant impact on the cost of MV cables. As shown in the graph below aluminum prices increased from 1,927 US\$/Ton in November 2018 to 2,296 US\$/Ton in January 2023. This shows a 19% increase in aluminum prices since earlier Determination by authority.

Increase in aluminum prices







In addition to the above cost, the cost of porcelain and ceramic material which is used in the manufacturing of substation equipment has risen substantially mainly due to high energy costs and the energy intensive procedures for manufacturing. As can be seen from the graph below, the costs have gone up by approximately 44% since November 2018.



FRED Producer Price Index by Commodity: Machinery and Equipment: Porcelain, Steatite, and Other Ceramic Electrical Products

Source: Fred

As the substation requirements are the same as previous determinations, the cost impact on this is significant. In addition, the Grid Code's N-1 criteria and NTDCs stringent technical specifications significantly increases the cost of the substation and therefore cannot be compared to a global norm. Due to these reasons, the cost impact on Electrical balance of plant including substation has increased by approximately USD 2.9 million.



Total Impact on EPC Cost

IHS Markit (A part of S&P Global) presents a PEG Engineering and Construction Cost Index (ECCI) which showcases an increasing trend of EPC costs. This has been based upon independent data obtained and compiled by IHS Markit from procurement executives representing leading Engineering, Procurement, and Construction firms. The ECCI tracks industry specific trends and variations, identifying market turning points for key projects, and is intended to act as a leading indicator for wage and material inflation specific to this construction and engineering industry. The below graph also depicts the increase in commodity prices, which have impacted the EPC prices of wind power projects.

Commodity prices (Jan 2020 vs. Mar 2022)



Due to the reasons mentioned above the EPC cost of the Project has increased from previously approved US\$ 57.0 Million (for Goldwind 2.5MW projects) to US\$ 64.6 Million and the same has been requested for the approval of the Authority. A summary of the increased costs from the last Goldwind determinations based on 20x2.5MWs is as follows:

	Increase from previous Goldwind
가 있는 것은	2.5MW Determination dated Nov
	2018 (USD Million)
WTGs	1.4
Transport	2.1
Civil	1.2
Electrical	2.9
Total	7.6

As mentioned in above paragraphs, there is a significant increase in cost of turbines, steel rebar, transportation, electrical balance of system, foundation/civil works including cost of cement, labour, HSD etc. These factors resulted in higher EPC cost of wind projects. It is pertinent to mention here that despite the significant increase in cost of above items, the Company managed to achieve a competitive EPC price of US\$ 64.6 Million for the Project.

Despite the fact that most costs have gone up by more than 50% (some in excess of 100%), the total current EPC cost has only increased by 13% as compared to earlier determined EPC cost for Goldwind 2.5MW WTG. This cost optimization of overall EPC price is achieved by selection of larger WTGs to offset the unprecedented cost increase in individual EPC components in the last 3-4 years.

3.6 Capacity Factor

The wind studies have been carried out by using wind data measured on ground from a met mast that was commissioned on 24th May 2016. For the purpose of analysis, ten (10) minute interval data from 24th May 2016 to 15th March 2021 having duration of 58 months has been used.



Out of the available data, a measurement period of 12 months from 23rd February 2017 to 22nd February 2018 was selected for the annual average wind speed and wind direction having highest data coverage period (95%) with good quality data, which is considered as a bankable time series. Analyzed average wind speed for the selected period is calculated as 8.42 m/s at 120 m height.

For the assessment of long-term wind speed, reference data sets of EmdERA, EmdIndia and MERRA2 have been considered and resulted in the coefficient of determination of $(R^2) = 79\%$ to 86%. Resultantly, the long-term wind speed of 8.31 m/s is calculated at 120 m height above ground level (a.g.l.) at the mast location.

Eleven (11) Goldwind wind turbines (GW155-4.5) at 95 m hub height have been used for the Project. The micro-siting of these wind turbines were performed considering the topographic and wind resource maps of the Project site. Goldwind is a key player in promoting energy transformation to attain access to affordable, reliable and sustainable energy for all, and to drive a renewable future. Goldwind specializes in wind power, internet of energy and environmental protection. Goldwind leverage strong scientific research innovation and best business practices to take renewable energy utilization efficiency to new heights.

The WTG model selected is the latest product range and technology available worldwide with all reputable OEMs. At this point in time, this is going to be the largest WTG ever installed in Pakistan in terms of rotor diameter (blade size), hub height and rated output.

Goldwind has a strong presence globally as well as in Pakistan with following stats:

- 86,134 MW (45,186 WTGs) installed globally.
- 477 MW (278 WTGs) installed in Pakistan.

The WindPRO (ver. 3.6) / WAsP (ver. 11) software is used to estimate the climatic parameters at each turbine location within the wind farm area based on the measured mast climatic data at a height of 95 m. The potential influence by all surrounding wind farms have been taken into account for the wake calculation. Losses are occurring along the whole energetic transformation chain from the rotor (kinetic energy) to the substation's delivery point (electricity) and have been considered on basis of turbine specifications and prudent assumptions.

Following losses have been considered to arrive at net energy number from the total gross:

- External Wake Effects
- Internal Wake Effects
- Availability
- Turbine Performance
- Electrical
- Environmental

An uncertainty assessment was also carried out following net energy calculation. Uncertainty sources are associated to measuring equipment, data acquisition, data processing, energy model development, turbine parameters, losses and energy estimation. Following uncertainty parameters have been considered:

- Wind Speed Related
 - 0 Measurement
 - Wind Speed (Cup Anemometer)
 - Wind Direction
 - Mounting
 - 0 Data Processing
 - Data Integrity
 - Data Analysis
 - Long Term Correction
- Prediction Horizon
- Energy Related



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- o Modelling
- o Power Curve
- o Loss Estimation
- o Overall Net Energy

The expected energy output of the Project is determined as 166,941 MWh per annum, which translates into a 38.5% annual capacity factor, and is considered consistent with the international and local performance trends at sites of similar wind climate. Again, this is the highest capacity factor considered in project parameters out of all thirty-six (36) projects installed in Pakistan till now and is also higher than the capacity factor that was part of the latest approved feasibility study. In this regard, TAEL has taken a very optimistic view on the capacity factor considering that the latest wind turbines are available in larger sizes and those have comparatively lesser power generation ability than smaller (and older) platforms, though these larger wind turbines bring optimization of costs.

A detailed Wind Resource Assessment and Energy Yield Estimate Report was part of the Feasibility Study of the Project submitted to AEDB.

3.7 Project Development Cost

The Authority in its Determination had allowed Project Development Cost of US\$ 2.5 million, considering the impact of prolonged development period. However, the Project is further delayed due to reasons not attributable to TAEL. More importantly, TAEL changed the technology of the turbines to bring in technologically advanced, efficient and larger Goldwind 155-4.5MW WTGs which would optimize yield versus turbine cost. Due to this change several technical, financial studies and project agreements are required to be revised including but not limited to feasibility study, wind resource assessment, energy yield assessment, environmental study, geotechnical study, topography, lender due diligence, financial modeling, project and financing agreements which will result in additional costs for TAEL. Furthermore, as a result of extended project development period, additional administrative expenses (such as payrolls, travel expenses, office expenses etc.) are and will be incurred by TAEL in addition to extra costs for generation license modification, annual license fees for extended periods of development and tariff petition fees. Consequentially, these will result in an increased cost in addition to already approved Project Development Costs, TAEL requests to maintain this cost at US\$ 2.5 Million as was previously allowed by the Authority.

3.8 Financing

The Authority in its Determination has already approved financing at 80:20 Debt to Equity ratio. Moreover, the Authority has directed to avail SBP financing for the Project and any remaining part of financing to be obtained from local or foreign finance and approved a rate of KIBOR + 2.25% or LIBOR + 4.25% for this purpose.

With regards to rate of foreign debt, the Authority's attention is drawn to the fact that after recent downgrade of Pakistan's sovereign credit rating by one notch further to Caal from B3, foreign lenders have increased the spread from 4.25% to 6% - 6.5% over base rate. In view of the Sponsors' credit history repeat customer relationship, the Project was able to secure a term sheet on the basis of 6% over base rate with a quarterly repayment period of 13.5 years.

Furthermore, USD LIBOR, used as the benchmark reference base rate for pricing of the USD facilities, will cease (globally) to be a benchmark and will no longer be available after June 30, 2023. Accordingly, all existing and new USD LIBOR linked transactions will need to be converted to a new benchmark reference rate, which will replace USD LIBOR. In this context, the USD financiers of TAEL will use Term Secured Overnight Financing Rate (the **"Term SOFR"**) as a base reference rate for replacement of USD LIBOR, which has



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emerged in the market as the most widely accepted replacement reference rate for USD LIBOR. Since USD LIBOR incorporated a credit risk premium (which is not the case for Term SOFR), Term SOFR is typically lower than USD LIBOR. To ensure the new benchmark rate is comparable to USD LIBOR, a credit adjustment spread ("CAS") will be added to the Term SOFR. The CAS was fixed by the International Swaps and Derivatives Association and endorsed by regulators and is [0.26161% / 0.42826%] for conversions from [three-month / six-month] USD LIBOR.

The financing mix for TAEL is proposed to be 50% foreign and 50% local debt. With regards to local debt financing, the TAEL have been able to secure a term sheet based on SBP RE facility i.e. 6% fixed rate with 10 year repayment on equal principle basis. However, the lenders in the term sheet have indicated that availability of the SBP RE facility will be on best effort basis, primarily subject to availability of this facility from SBP. In case, the SBP RE facility is not available, the local debt will be arranged through a conventional debt facility at KIBOR plus 2.50%.

TAEL hereby request the Authority for same debt to equity ratio of 80:20 with a 50% o SBP debt financing at the rate of 6% with a tenor of 10 years and 50% foreign debt financing at the rate of SOFR + CAS + 6% with at tenor of 13.5 years for the Project. TAEL humbly request the Authority to allow the above terms of financing to the Project. Indicative terms sheet from Meezzan Bank Limited and Bank AL Habib Ltd is enclosed at Annexure VIII for the consideration of the Authority.

This is to bring into Authority's notice that in recent past there is a significant increase in the base rate i.e. 3 M LIBOR which has increased from 0.6% to 4.01%. This increase in the base rate has an impact on tariff of US\$ Cents 0.4 per kWh, while total impact on tariff with a spread of 6% form previous allowed spread of 4.25% is US\$ cents 0.6 per kWh.

3.9 Other Assumptions

As mentioned in Section 3 above, it requested that the Authority may consider this Petition as a continuation of the earlier Determination, and allow the assumptions already allowed in its earlier Determination (except the economic assumptions and indices i.e. LIBOR, Exchange rate, Pak CPI and US CPI). The tariff assumptions allowed by the Authority are reproduced in below table for ready reference, and the Authority is requested to allow the same for the sake of equality and justice.

Sr.	Description	Already Allowed in the	Assumptions for this petition
		Determination	
(i)	Project Development Cost	USD 2.5 Million	USD 2.5 Million
(ii)	Insurance During	0.5% of the EPC Cost	0.5% of the EPC Cost
	Construction		
(iii)	Financing Costs	2.5% of the Debt Amount	2.5% of the Debt Amount excluding impact
		excluding impact of IDC	of IDC & Financing Cost
		& Financing Cost	
(iv)	O&M Cost	USS 23,000/MW	USD 26,000/MW
(v)	Insurance During Operation	0.4% of the EPC Cost	0.4% of the EPC Cost
(vi)	Tariff Period	25 years	25 years
(vii)	Debt Equity Ratio	80:20	80:20
(viii)	SBP Financing Rate	6%	6°/0
(ix)	KIBOR Rate (3 Month)	6.36%	15.79%
(x)	Spread Margin (Local)	2.25%	2.50%
(xi)	Base Rate for Foreign Debt	0.6% (3 Month LIBOR)	4.01% (3 Month SOFR plus CAS of
			0.26161%) (Current 3 M LIBOR is at 4.01%)
(xii)	Spread Margin (Foreign)	4.25%	6%

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Sr. Description		Already Allowed in the Determination	Assumptions for this petition			
(xiii)	USD/PKR exchange rate	120	PKR 225			
(xiv)	Discount rate of levelization	10%	10%			
(xv)	Return on Equity	14%	14%			
(xvi)	Construction Period	15 Months	15 Months			
(xvii)	True up conditions	ermination except for change in exchange rate				
(xviii)	Sharing Mechanism	As allowed in the earlier Determination				
(xviv)	Indexation	As allowed in the earlier Determination taking into account the change in the reference index applicable at the time of Authority's determination				



04 Project Cost, O&M Cost and Tariff

4.1 Revised Project Cost

Changes in EPC Cost mentioned in Section 03 above have consequential impact on other cost components resulting in revised Project cost as follows:

Project Cost.	USD Million
EPC Cost	64.60
Project development cost	2.50
Insurance during construction	0.32
Financial charges	1.35
Interest during construction	3.47
Total Project Cost	72.24

4.2 Revised EPC Cost

TAEL has submitted previous tariff petition on Vestas (V126 – 3.45 MW) WTGs as per a turnkey, fixed price, EPC contract with Northwest Engineering Corporation, which was selected after a competitive bidding process. However, EPC contract could not be materialized due to the fact that Company could not achieve FC in time due to delay in issuance of LOS by AEDB.

As mentioned earlier, the Project was not able to proceed to achieve FC for the reasons not attributable to the Company. Accordingly, the Company was directed to submit a new tariff petition before the honorable Authority. In view of the current economic environment worldwide and particularly in Pakistan where unprecedented devaluation of PKR and highest ever inflation was recorded, it was not possible for TAEL to undertake the entire bidding exercise again as the contractors are reluctant to offer a binding price.

However, in order to ensure competitiveness of the EPC price, the Company requested offers on the selected WTGs from the contractors who had submitted their bids in the previous round. Unfortunately, none responded except for the earlier selected EPC contractor i.e. Northwest Engineering Corporation Limited, which submitted their offer through its associated company Huadong Engineering Corporation Limited. Accordingly, the Company entered into the EPC Contract(s) with Huadong Engineering Corporation Limited, which comprised of two (2) separate contracts in accordance with practice in Pakistan, namely:

- a) The Engineering and Construction Contract (the "Onshore Contract"); and
- b) The Equipment Supply Contract (the "Offshore Contract")

Distribution of responsibilities between the contracts is briefly described below:

The Onshore Contract is signed with Hydrochina International Engineering Company Limited which includes design, engineering, construction, erection, testing, commissioning and all other works for completion of the Project inside Pakistan.

The Offshore Contract is signed with Hangzhou Huachen Electric Power Control Company Limited which includes but not limited to supplying imported equipment and materials for the Project outside Pakistan. All equipment supplied under the Offshore Contract will be warranted by the Offshore Contractor.



EPC contract provides a lump-sum price, as provided in the below table:

Description		Total
		(US \$ Million)
Equipment Su	pply Contract	51.68
Construction (Contract	12.92
Total Contrac	et Price	64.60

4.3 Project Development Cost

As explained in Section 03, due to the changes in the project technology, certain technical, and financial studies as well as project agreements will be required to be revised including but not limited to feasibility study, wind resource assessment, financial model, project and financing agreements which will result in additional cost for TAEL. Despite of these increased costs, Authority is kindly requested to allow a Project development cost of US\$ 2.5 Million as was previously allowed to the Project.

The costs under the head of Project Development Cost include, but not limited to, the following;

- Feasibility study costs including cost for Topographical survey of land, Geological and geotechnical study, Project layout study and electrical study; and Transportation study etc.
- Costs related to the performance guarantee to be furnished to EDGOS / AEDB;
- Land Lease payments;
- Various regulatory fees to be paid to NEPRA;
- Costs incurred during Project Company formation;
- Project Company staff salaries, allowances and other benefits;
- Project Company head office development and running expenses during construction period;
- Travelling costs of Project Company staff;
- Cost of security arrangement for the Project;
- Costs relating to various permits for the Project; and
- Project advisors, including cost of Local and Foreign Financial Advisors, Insurance Advisor, Audit and Tax Advisors, Security Advisors, etc.

4.4 Financing Terms

The following terms for financing the debt portion of the Project Cost have been assumed for the calculation of Reference Tariff Table:

Description	Terms
Total Value of Debt @ 80% of total Project Cost	57.79
SBP RE Refinancing Scheme (50% of the total debt requirement0	6%
Repayment of SBP RE Refinancing Scheme	10 years on Equal Principal basis
Local Debt (in case SBP financing is not available)	
Base Rate (KIBOR) for Local Debt	15.78%
Spread over KIBOR	2.50%
Repayment Period for Local Debt	13.5 years on annuity basis
Foreign Debt (50% of the total debt requirement)	
Base Rate (3 M SOFR plus CAS) for Foreign Debt	4.01%
Spread over LIBOR	6º/o
Repayment Period for Foreign Debt	13.5 years on annuity basis
Repayment Schedule	Quarterly



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Authority is hereby requested to allow conventional local financing in case SBP financing is not available for the Project.

4.5 Duties and Taxes

Duties and Taxes of non-refundable nature shall be adjusted at Commercial Operations Date, based on the actual cost incurred for which the Project Company shall submit documentary evidence to the satisfaction of the Authority.

4.6 Revised O&M Costs

Operations and maintenance of the Project mainly include regular repair and maintenance, spare parts, administration and other related costs of the Project during operational period. Due to global recession and raising inflation O&M cost of wind power projects costs have increased substantially, especially the replacement cost of equipment. This is evident from the increase in price of steel, cement, labor, transport as shown in section 3.4 as well as increase in price of copper and aluminum as shown in section 3.5 above. As a result of these factors, O&M cost of the Project has increased from US\$ 23,000/MW per annum to US\$ 26,000/MW per annum.

The Authority would be aware that in almost all the project finance deals for wind projects in Pakistan, the OEM of the WTGs is appointed as the O&M Contractor for at least debt term for the Project. Therefore, the Company intends to engage Gold Wind as the long term O&M Contractor for Project for the period of 13 years from COD. Furthermore, during the Warranty Period (i.e. two years of operations after COD), the EPC Contractor will act as the Warranty Period O&M Contractor under Warranty Period O&M Contract (WP O&M) and Gold Wind will act as a sub-contractor of the WP O&M Contractor.

The requested amount of USD 26,000/MW per annum (i.e. total USD 1.287 million per annum) is based on the following estimated costs;

O&M Cost Components	US\$ per annum
O&M Contractor annual fee	950,000
Company Annual Operating Costs	
Human Resource Costs	90,000
Site Security	75,000
Site Expenses and Electricity	80,000
Office (rent, utilities, POL, stationery, communication etc.)	40,000
Annual Regulatory Fee (NEPRA/SECP/EPA/Others)	10,000
Annual Statutory Audit	10,000
Lenders Annual Fee (Agency Fee, Monitoring Fee etc.)	25,000
Miscellaneous Operating Costs	7,000
Total Annual O&M Cost	1,287,000



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Reference Generation Tariff

Year	O&M	M&O	Insurance	RoE	RoEDC	Foreign	Local	Total	Tariff
	Local	Froeign		and a start of the second s		Debt	Debt		
				Rs/kWh			<u>, , , , , , , , , , , , , , , , , , , </u>	Rs/kWh	USc/kWh
1	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	6.1437	16.5383	7.3503
2	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	5.9100	16.3046	7.2465
3	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	5.6763	16.0709	7.1426
4	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	5.4426	15.8372	7.0388
5	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	5.2090	15.6036	6.9349
6	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	4.9753	15.3699	6.8311
7	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	4.7416	15.1362	6.7272
8	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	4.5079	14.9026	6.6234
9	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	4.2743	14.6689	6.5195
10	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	4.0406	14.4352	6.4156
11	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	-	10.3946	4.6198
12	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913	-	10.3946	4.6198
13	0.8673	0.8673	0.3483	2.7262	0.2943	5.2913		10.3946	4.6198
14	0.8673	0.8673	0.3483	2.7262	0.2943	2.6456	-	7.7490	3.4440
15	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
16	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
17	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
18	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
19	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
20	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
21	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
22	0.8673	0.8673	0.3483	2.7262	0.2943		-	5.1033	2.2681
23	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
24	0.8673	0.8673	0.3483	2.7262	0.2943	-	-	5.1033	2.2681
25	0.8673	0.8673	0.3483	2.7262	0.2943		-	5.1033	2.2681
Level	ized Tariff	·	·					12.8904	5.7291

Given below is the reference generation tariff table based on updated assumptions



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4.7 Debt Repayment Schedule (SBP Financing)

Given below is the debt repayment schedule of 50% financing at SBP rate.

Quarter Principal		Markup		Instalment		
	PKR	Rs/kWh	PKR	Rs/kWh	PKR	Rs/kWh
1	162,542,711	0.9736	97,525,627	0.5842	260,068,338	1.5578
2	162,542,711	0.9736	95,087,486	0.5696	257,630,198	1.5432
3	162,542,711	0.9736	92,649,346	0.5550	255,192,057	1.5286
4	162,542,711	0.9736	90,211,205	0.5404	252,753,916	1.5140
5	162,542,711	0.9736	87,773,064	0.5258	250,315,776	1.4994
6	162,542,711	0.9736	85,334,924	0.5112	247,877,635	1.4848
7	162,542,711	0.9736	82,896,783	0.4966	245,439,494	1.4702
8	162,542,711	0.9736	80,458,642	0.4820	243,001,354	1.4556
9	162,542,711	0.9736	78,020,501	0.4673	240,563,213	1.4410
10	162,542,711	0.9736	75,582,361	0.452	238,125,072	1.4264
11	162,542,711	0.9736	73,144,220	0.4381	235,686.932	1.4118
12	162,542,711	0.9736	70,706,079	0.4235	233,248,791	1.3972
13	162,542,711	0.9736	68,267,939	0.4089	230,810,650	1.3826
14	162,542,711	0.9736	65,829,798	0.3943	228,372,510	1.3680
15	162,542,711	0.9736	63,391,657	0.3797	225,934,369	1.3534
16	162,542,711	0.9736	60,953,517	0.3651	223,496,228	1.3388
17	162,542,711	0.9736	58,515,376	0.3505	221,058,088	1.3241
18	162,542,711	0.9736	56,077,235	0.3359	218,619,947	1.3095
19	162,542,711	0.9736	53,639,095	0.3213	216,181,806	1.2949
20	162,542,711	0.9736	51,200,954	0.3067	213,743,666	1.2803
21	162,542,711	0.9736	48,762,813	0.2921	211,305,525	1.2657
22	162,542,711	0.9736	46,324,673	0.2775	208,867,384	1.2511
23	162,542,711	0.9736	43,886,532	0.2629	206,429,244	1.2365
24	162,542,711	0.9736	41,448,391	0.2483	203,991,103	1.2219
25	162,542,711	0.9736	39,010,251	0.2337	201,552,962	1.2073
26	162,542,711	0.9736	36,572,110	0.2191	199,114,822	1.1927
27	162,542,711	0.9736	34,133,969	0.2045	196,676,681	1.1781
28	162,542,711	0.9736	31,695,829	0.1899	194,238,540	1.1635
29	162,542,711	0.9736	29,257,688	0.1753	191,800,399	1.1489
30	162,542,711	0.9736	26,819,547	0.1607	189,362,259	1.1343
31	162,542,711	0.9736	24,381,407	0.1460	186,924,118	1.1197
32	162,542,711	0.9736	21,943,266	0.1314	184,485,977	1.1051
33	162,542,711	0.9736	19,505,125	0.1168	182,047,837	1.0905
34	162,542,711	0.9736	17,066,985	0.1022	1~9,609,696	1.0759
35	162,542,711	0.9736	14,628,844	0.0876	177,171,555	1.0613
36	162,542,711	0.9736	12,190,703	0.0730	174,733,415	1.0467
37	162,542,711	0.9736	9,752,563	0.0584	172,295,274	1.0321
38	162,542,711	0.9736	7,314,422	0.0438	169,857,133	1.0175
39	162,542,711	0.9736	4,876,281	0.0292	167,418,993	1.0028
40	162,542,711	0.9736	2,438,141	0.0146	164,980,852	0.9882



4.8 Debt Repayment Schedule

Given below the debt repayment schedule on the basis of 50% foreign financing for the Project.

Ouarter	Prin	cipal	Markup		Instalı	Instalment	
	USD	Rs/kWh	USD	Rs/kWh	USD	Rs/kWh	
1	258 361	0.3482	723,134	0.9746	981,496	1.3228	
2	264 827	0.3569	716.669	0.9659	981.496	1.3228	
3	271.454	0.3659	710.042	0.9570	981 496	1.3228	
	279.247	0.3059	703 249	0.9478	981.496	1.3228	
	270,247	0.3730	606 285	0.0381	981.496	1 3228	
	200,211	0.3044	690,200	0.9384	081.406	1.3228	
0	292,348	0.3940	(01.032	0.0180	081.406	1.3220	
/	299,664	0.4039	081,032	0.9189	981,490	1.3220	
8	307,163	0.4140	0/4,333	0.9085	081.406	1.3220	
9	514,850	0.4245	600,040	0.8985	981,490	1.3220	
10	322,729	0.+550	658,767	0.8879	981,490	1.5228	
11	330,805	0.4458	650,691	0.8770	981,496	1.5228	
12	339,084	0.45-0	642,412	0.8658	981,496	1.3228	
13	347,569	0.4684	633,927	0.8544	981,496	1.3228	
14	356,267	0.4802	625,229	0.8427	981,496	1.3228	
15	365,183	0.4922	616,313	0.8306	981,496	1.3228	
16	374,321	0.5045	607,175	0.8183	981,496	1.3228	
17	383,689	0.5171	597,807	0.8057	981,496	1.3228	
18	393,291	0.5301	588,205	0.7928	981,496	1.3228	
19	403,133	0.5433	578,363	0.7795	981,496	1.3228	
20	+13,221	0.5569	568,275	0.7659	981,496	1.3228	
21	423,562	0.5709	557,934	0.7520	981,496	1.3228	
22	434,162	0.5851	547,334	0.7377	981,496	1.3228	
23	445,026	0.5998	536,469	0.7230	981,496	1.3228	
24	456,163	0.6148	525,333	0.7080	981,496	1.3228	
25	+67,579	0.6302	513,917	0.6926	981,496	1.3228	
26	479,280	0.6460	502,216	0.6769	981,496	1.3228	
27	491,274	0.6621	490,222	0.6607	981,496	1.3228	
28	503,568	0.6787	477,928	0.6441	981,496	1.3228	
29	516,170	0.6957	465,326	0.6271	981,496	1.3228	
30	529,087	0.7131	452,409	0.6097	981,496	1.3228	
31	542,327	0.7309	439,169	0.5919	981,496	1.3228	
32	555,899	0.7492	425,597	0.5736	981,496	1.3228	
33	569,810	0.7680	411,685	0.5549	981,496	1.3228	
34	584,070	0.7872	397,426	0.5356	981.496	1.3228	
35	598,686	0.8069	382.810	0.5159	981,496	1.3228	
36	613.668	0.8271	367.827	0.4957	981,496	1.3228	
37	629.026	0.8478	352.470	0.4750	981.496	1.3228	
38	644 767	0.8690	336 729	0 4538	981.496	1 3228	
39	660.902	0.8907	320 594	0.4321	981,496	1.3228	
40	677,441	0,9130	304.055	0,4098	981 496	1.3228	
41	694 394	0.9359	287 102	0.3869	981 496	1.3228	
42	711 771	0.9593	269 725	0.3635	981 496	1 3228	
43	729 584	0.9833	251 012	0.3395	981 496	1 3228	
4.1	747 841	1.0079	233.655	0.3140	981 196	1 3228	
45	766 556	1.0075	211.940	0.2807	981 496	1 3228	
46	785 730	1.0591	105 757	0.2638	081 106	1 3220	
47	805.102	1.0350	175, 5	0.2030	081 404	1 3028	
	825 557	1.0000	155 039	0.2373	081 406	1.3220	
40	846 217	1.1127	135,930	0.1823	0.81 404	1.3220	
50	867 304	1 1600	114 102	0.1025	081 406	1 3220	
51	880 100	1 1083	02 306	0.1336	901,490	1.3220	
52	011 350	1 2283	70.146	0.0245	981.496	1 3220	
53	03/1156	1 2500	17 340	0.0745	081 406	1.3220	
5.1	057 53.1	1 2905	23.062	0.0000	981 496	1 3228	



05 Prayer

In light of the foregoing, it is respectfully prayed that the earlier Determination may be reviewed based on the proposed technology and related factors as per the details given throughout this Petition.

In order to achieve financial closing, the Authority is also requested to allow a further period of 12 months for financial close of the Project.

Authority is requested to allow (a) change in WTG Technology (b) increase in EPC cost (c) change in project financing parameters and (d) change in capacity factor based on the change in WTG technology.

Authority is further requested to maintain original decision (as per the Determination) with regard to debt equity structure, return on equity, other costs and all indexations, escalations, adjustments and sharing mechanism. Any other relief that the Petitioner may be entitled to, be also allowed to the Project in the interest of justice.

Authority is also requested to approve a reference tariff table based on assumptions as requested in the petition.

Further any taxes, stamp duties, fees and levies (sales tax of non-refundable nature) etc. of federal, provincial, local or district governments, which are not factored in the tariff calculation are requested to be allowed as pass through.

Authority is kindly requested to process the Tariff Petition at the earliest thereby enabling TAEL to proceed further with the development process. The proposed levelized tariff of 12.9 Rupees per kwh is half of what is currently being charged by distribution companies and will significantly lower the basket price of energy in Pakistan. Further, by enabling this project, the country can save on imports of costly imported fuels which are currently crippling the economy and a major contributor to the current account and trade deficit and the depleted foreign exchange reserves. The Authority must move quickly to enable such projects which will serve to reverse the economic conditions of the country and promote a cleaner and greener Pakistan.

Respectfully submitted on the behalf of Petitioner.

Mr. Mustafa Tapal General Manager-Regulatory Affairs Trans Atlantic Energy (Private) Limited



11th January 2023