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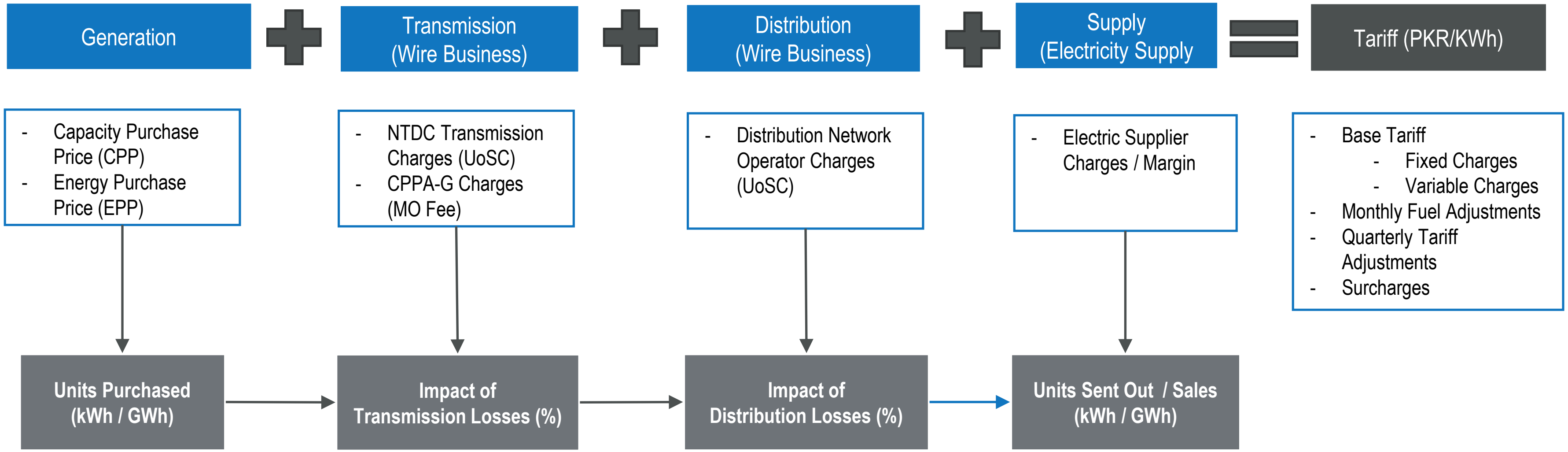
1. NEPRA APPROVAL OF PPP 2024-25
2. DISCOS TARIFF ANALYSIS
3. IMPACT OF NEW FIXED CHARGES

PPP = POWER PURCHASE PRICE

WHAT IS CONSUMER END TARIFF?

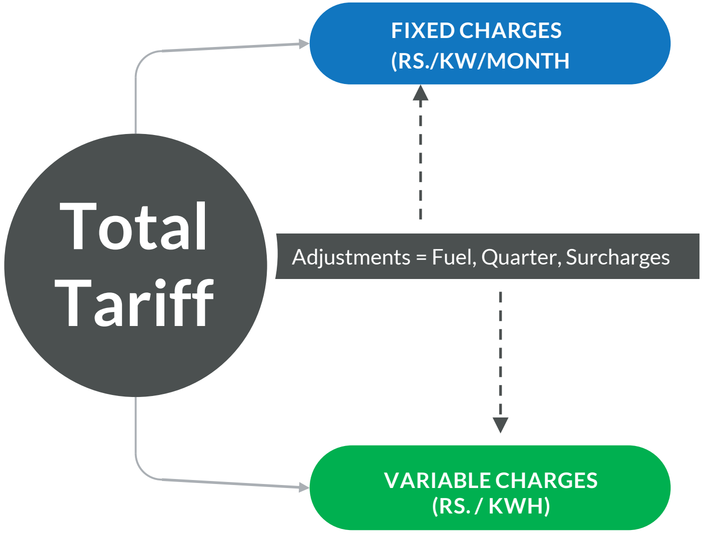
PPP = Power Purchase Price, EPP = Energy Purchase Price, CPP = Capacity Purchase Price, UoSC = Use of System Charges, MoF = Market Operator Fee



- **Determined Tariff:** Means Tariff determined by NEPRA for each License (DISCO)
- **Differential Tariff:** Authority determine separate tariff for each Licenses based on their specific allowed para meters.
- **Uniform Tariff:** Means Weighted Average Uniform Tariff based on consolidated determined tariff of each DISCOs. (National Average Tariff)
- **Applicable Tariff:** Consumer category wise tariff after incorporation of subsidy & Surcharges to be charged from consumers.

SUMMARY OF THE FY 24-25 TARIFF DETERMINATION

Total Tariff in Consumer Bills = Fixed Charges + Variable Charges + Fuel Adjustments + Quarterly Adjustments + Surcharges + Taxes



- ✓ NEPRA Authority has determined the base tariff for DISCOs & KE Consumers as 35.50 PKR/ Unit for fiscal year 2024-25.
- ✓ This is a 19% increase (Rupees 5.72) from the previous year applicable base tariff of 29.78 PKR per Unit.
- ✓ The primary impact of the increase in the per unit tariff is a reduction in demand (units sent out).
- ✓ NEPRA has not yet received the GoP’s Motion through the Power Division to establish new category-wise tariffs for consumers, after adjustment of subsidy and removal of major part of cross subsidy to give relief to the industry (which industries are subsidizing the lower residential protected consumers)
- ✓ The financial impact of relief to industry will be around Rs. 140-150 billion through reduction in its tariff but it will not affect tariff of lifeline consumers as the government will bear this burden through subsidy from budget.
- ✓ Fixed Charges will be introduced in the Residential Category.
- ✓ Fixed Charges of Industries will increase to 2,000 PKR / KW / Month.
- ✓ The increase in fixed charges will offset the reduction in tariff resulting from the decreased cross-subsidy from industrial tariffs. This will happen due to current economic conditions that have forced industries to operate at lower production capacities.
- ✓ The middle category of residential consumers i.e. from 301-700 units per month are likely to be hit badly with adjustment in Schedule of Tariffs.
- ✓ The Category-wise increase in tariff is will be approved by the Power Sector Regulator, after submission of Tariff Motion by Power Division.

FY 24-25 CONSUMER END TARIFF

The total revenue requirement for DISCOs is 3,768 billion PKR, which translates to a tariff of 35.5 PKR per unit, based on projected sales of 106,153 GWh.

TRANSMISSION CHARGES & MO FEE

O&M, Depreciation, RoE, Interest, Other Income. Prior Year Adjustment.

DISCOS WIRE NETWORK COST

O&M, Depreciation, RoE, Interest, Other Income, Prior Year Adjustment

CAPACITY CHARGES

Fixed O&M, ROE, ROEDC, IDC, Insurance, Debt Servicing etc.

ENERGY CHARGES

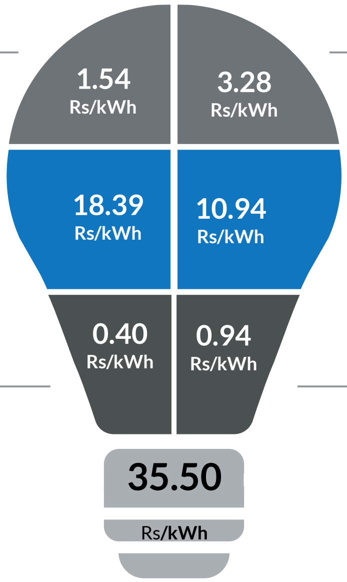
Fuel Cost + Variable O&M

SUPPLY MARGIN / COST

O&M , Other Income,

PRIOR YEAR ADJUSTMENT

Under/Over Recovery due to delay in notification/over under sales etc.



CPP	EPP	Transmission Charges & MO Fee	Distribution Wire Cost	Supply Margin	PYA	Total User End Tariff
18.39	10.94	1.54	3.28	0.40	0.94	35.50

CPP and EPP charges reflected on Projects Units Sales

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FY 24-25 CONSUMER END TARIFF

Component wise tariff of FY 2023-24

Description	FY 2023-24		FY 2024-25		Increase/(Decrease)	
	GWh		GWh		GWh	
Projected Sales of XW-DISCOs	110,165		106,153		(4,012)	
	PKR Million	Rs./Unit	PKR Million	Rs./Unit	Rs./Unit	%
Energy Charge	840,462	7.63	1,161,257	10.94	3.31	43%
Capacity Charge	1,874,334	17.01	1,952,493	18.39	1.38	8%
Transmission & MOF	151,363	1.37	163,755	1.54	0.17	12%
Power Purchase Price	**2,866,159**	**26.01**	**3,277,505**	**30.88**	**4.87**	**19%**
DISCO Distribution & Supply Margin	341,403	3.10	390,502	3.68	0.58	19%
PYA	73,599	0.67	999,54	0.94	0.27	40%
Revenue Req. of XW-DISCOs	**3,281,161**	**29.78**	**3,767,961**	**35.50**	**5.72**	**19%**

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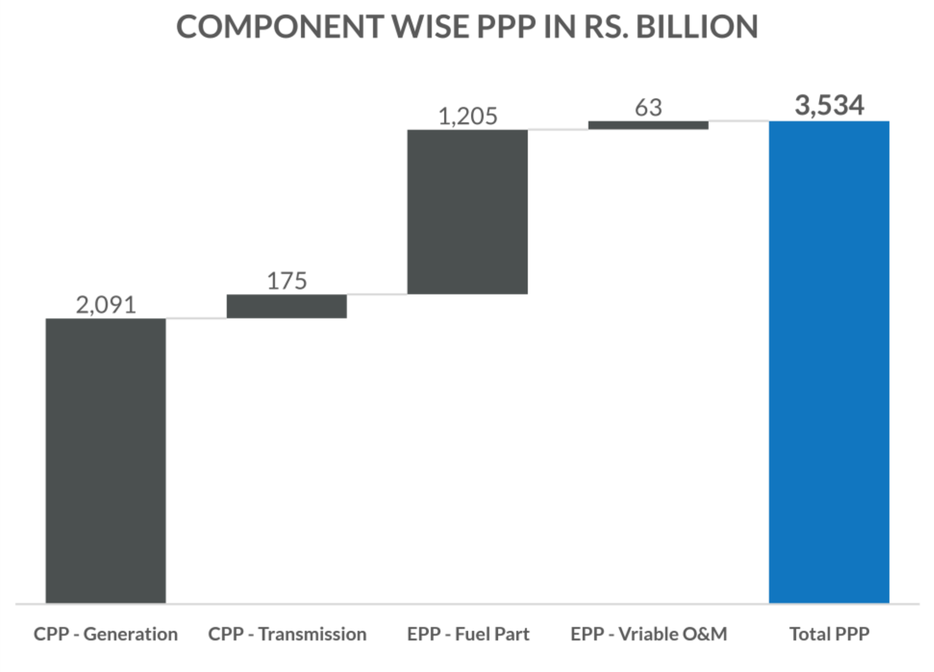
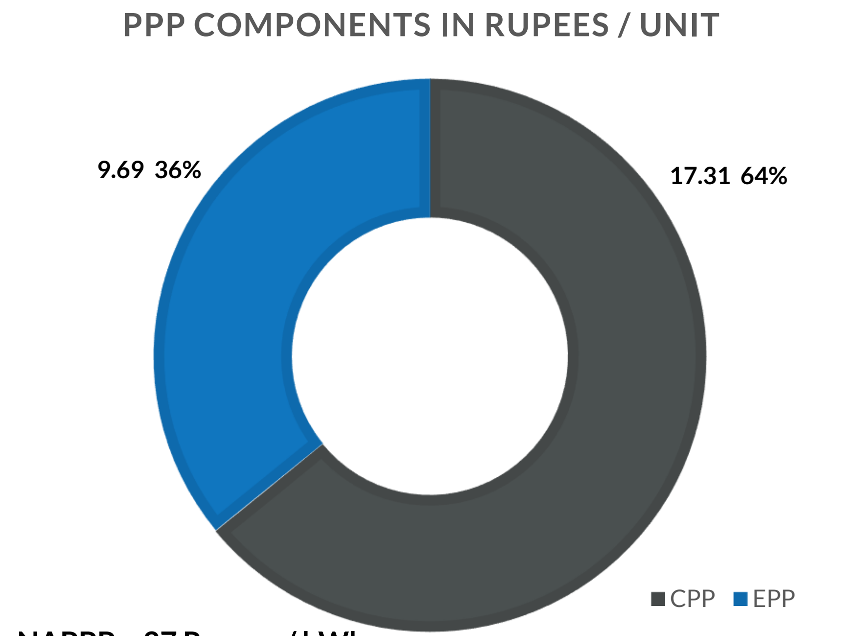
NEPRA APPROVED PPP FOR FY 2024-25

Overall Power Purchase Price including K-Electric National Grid Share, PPP = Power Purchase Price, NAPPP = National Average PPP





NAPPP = 27 Rupees / kWh

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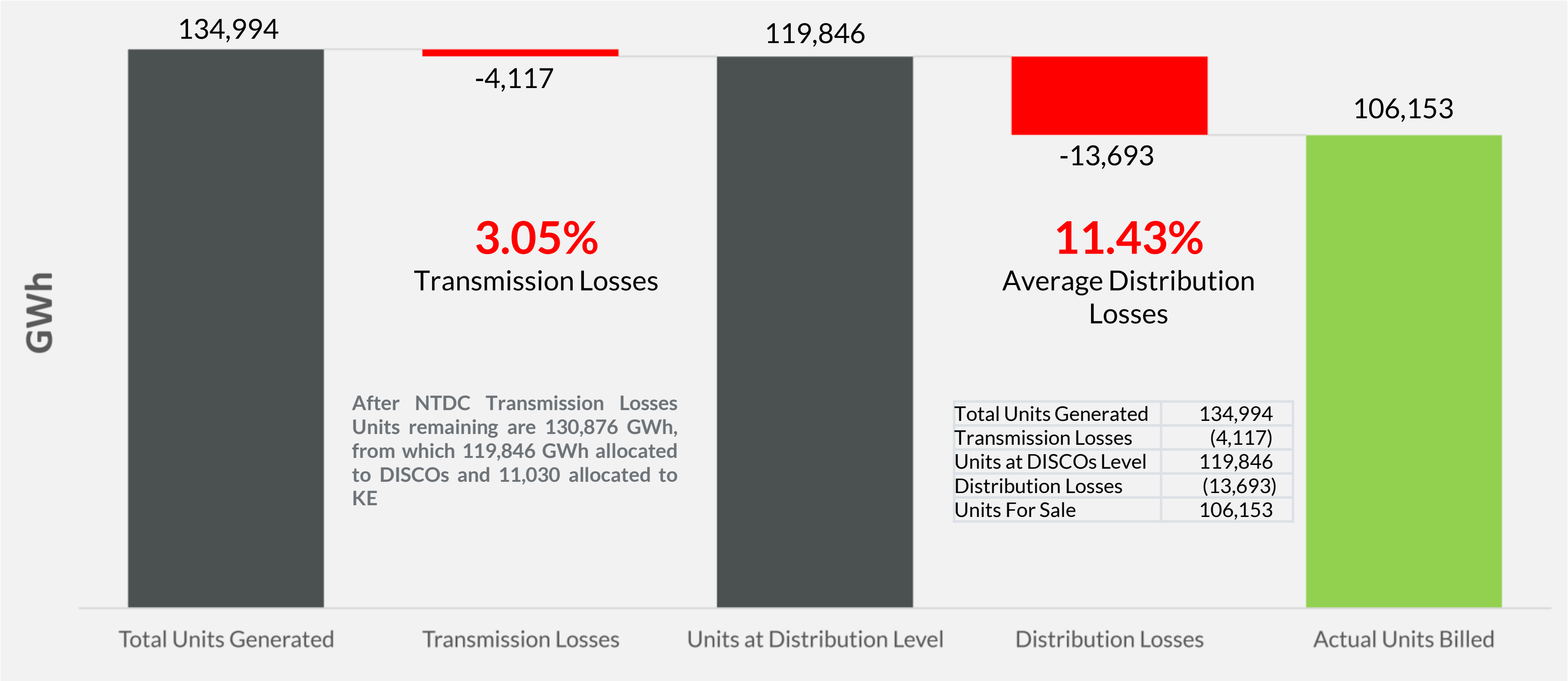
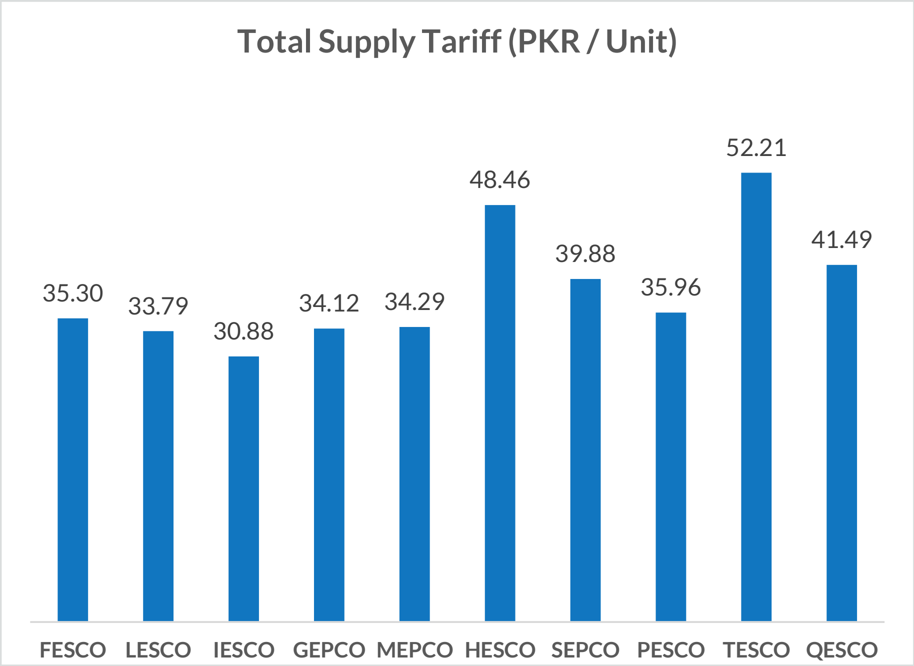
UNITS GENERATED VS UNITS SOLD – BY DISCOS

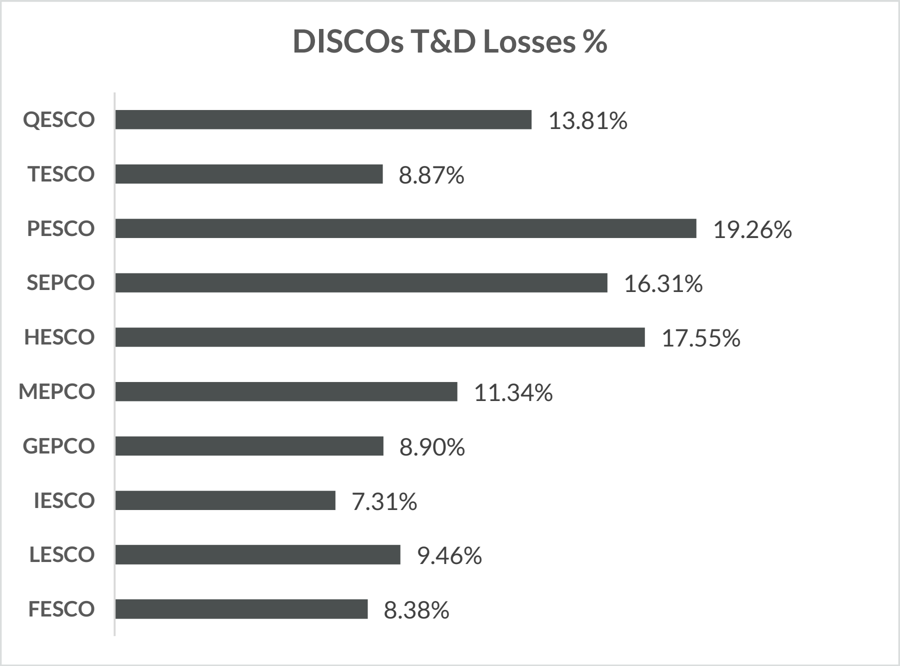
Based on anticipated demand, NEPRA has forecasted sales of 106,153 GWh units for the next financial year.



Total Units Generated	134,994
Transmission Losses	(4,117)
Units at DISCOs Level	119,846
Distribution Losses	(13,693)
Units For Sale	106,153

DISCOS INDIVIDUAL LOSSES & SUPPLY TARIFF





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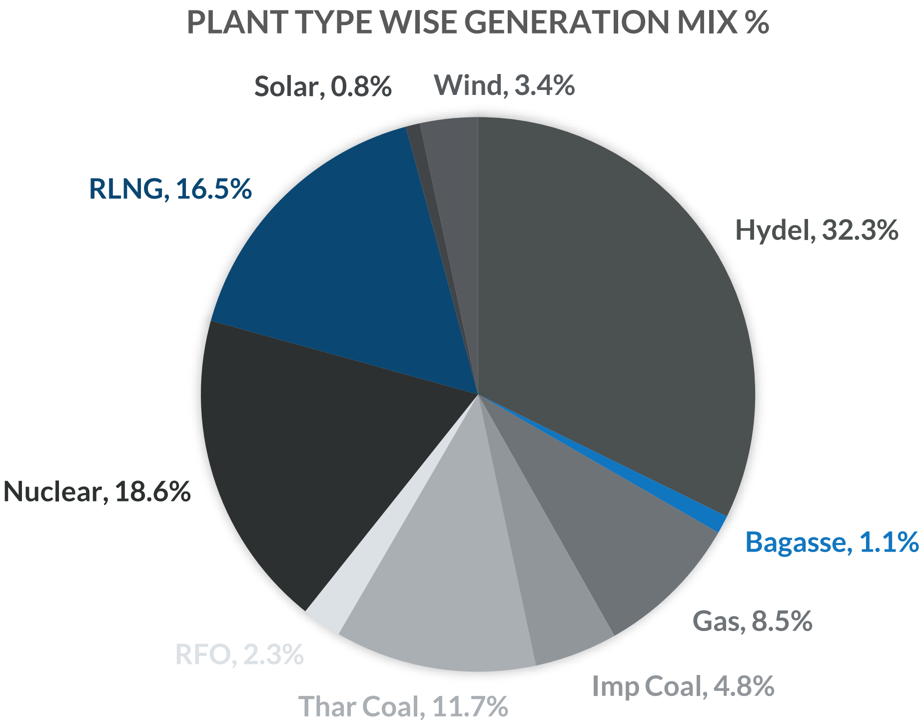
GENERATION MIX PPP EXPECTED FY 2024-25



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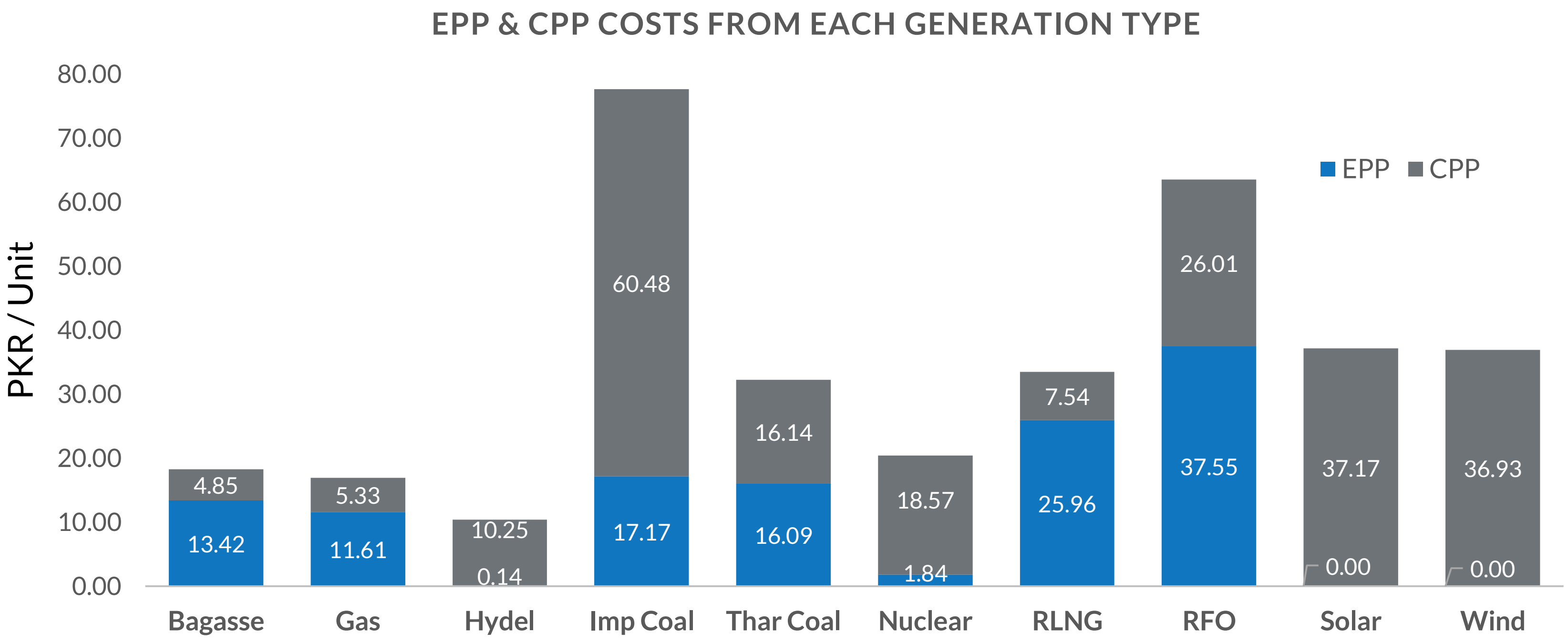
PLANT TECHNOLOGY WISE PPP FOR FY 2024-25



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FIXED CHARGES FROM JULY 2024

Type of Consumer	Existing	New		Percentage Increase
Residential Single Phase	Rs./kW Per Month	Rs./Connec. Per Month	Rs./kW Per Month	
301-400 Units	-	200	-	200 Rupees Fixed Per Month
401-500 Units	-	400	-	400 Rupees Fixed Per Month
501-600 Units	-	600	-	600 Rupees Fixed Per Month
601-700 Units	-	800	-	800 Rupees Fixed Per Month
Above 700 Units	-	1,000	-	1000 Rupees Fixed Per Month
Residential 3 Phase TOU	-	1,000	-	1000 Rupees Fixed Per Month
Commercial				
For Load less than 5 kW	-	1,000	-	1000 Rupees Fixed Per Month
For Load 5 kW and above	500	-	2,000	300%
Industrial Supply tariff - TOU				
B1 - Upto 25 kW	-	1,000	-	1000 Rupees Fixed Per Month
B2 - Upto 500 kW	500	0	2,000	300%
B3 - Upto 5000 kW	460	0	2,000	335%
B4 - For all Loads	440	0	2,000	355%

Definitions as per NEPRA Orders.

"Sanctioned Load" where applicable means the load in kilowatt as applied for by the consumer and allowed/authorized by the Company for usage by the consumer.

"Maximum Demand" where applicable, means the maximum of the demand obtained in any month measured over successive periods each of 30 minutes' duration except in the case of consumption related to Arc Furnaces, where "Maximum Demand" shall mean the maximum of the demand obtained in any month measured over successive periods each of 15 minutes' duration.

"Fixed Charge" means the part of sale rate in a two-part tariff to be recovered on the basis of "Billing Demand" in kilowatt on monthly basis.

"Billing Demand" means the 50% of the sanction load or Actual maximum demand recorded in a month, whichever is higher, except in the case of agriculture tariff D2 where "Billing Demand" shall mean the sanctioned load.

Provided that for the purpose of fixed charges sanctioned load means maximum demand recorded so far.

Provided further that in case of new connections or consumers who have renewed/revised their sanctioned load, the fixed charges will be charged on 50% of the sanctioned load or actual maximum demand recorded in a month, whichever is higher. However, upon establishment of MDI in next six months, the adjustment of fixed charges will be made accordingly by the DISCO."

Provided also that consumers having alternate/ dual source i.e. captive power, net metering etc. the existing mechanism of fixed charges shall remain the same i.e. the 50% of the sanctioned load or actual maximum demand recorded in a month, whichever is higher.

Extract from NEPRA Orders: Here it is pertinent to mention that there are certain consumer categories, where actual load / MDI is not being recorded. DISCOs for such consumers, submitted that either a fixed charge per connection or per KW sanctioned load be used for recovery of fixed charges. The Authority, for such consumers where MDI is not recorded, has decided to initially levy fixed charges at a fixed rate per month, as mentioned in the SoT attached with the decision. The Authority further directs the Petitioner to ensure that by the time it files its next tariff petition / adjustment request, MDI for all consumers at all levels is properly recorded.

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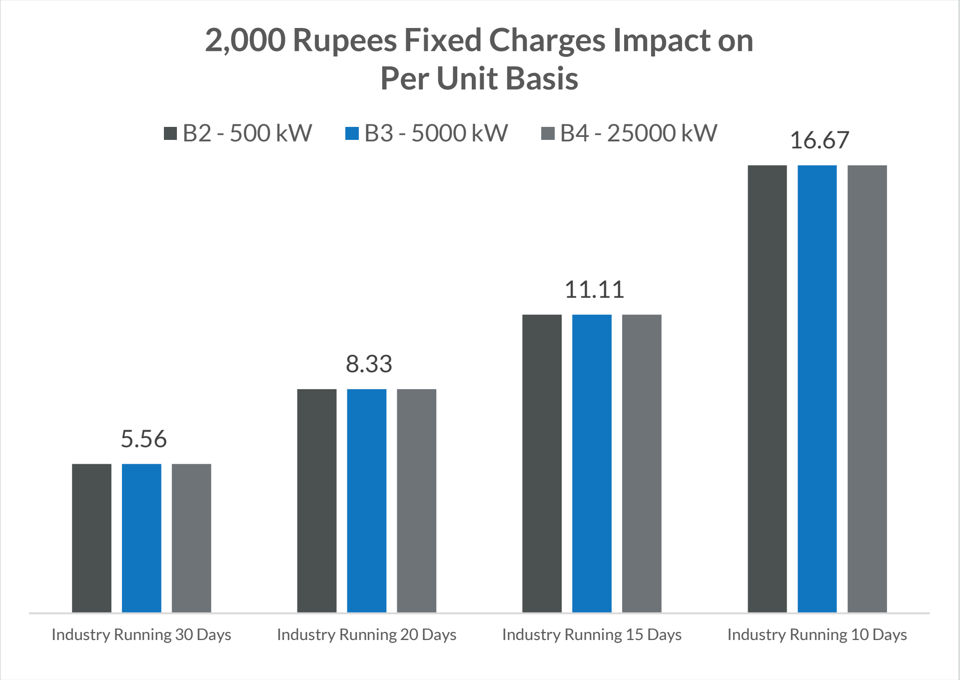
FIXED CHARGES NEGATIVELY IMPACT INDUSTRIES



As per NEPRA Consumer Service Manual; average diversity factor of the factories are 50%.

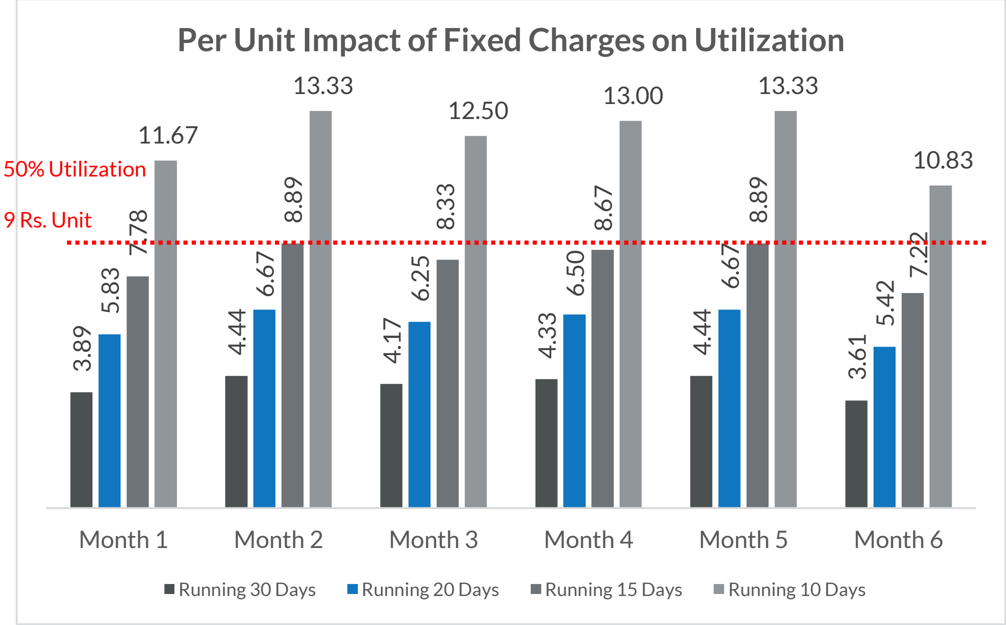
By Considering the same with MDI = Sanctioned Load mentioned against each case of B2, B3 & B4 category. It has a worst impact on the industry.

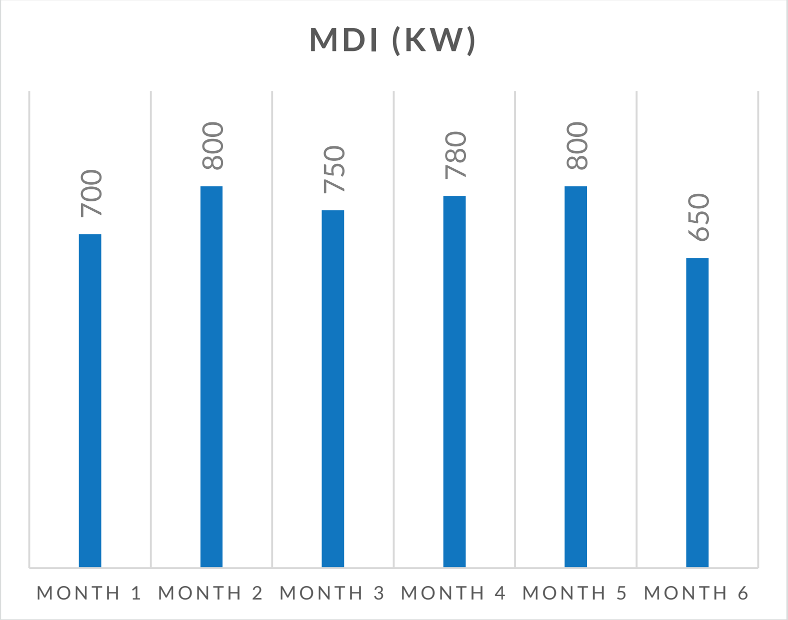
Considering the current economic conditions and lower demand; **average industry is running on its 50% production and considering this case fixed charges will translates into 11.11 Rupees / Unit.**

We recommend reducing the fixed charges to less than 1,000 Rupees per kW per month, with a total base tariff of approximately 36 Rupees, including fuel and quarterly adjustments. Even with the Financial PHL Surcharge and Electricity Duty, this would bring the total to around 40 Rupees.

FIXED CHARGES BILLING SCENARIO 1

- Consider an Industry having Sanctioned Load of 1,000 kW. Diversity Factor Considered for energy calculations is 50%.
- Following chart is showing impact of fixed charges on different months with different established MDI (Maximum Demand Indicator) and different utilization of Industry as per Market Demand.
- Running 15 Days a Month or on half of the production capacity is usual scenario now these days, which will have impact of 9 Rupees / Unit.





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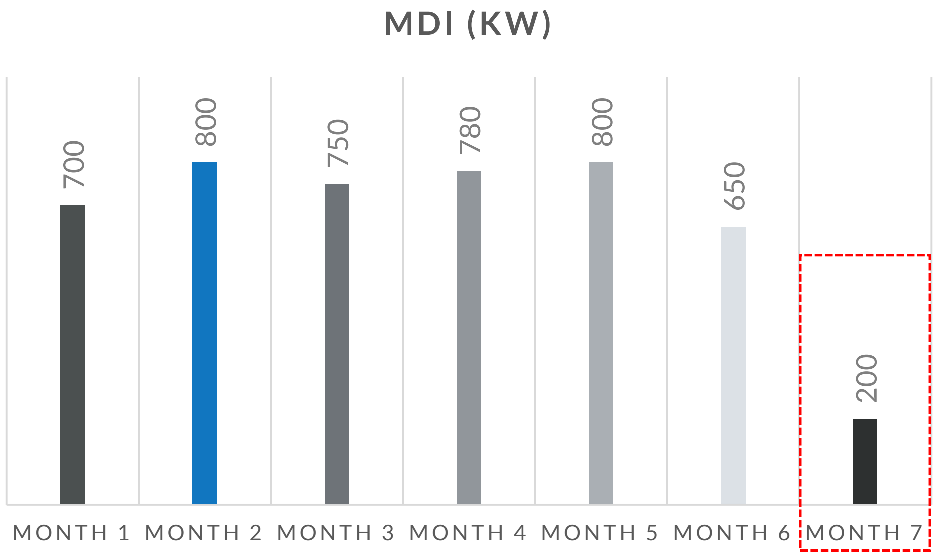
FIXED CHARGES BILLING SCENARIO 2

- Consider an Industry having Sanctioned Load of 1,000 kW. After Six Months, Maximum Demand Recorded so far will be considered as Sanctioned Load i.e. 800 kW in this case.
- On the 7 month, Industry is under shutdown due to no order / demand from market.
- Recorded MDI is 200 kW from usual auxiliary load. Auxiliary Energy consumed considered as 36,000 Units.
- Fixed Charges will be considered on Billing Demand Definition - 50% of the Sanction Load or Actual Maximum Demand recorded in a month, whichever is higher.



Industry Shutdown In 7th Month

Fixed Charges Bill in 7th Month

Fixed Charges = 2,000 Rupees x (800 kW / 2)
Fixed Charges = 800,000 PKR

Per Unit Impact of Fixed Charges = 22 Rupees per Unit

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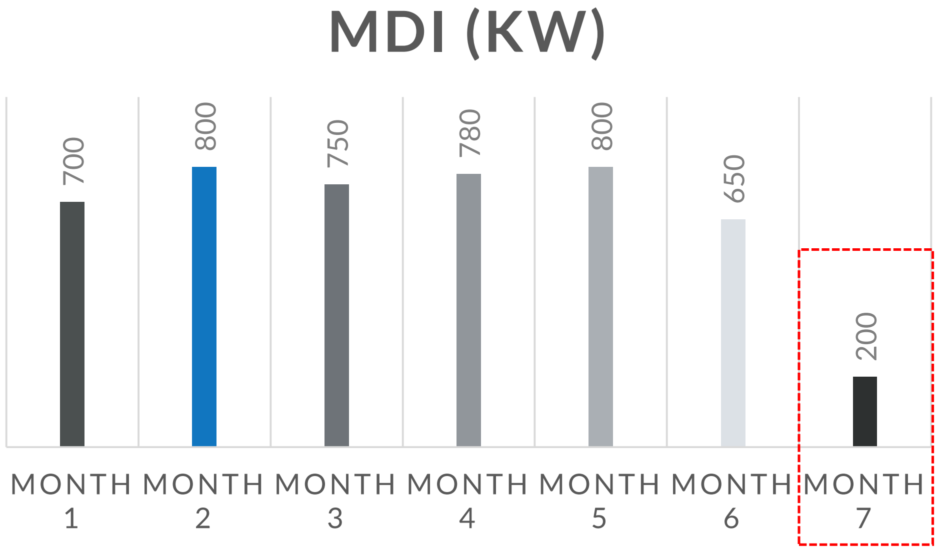
FIXED CHARGES BILLING SCENARIO 3

- Consider an Industry having Sanctioned Load of 1,000 kW. If the Industry is using Captive or Alternate Resources as well, its Sanctioned Load will remain the same i.e. 1,000 kW in this case.
- On the 7 month, Industry is under shutdown due to no order / demand from market.
- Recorded MDI is 200 kW from usual auxiliary load. Auxiliary Energy consumed considered 36,000 Units.
- Fixed Charges will be considered on Billing Demand Definition - 50% of the Sanction Load or Actual Maximum Demand recorded in a month, whichever is higher.



Industry Shutdown In 7th Month

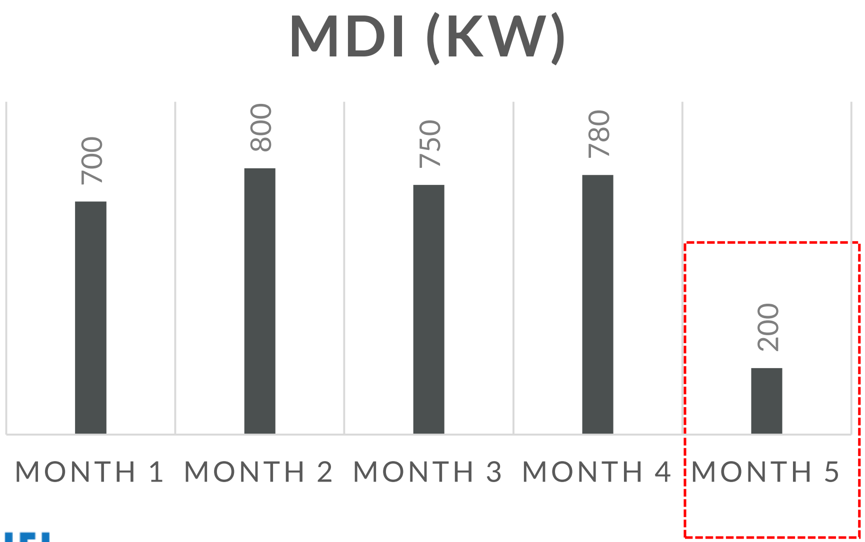
Fixed Charges Bill in 7th Month

Fixed Charges = 2,000 Rupees x (1,000 kW / 2)
Fixed Charges = 1,000,000 PKR

Per Unit Impact of Fixed Charges = 28 Rupees per Unit

FIXED CHARGES BILLING SCENARIO 4

- Consider a new Industry having Sanctioned Load of 1,000 kW. And it has not crossed six months to establish its sanctioned load as per Maximum Demand. So its Sanctioned Load will be considered as i.e. 1,000 kW in this case.
- On the 5 month, Industry is under shutdown due to no order / demand from market.
- Recorded MDI is 200 kW from usual auxiliary load. Auxiliary Energy consumed considered 36,000 Units.
- Fixed Charges will be considered on Billing Demand Definition - 50% of the Sanction Load or Actual Maximum Demand recorded in a month, whichever is higher.



Industry Shutdown In 5th Month

Fixed Charges Bill in 5th Month

Fixed Charges = 2,000 Rupees x (1,000 kW / 2)
Fixed Charges = 1,000,000 PKR

Per Unit Impact of Fixed Charges = 22 Rupees per Unit

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TARIFF COMPARISON & SUGGESTIONS

Example: B3 Industrial Tariff	Current Tariff	Tariff Anticipated after NEPRA Orders	Tariff Analyzed by Arzachel
	PKR / Unit	PKR / Unit	PKR / Unit
Peak Rate	37.83	36	36
Off Peak Rate	32.03	26	26
Avg. of Both	33.00	27.67	27.67
Fixed Rate Ratio	2.00	8.00	4.00
Base Rate	**35.00**	**35.67**	**31.67**
QTR Adjustment	2.7000	2.0000	2.0000
Avg. FCA	3.3321	2.0000	2.0000FC
FC (PHL) Surcharge	3.23	3.23	3.23
Electricity Duty	0.63	0.52	0.52
Total per Unit	**44.89**	**43.42**	**39.42**
GST 18%	8.08	7.82	7.10
Unit with GST	**52.97**	**51.24**	**46.52**

Following the Prime Minister's announcements, we anticipated the removal of cross-subsidies from the industrial tariff and assume that final tariff will be 36 Rupees. However, according to NEPRA's orders for DISCOs dated 14th June 2024, the fixed charges are extraordinarily high, potentially leading to complete industrial shutdowns.

We recommend reducing the fixed charges to less than 1,000 Rupees per kW per month, with a total base tariff of approximately 36 Rupees, including fuel and quarterly adjustments. Even with the Financial PHL Surcharge and Electricity Duty, this would bring the total to around 40 Rupees.

TARIFF RATIONALIZATION - B2 B3 B4 CONSUMERS

Type of Connection	Description of Connection	Suggestions
B2 – Low Voltage	Consumers are connected to Low Voltage and all O&M till PMT (transformer) and losses shall be on DISCOs Part	In all countries, including neighboring India and Bangladesh, higher voltage tariffs are substantially lower than low and medium voltage tariffs.
B3 – Medium Voltage	Consumer will maintain its Sub Station and bear all O&M expenses. Consumer bear all medium (11kV) and low voltage wire losses internally.	To incentivize customers to invest in substations and 11kV equipment, the tariff should be lower from B2 consumers. Although specific distribution loss segregation for medium voltage (MV) and low voltage (LV) is not provided, and LV incurs the most losses, assuming a 40% share of MV in losses, *the tariff for B3 should be approximately 2 to 2.5 PKR per unit lower than that for B2.*
B4 – High Voltage	Consumer will maintain its own Grid Station and bear all O&M expenses. Consumer bear all (132kV) Power Transformer and (11kV) medium and low voltage wire losses internally.	To incentivize customers to invest in grid stations and 132/11kV equipment, the tariff for B4 should be lower than those for B3 and B2. The O&M costs of DISCOs and the impact of 11% distribution losses should be subtracted. *Analysis indicates that the B4 tariff should be 4 to 5 PKR per unit lower than the B2 tariff.*

WHAT WE DO

Our team at Arzachel can help transform your project idea into a well-defined project layout, meticulously assessing various realization concepts. We conduct thorough investigations into the technical feasibility and financial viability of projects, laying the groundwork for potential project funding commitments.

ENERGY MARKET ANALYSES

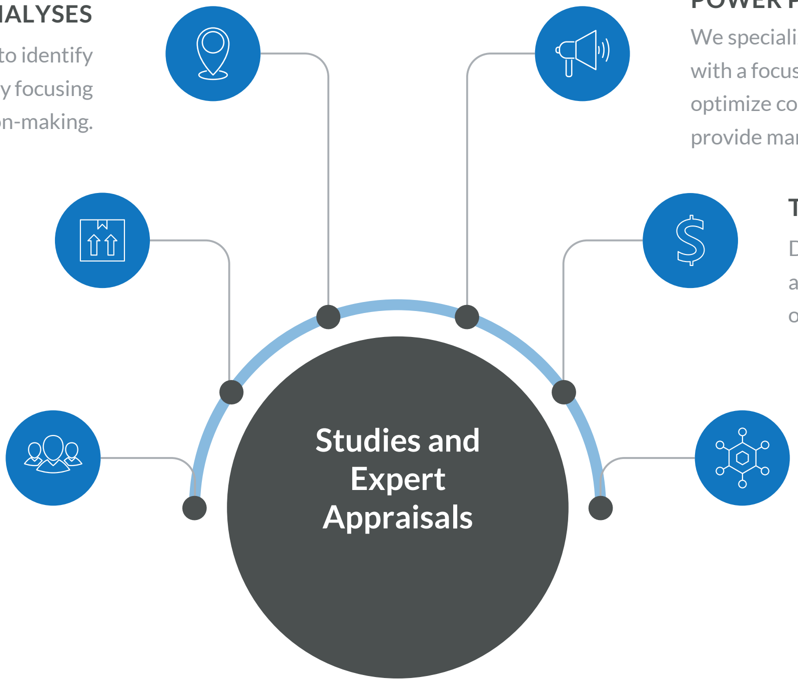
Comprehensive insights and research to identify market trends and opportunities, particularly focusing on CTBCM, to support informed decision-making.

FEASIBILITY STUDIES

Rigorous assessments of project viability, considering technical, economic, and logistical aspects to determine potential success.

POWER PURCHASE AGREEMENTS PPA ADVISORY SERVICES

A comprehensive range of Power Purchase Agreement (PPA/EPA) advisory services tailored to meet diverse client needs.



POWER PLANTS TARIFF STUDIES

We specialize in comprehensive tariff studies for power plants, with a focus on integrating renewable energy sources to optimize cost-efficiency, ensure regulatory compliance, and provide market-driven insights for informed decision-making.

TECHNO-ECONOMIC ANALYSES

Detailed evaluations of the technical and economic aspects of projects, providing a holistic understanding of their feasibility and profitability

ELECTRIC GRID, TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE DESIGN

Comprehensive planning, design, and engineering of electric grid systems, including high-voltage transmission lines, substations, and robust distribution networks, to ensure efficient and reliable power delivery to end-users.

ABOUT US

At Arzachel, we are passionate team of experienced industry professionals with the vision to provide top-notch consultancy services to various industries. Our team has a diverse range of project experience in the power sector, having worked with top organizations such as NTDC, KE, WAPDA, DISCOs, SEC, DEWA, etc. We have also undertaken a number of industry and renewable energy projects. Our team of experts bring a wealth of knowledge and hands-on experience in the fields of power generation, transmission and distribution, renewable energy, project management, and energy market services. We are committed to provide innovative and effective solutions to our clients' most complex challenges, while maintaining the highest standards of quality and professionalism. With a proven track record of successful project delivery, we strive to exceed our clients' expectations and deliver value that makes a difference.

Our company name, "Arzachel," is a tribute to the renowned astronomer and astrologer from the Islamic Golden Age, al-Zarqālī, whose Latinized name was "Arzachel." Our name reflects the symbol of expertise and ingenuity of our ancestors, who were known for their ability to provide insightful solutions in their field. At Arzachel, we strive to embody those same qualities in our work, providing innovative and effective solutions to our clients' most complex challenges. By drawing inspiration from the past and leveraging modern technologies, we aim to continue the legacy of excellence that our name represents.

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