75 YEARS OF PAKISTAN

STATE OF INDUSTRY REPORT

2022

STATE OF INDUSTRY REPORT 2022

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

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FOREWORD

Electricity sector is the backbone of the economy of every country and plays a key role in channeling the country's progress towards the long-term sustainable development pathway. The challenge to achieve and maintain the desired economic growth of the country can only be tackled by providing reliable, sustainable, and affordable electric power services to all sectors of economy. Enhancing the share of electricity based on indigenous energy supplies is crucial to ensure energy security, self-reliance, affordability, sustainability and reduction in dependency on the imported fuel based generation. Additionally, sustainable development of the country also requires an increased share of clean and renewable energy resources to ensure environmental sustainability, enhance adaptability and mitigate carbon emissions to curb climate changes whose menace is quite evident in the country. Furthermore, the transformation, digitization and technological revolution in different sectors of the economy requires realigning the power planning and embracing innovations.

Keeping in view the challenges of supply-demand deficits, fuel supply planning, sourcing and management, pricing mechanisms of primary energy supplies, least cost procurements, optimizing the contractual arrangements, ensuring adequate efficiency in the power market, and environmental sustainability, it is essential for the power planning of the country to be carried out in a more integrated manner, with short, medium, and long term implementation plans and targets. The creditability, predictability, and applicability of integrated system planning is important for a plausible policy and planning instruments, which is not possible unless the framework used for its formulating is based on reliable data set.

National Electric Power Regulatory Authority (NEPRA), was established under the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (Act), amended from time to time, to act as an exclusively empowered as independent regulator to regulate the provision of the electric power services in the country. NEPRA performs its regulatory functions and discharges its duties by exercising powers as conferred under the Act. Since its establishment, NEPRA has been making efforts to bring transformation, innovation and improvements in all the segments of the electric power services. To this effect, NEPRA is making all efforts to bring competition and transparency in the electric power services, and has been endeavoring to strike a balance, remain impartial and protect the interests of the consumers and the providers of the electric power services. While performing its functions and powers, the Authority ensures prudency, efficiency, optimization, better pricing and better planning practices in the electric power services.

As required under the Section 42 of the Act, NEPRA prepares and publishes the State of Industry Report (SIR) and submits it for the consideration of the Federal Government and Council of Common Interest (CCI) annually. The SIR provides for the year long data and information relating to the performance of different segments of the electric power services i.e. generation, transmission, distribution and supply. It also highlights key challenges being faced, strengths and weaknesses, inefficiencies and gaps in the system and submits recommendations for improvements for the consideration of the Federal Government and

CCI. The consolidated data as included in the SIR provides basis for improved decision-making, help in better policy making and devising implementation frameworks to address various challenges of the sector and creating an enabling environment to better align the sector.

The current SIR-2022 presents the performance of generation, transmission, distribution and supplier segments of the power sector during the FY 2021-22. The report comprises of three sections, the section one provides an overview of the performance of the electricity sector during the Financial Year (FY) 2021-22, monitoring parameters, key initiatives by NEPRA and the stakeholders and the key challenges that were faced in the generation, transmission, distribution and supplier segments of the power sector. It highlights those important issues that resulted in inefficiencies, mismanagement, underutilizations of available resources, losses and ineptness in making desired improvements, weaknesses in maintaining the liquidity in the power sector, deficiencies in the supply chain management of fuel for operationalizing and optimizing the utilization of thermal power plants and factors that contributed towards operational deficiencies at various segments of the electric power services. The report also contains set of recommendations which can help the policy makers in curbing the issues, bringing efficiencies and optimization in all the segments of the electricity sector.

The section two of the report comprises of the statistical data that provides comprehensive and useful information for the last five years pertaining to the operational matters of the electric power generation, transmission and distribution systems. The data includes technology-wise electric power generation capacity, actual generation, daily, seasonal and annual generation variations, utilization, fuel consumption, resource-wise generation tariffs, daily load management, transmission network performance, delivery and constraints, distribution network efficiencies, constraints, consumer services and delivery. The data as provided in the report is likely to become a source of information for the researchers and the policy-makers.

To facilitate the academia/researchers, decision-makers and developers, NEPRA has compiled the last five years' data related to power plant-wise daily, monthly and annual available capacity, generation, and utilization as provided by the System Operator, monthly fuel price adjustments request of Central Power Purchasing Agency Guarantee Limited (CPPA-G), and K-Electric (KE), Economic Merit Order (EMO) list and has made it available online. The same can be downloaded from NEPRA website. This initiative has been taken for the first time, with expectations that the researchers and planners will be able to utilize this data for their research, analyses and recommendations for improvements in the system operations in the short as well as long run.

The State of Industry Report 2022 has been published for submission to the Council of Common Interests and to the Federal Government pursuant to Section 42 of the NEPRA Act. The compilation of this Report has only been possible due to the timely provision of data by all NEPRA Licensees whose cooperation deserves due acknowledgement. NEPRA is especially thankful to the Ministry of Energy (Power Division), KE, CPPA-G, Hydrocarbon Development Institute of Pakistan (HDIP), National Transmission and Despatch Company Limited (NTDC), Distribution Companies (DISCOs), Water and Power Development Authority (WAPDA), Independent Power Producers (IPPs), Private Power and Infrastructure Board (PPIB), Alternative Energy Development Board (AEDB), National Energy Efficiency & Conservation Authority (NEECA), Pakhtunkhwa Energy Development Organization (PEDO), Punjab Power Development Board (PPDB), Energy Department (Government of Balochistan) and Energy Department (Government of Sindh) for their valuable inputs.

It is clarified that this SIR-2022 presents the data received from the Licensees and other stakeholders up to 30th June, 2022. Due to the paucity of time some data has been provided as provisional and may be subject to corrections subsequently. Further, this SIR-2022 shall not be construed or liable for any legal claims/disputes/proceedings at any forum.

01

EXECUTIVE SUMMARY

The State of Industry Report 2022 (SIR-2022) captures and presents the status and performance of various segments of the electric power sector i.e. generation, transmission, distribution and supply, during the FY 2021-22. The SIR-2022 provides a snapshot of developments, and delivery of sectoral players, identifies weaknesses of the sector, and suggests improvements in each segment of the electric power services. The SIR-2022 has highlighted various challenges that were faced during the FY 2021-22. Some of the issues were the same as highlighted in SIR-2021, continued to have an impact on the power sector, while a few more new challenges surfaced during the FY 2021-22, which added to the woes of the power sector. As discussed in the succeeding chapters, all these issues contributed towards increase in the cost of electricity adversely affecting the affordability of the end-consumers.

Supplying affordable and reliable electricity to the end-consumers is to be treated as a priority for sustainable development, economic uplift, and poverty alleviation. This, in return, creates an environment of growth in electricity demand per capita; which is linked with the GDP growth of the country. According to the data submitted by DISCOs and KE, Pakistan's per capita annual electricity consumption of 644 kWh, is among the lowest in the world, which is only 18% of the world average, 7% of the developed countries' average, and 12% of that of China. Per capita electricity consumption is considered as one of the key parameters, reflecting the living standards of the people in a country. This indicates that there is a lot of room for improving the living standards of the people and running the wheel of the economy to ensure sustainable growth.

Climate Change is a reality all across the globe and Pakistan is termed as one of the most vulnerable countries to its impacts. The impacts of climate change include weather shifts, an increase in temperature, heat waves, alteration in precipitation patterns, precipitation intensity, occurrence, and seasonal variations, and the resultant impact on the hydrology, affecting the power sector twofold i.e. increase in the electricity demand particularly for cooling, and reduction in electricity generation from hydropower. Due to this, the reliance on expensive fossil fuel-based power generation was increased during FY 2021-22. There is a dire need to take climate change mitigation into account for future power system integrated planning and management.

Given the situation, it is of paramount importance that the development of the power sector must follow an integrated, harmonized, and a holistic planning approach. A robust planning process, based on a scientific methodology, needs to be in place for the network expansion, improvement, and delivery. It is imperative that all stakeholders of the power sector must realign their business models for the improvement and better utility services to the end-consumers. They should embrace the innovation in policies, technology, and financial models to transform the electricity sector into a better performing and sustainably growing sector of the economy.

This SIR-2022 is divided into three sections; Section 1 is the analysis part, which comprises of 08 Chapters. Chapter 2 presents an overview of the electric power sector as a whole. It provides overview of present status of the electric power sector including the capacity of the power sector to generate, transmit, distribute and supply electric power to the end-consumers. It captures the capabilities of the power sector and highlights key issues that were faced in each segment of the electric power services during the FY 2021-22 and adversely affected the performance of the power sector and provides recommendations for improvements.

Chapter 3 highlights the performance of the generation segment of electric power services during FY 2021-22. It provides information about the installed and dependable generation capacities, new capacity additions and expired generation capacity and total electricity generation in the country.

Chapter 4 provides the performance of the transmission sector, status of expansion and improvements, addition of new sectoral players like provincial grid companies, utilization and loading position of the transmission assets, details of transmission and transformation losses, a summary of investments made by the transmission network operators and their performance in complying with the performance standards and ensuring system reliability, security, and stability.

Chapter 5 focuses on performance of the distribution sector. It provides information related to the infrastructure of the DISCOs i.e. transmission lines, grid stations, power transformers, 11 kV feeders, and distribution transformers. It also provides detailed information about the number of consumers of various categories in each of the DISCOs, the sales growth of the DISCOs, position of transmission and distribution losses, recovery of bills from the consumers, details of receivables of the DISCOs, loading position of their networks, progress made in awarding connections, number of fatal accidents happened in the DISCOs, status of Time-of-Use (TOU) meters and performance of DISCOs in making investments against the allowed investments to improve the delivery and comply with the targets of the Authority.

Chapter 6 provides vital information about the monitoring and enforcement activities undertaken during the FY 2021-22 by the Authority to ensure that the licensees of NEPRA comply with the performance parameters as given in the applicable documents. Since NEPRA is following a 'zero tolerance policy against fatal incidents, an account is provided about the actions taken against various entities where fatal incidents have occurred, and compensation provided to the families of those who lost their lives due to the negligence of the licensees. Highlights are also given about the actions taken by NEPRA against those licensees who did not comply with the applicable documents. It also gives a brief about the annual performance reports of the transmission and DISCOs and the status of pending applications for new connections.

Chapter 7 gives a detailed account with regards to major regulatory activities being undertaken during the FY 2021-22. It provides details regarding developments in the wholesale electricity market i.e. Competitive Trading Bilateral Contract Market (CTBCM), notification of a new set of regulations according to the NEPRA Act, progress in grant of licenses for generation, transmission, and distribution, modification of licenses, and cancellation, the status of net metering licenses, tariff determinations, modifications, Commercial Operation Date (COD) adjustments, monthly, quarterly, and annual adjustments. An account is also provided about the processing and managing the consumer complaints to reach an amicable resolution. The developments made at the NEPRA Appellate Board to hear the appeals received in NEPRA against the decisions of the provincial offices of inspection are also provided herein. Further, it also gives an account of initiatives related to health, safety, and the environment and efforts made by the licensees at the front of corporate social responsibilities. It also provides details of various developments being made to ensure better services to the end-consumers.

Chapter 8 provides a brief snapshot of various initiatives taken by the key stakeholders of the power sector during FY 2021-22 including the Federal entities like the PPIB, AEDB, National Energy Efficiency Conservation Authority (NEECA) and Provincial entities including PPDB, PEDO, Energy Department (Government of Sindh) and Energy Department (Government of Balochistan). It provides for their achievements and activities in delivering their roles and responsibilities as per their mandates.

Section 2 of the SIR-2022 includes statistical data about the energy and electricity sector. The data comprise more than 100 tables. It has endeavored that the data with its source shall be provided to the key decision-makers, researchers, and developers for better analyses, informed decision-making, and eventual improvements in the policy-making, development, performance, and execution.

Section 3 of the SIR-2022 comprises the web-based data related to plant-wise daily, monthly and annual available capacity, generation and utilization as provided by the System Operator, monthly fuel price adjustment requests of CPPA-G and KE, and the EMO list.

The SIR-2022 is submitted herewith according to Section 42 of the NEPRA Act.

02 OVERVIEW OF THE ELECTRIC POWER SECTOR

The provision of affordable and reliable electricity is required for a sustainable economic growth of the country and it is essential to meet the basic needs of people belonging to all walks of life. The electric power sector of Pakistan is yet to attain this maturation. Keeping in view the available generation mix in the power system of Pakistan coupled with under-utilization of the 'Take or Pay' power generation capacity, the high cost of electricity is the biggest challenge, which is negatively impacting the sustainable development of the country as a whole and social life of low-income groups specifically. While the power sector continued to face most of the issues relating to the generation, transmission, and distribution and supply segments highlighted in the previous SIRs, drastic devaluation of the Pak Rupee against the US dollar, increase in prices of imported fuel, fuel supply management issues, global geopolitical issues, etc. further aggravated the high cost of electricity during FY 2021-22.

The challenges being faced by the power sector of the country are required to be handled through an integrated, holistic, harmonized market-based approach that would entail managing the primary fuel supplies, bringing affordable, clean, and green electricity into the system to promote competition, energy independence and improving efficiencies in every segment of the electric power services. To bring improvements in the generation segment, the power sector planning needs to take into account the immediate retiring of inefficient power plants in the public i.e. Generation Companies (GENCOs), Hydro-Electric (Hydel) and private domain, recommending the optimal solution to replace those plants, minimizing dependence on imported fuels, increasing the portfolio of indigenous resource based generation for energy security.

System operations is a very sophisticated subject. The System Operator cannot optimally operate the system unless the latest Supervisory Control and Data Acquisition (SCADA) based on Human-Machine Interface (HMI) technology is fully implemented. Furthermore, the constraints in the transmission network are bottlenecks in operating the generation mix according to the EMO. The National Grid Company (NGC) is required to remove the transmission system constraints, which translate into a huge financial loss for consumers. Also, it is required that Transmission System Expansion Plan (TSEP) must be integrated with Indicative Generation Capacity Expansion Plan (IGCEP) to implement an integrated expansion plan which is purely based on a least-cost basis. The inefficient and costlier thermal power plants of GENCOs need to be replaced. At the same time, the old highly expensive generation power plants of KE also need to be substituted with efficient power plants. KE is also required to look into the option of inducting renewable energy into its energy mix to reduce the cost of generation. On the distribution end, the DISCOs need to improve performance in every aspect including but not limited to T&D losses, recoveries, demand forecast, drawing allocated quota, eliminating AT&C loss based load shedding, provision of timely connections, improving governance, customer facilitation, etc.

Commercial operations of the electric power sector carry utmost significance to bring efficiencies and discipline to the power sector. Under the Commercial Code, CPPA-G was supposed to prepare Standard Operating Procedures (SOPs) for all commercial transactions. However, to date, the SOPs have not been in place to implement. CPPA-G constituted the committee that decided on payment to the licensees keeping in view the debt servicing liability and fuel requirement for the plants. CPPA-G needs to prepare detailed payment SOPs that are tailor-made according to Pakistan's power market scenario and for transparency.

Since the electricity mix of Pakistan is thermal fuel dominant, management of the supply chain of primary fuels is vital to ensure that the efficient and cheap power generation capacity shall remain available to suffice the electricity demand. The power sector faced a shortage of RLNG during most part of the year which compelled generation from expensive power plants. During the period of FY 2021-22, due to the unavailability of the RLNG, comparatively inefficient power plants have been operated having a financial impact of Rs. 19,332 million. This issue can be resolved by better Supply Chain Management of RLNG including enhancement of gas transmission and distribution infrastructure, development of storage facility for RLNG, and implementation of hybrid GSA models to optimize the utilization of RLNG.

The performance of DISCOs to serve their consumers while operating within the terms and conditions as given by NEPRA is a prime factor that has a considerable impact on the consumer-end tariff. As per the current tariff mechanism for the end-consumers, a uniform tariff is levied on all the consumers of the DISCOs irrespective of their performance, delivery, and efficiency. By not passing on differential tariffs to the non-performing DISCOs, the burden of cross-subsidies on the consumers of efficient DISCOs and subsidies on the Government has been increasing. Built-in incentive/ penalization with performance needs to be implemented to push the DISCOs to overcome their operational inefficiencies.

Existing dynamics of the power sector require that immediate actions should be taken in all the segments of the electric power services to transform the power sector into a sustainably growing and serving the consumers to their utmost satisfaction. The necessary steps are required to bring down the cost of electricity, improve the governance, address the challenges and ensure access to electricity at the doorstep of every citizen of the country.

The succeeding paragraphs give an overview of the performance of the generation, transmission, and distribution sectors during FY 2021-22 along with the challenges and remedial measures to be taken for improvement of the situation.

2.1 POWER GENERATION CAPACITY AND GENERATION THEREFROM

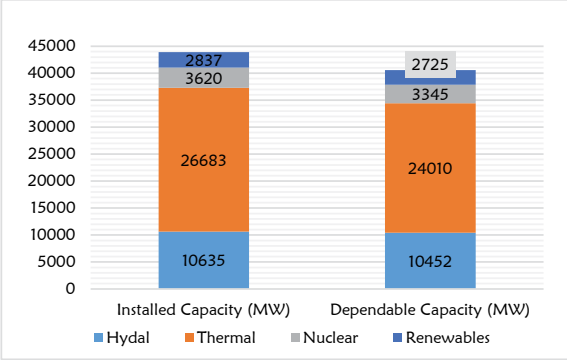
The installed electric power generation capacity of Pakistan as of 30-06-2022 remained 43,775 MW which includes 40,813 MW in CPPA-G System and 2,962 MW in KE System. Similarly, the dependable capacity of Pakistan as of 30-06-2022 remained 40,532 MW which included 37,858 MW in CPPA-G System and 2,674 MW in KE System.

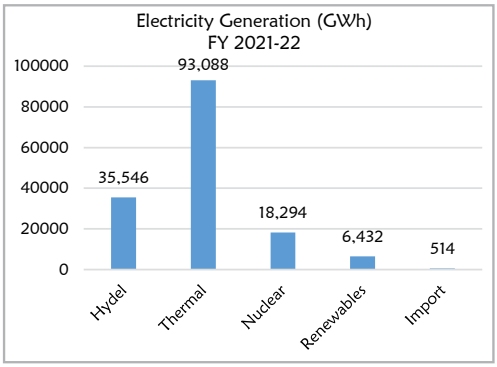
During the FY 2021-22, 4,498 MW generation capacity has been added to the CPPA-G system which includes 1,263 MW Trimmu RLNG Power Project which is under testing, 1,145 MW KANUPP-III Nuclear Power Project, 720 MW Karot Hydropower Project, 660 MW Coal-Based Power Project of Lucky Electric, Twelve (12) Wind Power Projects with an accumulated capacity of 600 MW and a 100 MW Solar Power Project of Zhenfa Power. During the year, Licenses of 150 MW GENCO-IV, 97 MW Reshma Power, 84 MW Gulf Powergen, 117 MW Southern Electric, 120 MW Japan Power, 31 MW Altern Energy and 137 MW KANUPP have expired.

During FY 2021-22, total electricity generation in the country, including KE System remained 153,874.20 GWh. This generation translates into 43% utilization factor of dependable capacity meaning thereby 57% of the 'Take or Pay' based power generation capacity remained unutilized. The total electric

power generation in CPPA-G System and KE System remained 143,108.69 GWh and 10,765.51 GWh respectively.

The detailed break-up of installed, dependable capacity in terms of MW as of 30-06-2022 in the CPPA-G and KE system as well as electric power generation during the FY 2021-22 is as follows:





2.2 ISSUES IN THE GENERATION SECTOR

NEPRA in its earlier State of Industry Reports has been highlighting the issues in the generation sector such as assessment of generation capacity needs with best estimates, balanced energy mix, induction of generation capacity in phases, optimum utilization of available generation capacity, strict compliance of EMO, Annual Dependable Capacity (ADC) test, implementation of SCADA system, scheduled and forced outages, peaking load power plants, two baskets of KE and CPPA-G, operation of combined cycle power plants in open cycle mode, induction of renewable energy which becomes more important keeping in view the fuel prices, issues with hydel power generation like seasonal variations, availability of RLNG, availability of required gas pressure, Liquidated Damages, non-payment to generation companies, etc. Most of the issues persist during the FY 2021-22.

It has been observed that for the period FY 2021-22, no significant improvements could be seen in respect of the issues that were highlighted by NEPRA during its past SIRs. The noteworthy issues that are hampering the performance of the generation segment of the electric power services are discussed hereunder:

2.2.1 Plant Operation in violation of Economic Merit Order:

During FY 2021-22 as well the operation of various power plants in violation of Merit Order has been witnessed. The main reason for out of merit operations of power plants was non-utilization or underutilization of efficient power plants either due to non-availability of fuel i.e. RLNG or transmission and/or distribution constraints. The financial impact on these accounts are as under:

(i) Due to RLNG shortage expensive plants were operated which have impact of Rs. 19,332 million.
(ii) Due to System constraints, financial impact is Rs. 3,670 million.
(iii) Due to underutilization/non-utilization of efficient power plants, the financial impact is Rs. 260 million.

The out of merit plants operation is an old issue, which the Authority has been highlighting for many years for improvement. In order to assess the performance of the System Operator and the financial impact of out of merit plant operation during the period FY 2018 to FY 2020, a contract has been awarded to a third-party consortium to carry out a comprehensive study and present its findings and recommendations for Authority's consideration. Further, in order to check the out of merit operations on daily basis, the Authority has directed National Power Control Centre (NPCC) and CPPA-G as under:

(i) In case of dispatch of generation plant(s) out of merit order, for reasons whatsoever, System Operator shall report the same to CPPA-G within 24 hours with its copy to NEPRA along with the reasons of such dispatch order.

(ii) The CPPA-G, being the agent of DISCOs to procure electricity on their behalf, to scrutinize the NPCC's dispatch report in terms of Schedule Dispatch Code (SDC) of Grid Code and prepare a report comprising of all dispatch order deviation from merit order, the plants available but not dispatched, and dispatch deviation justified/unjustified in terms of SDC of Grid Code along with their financial impact.

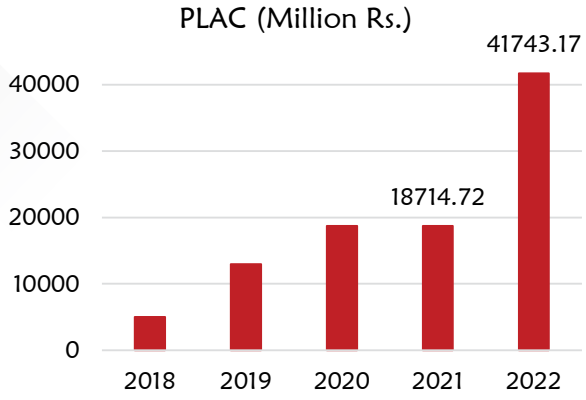
(iii) CPPA-G was also directed to share the report with the System Operator and also submit it to NEPRA at the time of filing of monthly fuel price adjustment request.

Unfortunately, both CPPA-G and NPCC have lagged in complying with the directions of the Authority in letter and spirit for which the Authority has initiated legal proceedings against these entities under Section 48 of the Act.

The CPPA-G has previously been directed to undertake strict technical and financial audit while procuring the electricity on behalf of DISCOs. However, improvements in this regard have not yet been seen during the FY 2021-22. Violation of EMO by the System Operator is still happening. CPPA-G needs to be more vigilant and heedful, carrying no-tolerance policy against the violations of the EMO, critically scrutinize the dispatch order reports of SO, recording reasons of violation of EMO, determining its financial impacts and reporting the same to the Authority along with the fuel price adjustment application. Despite directing CPPA-G to conclude various matters related to Liquidity Damages (LDs) on WAPDA and GENCOs; the matters are still unresolved. CPPA-G also could not settle the claims raised against Sui Northern Gas Pipelines Limited (SNGPL) under the provisions of 'Reimbursement Agreement' due to 'Non-Supply Events' in respect of three RLNG based power plants. Further, despite repeated directions to CPPA-G by NEPRA, the ADC Tests in case of several power plants have not been carried out which is necessary to establish the accurate dependable capacity of the power plant to make capacity payments accordingly. In order to improve the working of CPPA-G, the Authority has been undertaking operational audits, which has resulted in managing different operational deficiencies and issues. The Authority is already undertaking a comprehensive study of system operations of NPCC for past years and is going to undertake the same for CPPA-G.

2.2.2 Operating Power Plants at Lower Efficiencies and Payment of Part Load Adjustment Charges:

The operation of the Thermal Power Plants on part load results in a loss of efficiency of the power plants and thus higher fuel price charges for end-consumers. Under Power Purchase Agreement (PPA), the power plants are usually allowed to claim Part Load Adjustment Charges (PLAC) when they are operated on part load by the System Operator. Like previous years, during FY 2021-22 also it is noted that the most efficient RLNG based power plants in CPPA-G System (above 61% and 51% efficiency) were also operated on part load despite having demand in the system. During the year, an amount of Rs. 41.7 billion accrued on account of PLAC. With better planning, specifically with better management of AT&C losses-based load shedding in the country, this undesirable expense could have been minimized, if not fully eliminated.



S. No.	Power Plant	Capacity (MW)	Net Efficiency (%)	Utilization Factor (%)	PLAC (Rs. Million)
1	QATPL	1231	61.62	67.11	8,291
2	HBS	1277	61.47	87.74	8,353
3	Balloki	1276	60.27	81.45	8,306
4	Orient Power	225	51.20	59.37	1,191
5	Saif Power	225	51.20	41.45	1,209
6	Sapphire Electric	235	51.20	43.19	1,256
7	Halmore Power	225	51.18	41.94	1,031
				Total	**29,637**

Note: The availability factor of gas based power plants around the globe is above 92%.
Source: CPPA-G/NEPRA

2.2.3 Operation of Combined Cycle Power Plants in Open Cycle:

The operation of Combined Cycle Power Plants (CCPP) in open cycle mode affects the consumer-end tariff adversely. Generally, the tariff of CCPP while operating in the open cycle is 1.5 times higher. During FY 2021-22 as well, it is noted that the dedicated cheap price local gas based CCPP Guddu was either not operated or operated in open cycle mode. Besides the old power plants of Guddu, the newly commissioned Guddu 747 MW Power Plant during FY 2021-22 was operated with only one Gas Turbine. The loss of generation due to the operation of CCPP Guddu in the open cycle had to be met by operating the costliest power plants. On the basis of marginal fuel prices, the financial loss due to the non-availability of units at TPS Guddu (old & 747 MW) was calculated as more than Rs. 55 billion during FY 2021-22. The operational performance of the Guddu Power Plant is extremely poor for the last many years continuously affecting the power sector and the electricity consumers negatively. The Authority has already initiated proceedings against the licensee.

2.2.4 Supply of Low Pressure Gas to K-Electric:

For the last many years, the relatively efficient power plants of KE at Korangi and SITE are being operated at a lesser capacity, reportedly due to either non-availability of gas or the low pressure of gas supplied by Sui Southern Gas Company Limited (SSGC). On occasions, due to low pressure, the available gas is burnt in the boiler which is nothing but burning of precious gas to its much lower value. This not only results in loss of generation from relatively efficient power plants but also causes loss due to inappropriate burning of precious primary energy sources.

2.2.5 Optimum Mix of 'Take or Pay' and 'Take and Pay' Contracts:

Most of the PPAs with base load thermal power plants are capacity based 'Take or Pay' contracts under which capacity payments are necessarily required to be paid against available generation capacity irrespective it was utilized or not. The 'Take or Pay' compulsion calls for maximum utilization of such

power plants to avoid unnecessary capacity payments which translate into a higher per unit cost of electricity for the end-consumer. The experience, however, shows that due to certain issues, controllable as well as uncontrollable, the maximum utilization of such plants has often remained unachievable which has caused a huge financial burden for the power sector and higher prices for consumers.

During FY 2021-22, the utilization factor of 30,303 MW base load 'Take or Pay' thermal power plants in the CPPA-G system remained at 46% only which means that consumers had to pay capacity charges for 54% unutilized capacity as well. The average per unit capacity payment for a few of the power plants during FY 2021-22 is given below:

S. No.	Power Plant	Dependable Capacity (MW)	Electricity Generation (GWh)	Capacity Payment (Rs. Million)	Per Unit Capacity Payment (Rs./kWh)	Utilization Factor (%)
1	Hub Power	1,200	1,343.33	25,441.27	18.94	12.78
2	GENCO-I	649	245.51	3,381.92	13.78	4.32
3	Rousch Power	395	495.9	4,607.02	9.29	14.33
4	Sahiwal Coal	1,243	6,882.11	55,710.15	8.09	63.20
5	Halmore Power	199	675.91	4,612.32	6.82	38.77
6	Saba Power	126	329.67	2,208.02	6.70	29.87

Source: CPPA-G/NEPRA

Further, the tariff of WAPDA hydel is dominantly capacity based, even for those power plants which have completed more than 30 years of commercial operation and all debt has been paid. In most cases, the hydrological risk of the hydropower plants is to be borne by the Power Purchaser. The utilization factor of WAPDA hydropower plants during FY 2021-22 remained at 39%. The lower utilization factor of hydropower plants requires to be supplemented through base-load power plants, which results in a higher cost of intermittency.

Similarly, like hydropower, the RE power plants as per their EPAs signed with the Power Purchaser also have must-run status having priority dispatch which means that the power purchaser is bound to off-take all available power generation otherwise it is liable to pay the power producer for all un-dispatched energy on account of Non-Project Missed Volume (NPMV) i.e. payment without procuring electricity. During FY 2021-22, the total capacity payments against 43,775 MW installed capacity remained around Rs. 721 billion while payment on account of NPMV during the same period remained Rs. 1.17 billion, whereas capacity payment during FY 2020-21 was Rs. 614 billion against 39,772 MW installed capacity and Rs. 3.939 billion against NPMV. The amounts of NPMV solely due to transmission or distribution system constraints shall be charged by CPPA-G to responsible transmission and/or DISCOs instead of passing on the amount to electricity consumers.

To reduce the burden of undesirable capacity payments in the future, there is a need to induct power plants on a 'Take and Pay' basis where the payments are only to be made against the energy delivered. Further, the tariff of WAPDA hydro and other old power plants which have completed PPA period of operation and needs to be converted on 'Take and Pay' i.e. on an energy-delivered basis. Renewable power plants may be treated as 'Must Run' power plants with priority dispatch.

2.2.6 Optimum Utilization of the Available Resources/Balanced Generation:

In a power sector having predominantly 'Take or Pay' based thermal power plants and 'Must Run' RE power plants, underutilization/non-utilization of available generation capacity is highly undesirable as it impacts the per unit cost of generation and consumer end price of electricity in many ways including capacity payment for un-utilized power generation capacity, payment on account of PLAC due to part load operation of the power plant, payment on account of NPMV for not off-taking the available electric power from RE power Plants and payment on account of energy purchases from costlier plants in cases where efficient power plants could not be operated due to transmission/distribution system constraints.

During FY 2021-22, a peak demand of 28,253 MW was witnessed in the system during the month of June 2022 while in the winter season, the peak demand of the country came down to 15,962 MW during the month of December, 2021. On the other hand, the installed capacity of the country with 'Take or Pay' and must run power plants is 40,813 MW. Higher installed capacity as compared to demand in the system is certainly increasing the consumer end tariff owing to 'Take or Pay' and 'Must Run' compulsions.

The induction of 'Take or Pay' power generation capacity considering the maximum demand in the system while the supply of electricity after load management on the basis of AT&C and other factors always burdens the power sector adversely. Therefore, the gap between the 'Take or Pay' available power generation capacity and demand in the system needs to be as minimum as possible. This can be done by devising a better policy towards the development of the supply side in consideration of effective demand side management including marketing and de-marketing policy in accordance with the surplus/deficient power generation capacity.

2.2.7 Procurement of Cheap 'Take and Pay' Power at DISCOs Level:

Distributed generation using RE sources provides Power Purchaser specifically DISCOs, an opportunity to purchase cheap power from such generators on a 'Take and Pay' basis. Such purchases can play an important role to control the electricity tariff in the country. The existing average cost of electricity for supplying electricity to end-consumers is around Rs. 26/kWh. One way of reducing this high cost is to procure cheap electricity from indigenous resources like wind, solar, bagasse, micro-mini hydro, etc. preferably at the 11 kV level. With this, the share of cheap electricity can be increased as well as the impact of T&D losses will be minimized, which would result in reducing the cost of electricity. For example, the crushing season for sugar cane starts in November every year and ends in April. The sugar industry has installed bagasse-based generation plants to meet their electricity needs. These plants are available at an 11 kV network, near the load centers generally with surplus capacity during crushing season. The DISCOs can procure the spillover electricity from the sugar industry at cheaper rates on a 'Take and Pay' basis.

However, due to the non-commercial approach of DISCOs, reasons best known to them, neither they are inclined to look and/or offer for distributed generation projects nor they are willing to procure electricity from distributed generation projects in their area. The worst example of averting the purchase of cheaper power is the reluctance of a DISCO for the past two years to procure electricity from cheap bagasse-based power plants in its area that too on the lowest rate of Rs. 7.53/kWh. At least six sugar mills have been approaching DISCO for the last two years to supply surplus electricity. However, for reasons not carrying merit, DISCO is refusing to buy such electricity while at the same time CPPA-G is purchasing equivalent electricity units on the basis of the marginal cost of fuel as high as Rs. 30/kWh. This attitude of DISCO has so far caused a loss of billion to the power sector of Pakistan. The accumulated loss for non-purchase of electricity from Sugar Mills for FY 2020-21 and FY 2021-22 is roughly to the tune of Rs. 1.8 billion.

Similar is the case with another DISCO which, for their own reasons, prima facie, caused a delay in the commissioning of two solar power plants of Access Electric and Access Solar with an installed capacity of 10 MW and 11 MW respectively. Delay in commissioning of cheap indigenous fuel power plants is affecting the power sector adversely. The Authority has already initiated proceedings against these DISCOs. Instead of avoiding initiatives, the power purchasers including CPPA-G and DISCOs need to motivate investors to install cheaper power plants on a 'Take and Pay' basis to have cheaper power in their basket.

2.2.8 Liquidated Damages:

The PPAs signed between CPPA-G and IPPs provide for the imposition of LDs by CPPA-G on IPPs for

non-compliance with the provisions of contractual arrangements including delay in COD and non-availability of power plants during the operational phase.

2.2.9 Liquidated Damages on Account of Delay in Achieving Commercial Operation Date:

Delay in COD of new power plants, having better efficiency or lower cost of electricity generation, adversely affects the electricity consumers as in their absence, costlier electricity from less efficient plants needs to be purchased. For instance, the tentative EPP of electricity from 330 MW Thar Energy and 330 MW Thal Nova may be Rs. 8/kWh or less. However, due to the delay in CODs of these projects, expensive electricity at rates as high as Rs. 30 to 40/kWh had to be purchased. Further, the delay in the commissioning of these projects is also causing underutilization of the ±660 kV HVDC transmission line which also has an adverse financial impact. Similar is the case of delay in commissioning of RLNG power plants, with efficiency above 60% at Jhang.

For delay in COD, the power producer is liable to pay LDs. However, the amount of LDs is much lesser than the loss incurred due to the purchase of costlier energy caused by the delay in the commissioning of new efficient power plants. Therefore, it is necessary to rationalize the LD amount for future projects and it may be linked with the marginal cost of the costliest energy purchased by power purchasers due to delay in the COD of a new power plant.

2.2.10 Liquidated Damages on Account of Non-Availability of the Power Plant during the Operational Phase:

CPPA-G imposed LDs on some IPPs for non-availability of their plants. However, the IPPs challenged CPPA-G's claim on the basis that their plants were unable to dispatch only due to the non-availability of fuel which was caused by the non-payment of their dues by CPPA-G. It is noted that in most of the cases, CPPA-G could not defend its position and had to settle the dispute by compromising its claim on LDs as well as capacity payments through side agreements/MoUs. Details of allowed FME by power purchaser during last 10 years is given hereunder:

Company Name	Force Majeure Events (FME) Allowed			Brief Description
	Days	From	To	
Narowal Energy	68	22-04-2021	29-06-2021	Fuel shortage period has been considered as Other Force Majeure Event.
Nishat Chunian	75	20-07-2021	04-10-2021	
Nishat Power	68	08-06-2021	16-08-2021	
Atlas Power	95	18-12-2021	22-03-2022	
KAPCO	485	27-06-2021	24-10-2022	
Lalpir Power	248	26-03-2021	28-11-2021	
Pakgen Power	156	04-05-2021	07-10-2021	
Rousch Pakistan	86	11-12-2012	10-05-2013	Force Majeure occurred due to Non Supply Gas Events.
	26	31-12-2016	29-01-2017	
	37	04-07-2017	29-12-2017	
	85	06-12-2018	28-02-2019	
	55	01-01-2020	25-02-2020	
	112	07-07-2021	27-10-2021	As per PPA Amendment Agreement signed between parties, Force Majeure occurred due to Non-Supply Gas Events.
TNB Liberty	376	09-09-2020	20-09-2022	
Saif Power	43	30-04-2021	11-06-2021	
Orient Power	209	24-05-2021	18-12-2021	
Sapphire Electric	53	05-10-2021	26-11-2021	
Halmore Power	243	25-06-2021	22-02-2022	
Uch-II Power	62	13-11-2013	08-01-2014	

Source: CPPA-G

Further, during the last four years, the amount claimed by CPPA-G on account of LDs and its payment by some power producers is given below:

LD Claims and Recovered (Rs. in Million)

S. No.	Power Plant	FY 2017-18		FY 2018-19		FY 2019-20		FY 2020-21	
		Claim	Recovery	Claim	Recovery	Claim	Recovery	Claim	Recovery
1	Lalpir Power	0.64	0.36	0.23	0.16	23.05	0.21	-	-
2	Pakgen Power	0.41	0.34	0.31	0.17	27.71	0.23	-	-
3	Saba Power	28.94	28.94	1.59	1.59	233.20	233.20	120.45	0.00
4	KAPCO	0.54	0.54	-	-	-	-	-	-
5	KEL	54.92	54.92	0.16	0.16	0.03	0.03	0.05	0.05
6	GENCO-I	213.75	-	550.41	1.24	108.98	0.32	3.31	-
7	Fauji Kabir Wala	118.36	0.37	782.29	-	683.49	-	-	-

Source: CPPA-G

Raising claims of LDs by CPPA-G without fulfilling its legal obligations is further burdening the power sector in the shape of litigation fees and allied expenses, increase in risk cost of the business in the country, etc.

It is understood that CPPA-G itself does not generate revenue but its receipts come from DISCOs and KE against the sale of electricity as well as payments of subsidies by the Government. Therefore, CPPA-G needs to execute commercial contracts with all entities including DISCOs, KE, and the Government for payment of their dues in time enabling it to fulfill its payment obligations towards the transmission and generation companies. In case of delay in payment to CPPA-G, the responsible entities must be liable to pay penalties/financial charges to CPPA-G to meet its liabilities towards generation and transmission companies under the contract instead of passing on the impact of such liabilities to the consumers. To create financial discipline, commercial contracts shall be made and the cost of inefficiency shall be borne by the respective inefficient entity rather than passing it on to electricity consumers for none of their faults.

2.2.11 Loss due to Delay in Commissioning of New Projects:

(i) Bin-Qasim Power Station-III:

KE was allowed to construct 900 MW RLNG based power plant Bin Qasim Power Station-III (BQPS-III) at efficiency of 59.23% with the following timelines for commissioning of the Project:

Unit	Simple Cycle	Combined Cycle
Unit-I	July, 2018	July, 2019
Unit-2	April, 2019	December, 2019

Source: NEPRA

Accordingly, investment was allowed to KE through its tariff determination. The allowed efficiency i.e. 59.23% of the referred plant is highest amongst the power plants available in the KE power generation fleet. Unfortunately, this plant has not yet achieved COD. Had this plant achieved the COD, it would have replaced the generation from costliest RFO based BQPS-I, Tapal Energy, Gul Ahmed and other costlier power plants in the KE system. Due to delay in COD of BQPS-III, the power sector of Pakistan and electric consumers are suffering badly. The estimated financial loss due to delayed commissioning is estimated in billions of rupees.

(ii) Thar Energy and Thal Nova:

Thar Energy Limited and Thal Nova opted for unconditional upfront Thar Coal tariff for their coal power plants each having 330 MW installed capacity at Sindh. Applications of both companies were approved by the Authority on October 18, 2016. Vide the referred approval, the construction period for

the power plants was stipulated as 40 months. However, these power plant could not achieve COD till the period of this report i.e. 30-06-2022. Since these projects are based on indigenous coal i.e. at mine mouth of Thar; therefore, the EPP from these projects could have been Rs. 8/kWh or lower. However, due to delayed in commissioning of these projects, Pakistan power sector and the electricity consumers are pushed to purchase electricity from much costlier plants with EPP in the range of Rs. 30/kWh or above. Further, their timely completion could have saved foreign exchange spent on importing RFO/ RLNG/HSD fuels.

(iii) Punjab Thermal Power (Pvt.) Limited:

Punjab Thermal Power (Pvt.) Limited filed tariff petition to set up a 1,263.20 MW RLNG based combined cycle power plant at District Jhang having efficiency above 61%. The Authority determined its tariff on 26-12-2017. The construction period of this power plant was 26 months while provision of bonus was also given in case of early commissioning. The very purpose for setting up the efficient RLNG based power plants was to replace the costlier and comparatively in-efficient power plants. Unfortunately, the COD of this power plant is delayed and till the period of this report i.e. 30-06-2022 this plant could not achieve COD and due this delay, during the FY 2021-22, costlier plants had to be operated for power generation which affected the power sector and electricity consumers adversely. Timely commissioning of this project could have saved billions of rupees of consumers which they paid to purchase costly electricity.

(iv) Karot Power Company Limited:

The EPC stage tariff for 720 MW Hydropower project of Karot Power Company Limited (KPCL) was issued on 24-02-2016. The construction period of the project, as given in the tariff determination, was 05 years. However, the project could not achieve COD till 30-06-2022. Delay in commissioning of this hydel project has two-fold financial impact; firstly costlier generation through available costliest power plants and secondly spending of foreign exchange on import of fuel that could have been saved, had this hydel power plant commissioned in timely manner.

(v) Suki Kinari Hydropower Project:

The EPC stage tariff for 840 MW Suki Kinari Hydropower Project of SK Hydro was issued on 28-03-2014. The construction period of the project, as given in the tariff determination, was 72 months. However, the project could not achieve COD till 30-06-2022. Like KPCL the delay in commissioning of this hydel project has also two-fold financial impact; firstly costlier generation through available costliest power plants and secondly spending of foreign exchange on import of fuel that could have been saved, had this hydel power plant commissioned in timely manner.

(vi) 12 Wind Power Plants:

12 Nos. Wind Power Projects having cumulative capacity of about 610 MW were given tariff by the Authority in the second half of 2018. In strict accordance with the timeliness given in the tariff determinations, all these projects were to come online during the period from November, 2020 to February, 2021. However, these projects achieved COD during the period from August, 2021 to May, 2022. The delay is being attributed to many reasons including non-availability of Grid, outbreak of COVID-19 etc. Had the delays been escaped by the concerned network companies, there could have been huge savings in the power purchase cost during that period.

2.2.12 Losses due to Outages of Few Economical Power Plants:

(i) Guddu Old Power Plant:

Guddu (Old) Power Plant of CPGCL comprising of 09 power generation machines (06 Gas Turbines and 03 Steam Turbines) is operating on dedicated indigenous gas fuel. Due to cheaper gas fuel, the cost of electric power generation from Guddu (old) Power Plant is quite low. However, despite cheaper gas, the annual plant utilization factor of Guddu old remained low. The utilization factor of Block-I (415 MW installed capacity) of CPGCL remained 4.26% while Block-II (600 MW installed capacity)

remained 29.33%. The utilization factor of the power plant is quite low which is compensated through expensive generation having financial impact on the end consumers.

(ii) Guddu 747 MW:

The dedicated indigenous gas based CCPP Guddu 747 MW comprising of two GTs and one ST is operating on dedicated indigenous gas fuel. Due to cheaper gas fuel, the cost of electric power generation from CCPP Guddu is quite low. However, despite cheaper gas fuel, the utilization factor of this power plant remained 41.06% only. In absence of the cheaper generation from CCPP-Guddu (747 MW) which was delivering the electricity at rate as low as around Rs. 6.53/KWh, the missed volume was purchased from costlier power plants, the delivery cost of which was as high as Rs. 23.49/KWh which resulted in loss of around Rs. 54 billion.

(iii) China Power Hub Generation Company:

One unit (624 MW) of coal-based power plant of China Power Hub Generation Company (CPHGC) could not supply electricity to the system on account of damage to its transformer during the period from 14-07-2021 to 06-01-2022. Since generation from this unit was cost effective, therefore, its non-availability resulted in financial loss of Rs. 30 billion approximately due to marginal cost of the fuel used for generation by the costlier power plants in absence of the above unit of CPHGC.

(iv) Engro PowerGen Thar:

The Unit No. 1 and 2 of Thar coal-based power plant of Engro PowerGen Thar (EPTL) remained on outage from March to May, 2022 for total of 984 hrs. and 1392 hrs. for each of the units respectively. Due to this outage, the plant missed energy volume of around 715 GWh. Being Thar coal base plant, EPGL is amongst the cheapest power plants usually in the top five slots of EMO. The loss of generation from EPTL is offset through generation by the costliest power plants. The financial impact of the forced outage of EPGL's units during the year is calculated at around Rs. 16 billion.

2.2.13 Supervisory Control and Data Acquisition:

For the purpose of transparency and accuracy advanced SCADA based on Human Machine Interface (HMI) technology is the need of the hour and must be installed at the earliest. The System Operator has to decide the matter in real-time for which efficient software is required to indicate the optimum utilization of the available resources keeping in view all the factors of Grid Codes. However, it has been observed that despite several directions during the past years, System Operator is still relying on the old system of fax, telephone, mobile messages, etc. instead of utilizing the efficient system for timely decisions on real-time automated data. The System Operator is required to implement the SCADA-III project on a fast-track basis for automation of its operations.

2.2.14 Separate Basket of CPPA-G and KE:

At the time of privatization, it was considered that NTDC (the then power purchaser on behalf of DISCOs) will supply electricity to KE (then KESC) to meet the shortfall and charge it not at par with DISCOs but on marginal cost plus use of system charges and KE shall maintain its generation basket separately. Later on, the ECC of the Cabinet vide its decision dated 26-08-2008, decided to treat KE at par with DISCOs for tariff purposes. Subsequently, the Authority vide Determination dated 29-09-2008 decided that NTDC shall treat KESC at par with DISCOs for the purpose of sale of power and shall charge KESC on the basis of a similar mechanism as approved for DISCOs. Since then NTDC/CPPA-G is supplying electricity to KE at par with DISCOs rate. The quantum of supplied electricity during the period varied and now reached up to 1,100 MW. On one hand, KE is maintaining its own power generation basket with an independent power dispatch control center, while on the other hand, CPPA-G is supplying electricity to KE to the tune of 1,100 MW not on the basis of marginal cost but at par with the DISCOs rate.

Thus due to several reasons including but not limited to two separate generation baskets and two independent power dispatch centers, on occasions, it was noted that KE was operating its costliest plants

while cheaper power plants available in CPPA-G System were un-utilized or under-utilized. Similarly, in past years, the cheaper pipeline quality gas was being used in KE's inefficient power plants while more efficient power plants in CPPA-G System were either un-utilized/under-utilized or were being operated on costlier fuels like RLNG and HSD. The costlier generation from KE plants leaving the cheaper power available in CPPA-G System, while CPPA-G is supplying electricity to KE at par with DISCO rate is burdening the power sector of Pakistan including the consumers of CPPA-G as well as KE Systems.

It is, therefore, high time to decide on a clear long-term relationship between CPPA-G and KE regarding power supply quantum and rate/tariff so the transmission and distribution network in the backdrop of single generation basket shall be developed accordingly and thus all available generation capacity in the country shall be utilized optimally.

2.2.15 Expansive Generation Basket of KE:

The generation fleet of KE (self-owned, IPPs and CPPs) comprise of costlier thermal power generation plants. Most of the generation plants have completed their life and required to be replaced with efficient and least cost new capacity. As like, 900 MW BQPS-III power plant was supposed to commission during the FY 2018-19, and was likely to replace the BQPS-I, which still could not achieve commercial operations till FY 2021-22. KE, instead of operating its expensive plants, could have procured electricity from the underutilized power plants of the CPPA-G system, which would have improved their utilization, but, this could not be ensured due to various reasons most important of which was that both CPPA-G and KE could not agree and finalize the agreement to this effect. This issue due to which all stakeholders are suffering, require urgent decisions and quick actions to utilize available resources efficiently.

2.2.16 Fuel Supply, Planning, Sourcing and Management:

During FY 2021-22, weaknesses in fuel supply planning and management appeared more prominently. It is noted often that a power plant declares itself available without having fuel to operate. In some cases, CPPA-G imposed LDs on power plants and deducted capacity payments. However, power producers disputed the same on the grounds that the non-availability of fuel for operating their plants was either due to non-supply of fuel or due to non-payment of their due amount (CPP and EPP) by CPPA-G. This is quite an old issue and affects the power sector and end-consumers adversely.

Regarding the availability of fuel in the case of gas-based power plant namely the Halmore Power, the risk of non-availability of gas was shifted (in the shape of difference of cost between generation through gas and generation through alternate primary fuel) to the extent of 50% on gas supply company and 50% on the IPP. Along with Halmore Power, three other power plants namely Orient Power, Saif Power and Sapphire Electric with an accumulated capacity of 910 MW were inducted into the power sector of Pakistan. These power plants are the second most efficient lot of available power plants in the power system with net efficiencies of more than 51%. However, their utilization factor is quite low.

Further, four RLNG power plants (three in operation and one under testing prior to commissioning) with an accumulated capacity of 5,047 MW are the most efficient lot of available power plants in Pakistan with a net efficiency of above 61%. The issue of fuel availability in case of these RLNG-based power plants is settled in a way that the power purchaser is responsible for RLNG supply to power producers. In case RLNG is not supplied by gas supply companies i.e. SNGPL, the power purchaser shall pay the capacity payment to the power producer and will get the gas reimbursement claim from SNGPL.

It is noted that these power plants despite being the most efficient ones could not be operated to their maximum capacity and on various occasions either operated on the costliest HSD or utilized on part load with PLAC. The plant utilization factor and PLAC amount in respect of these power plants during the last three years is given below:

Particulars	HBS	Balloki	QATPL	Saif Power	Sapphire Electric	Halmore Power	Orient Power
Installed Capacity (MW)	1,277	1,276	1,231	225	235	225	225
Efficiency (%)	61.47	60.27	61.62	51.20	51.20	51.18	51.20
FY 2019-20							
Utilization Factor (%)	70.03	62.10	53.91	26.47	16.62	19.99	27.51
Plant Operation on HSD (GWh)	-	-	-	0.12	0.22	0.00	0.33
PLAC Amount (Rs. in million)	4,388	4,432	3,774	420	339	389	445
FY 2020-21							
Utilization Factor (%)	80.35	75.83	77.27	35.87	31.47	33.54	48.57
Plant Operation on HSD (GWh)	0.12	51.45	0.8202	33.79	130.05	38.12	57.18
PLAC Amount (Rs. in million)	4,008	3,075	4,172	490	686	442	539
FY 2021-22							
Utilization Factor (%)	87.74	81.45	67.11	41.45	43.19	41.94	59.37
Plant Operation on HSD (GWh)	120.79	289.85	410.40	82.58	80.32	48	62.08
PLAC Amount (Rs. in million)	8,353	8,306	8,291	1,209	1,256	1,031	1,191

Source: CPPA-G

Furthermore, in the case of RFO as well as coal-based plants, the availability of fuel is the responsibility of power producers who are bound to keep a sufficient inventory of fuel to ensure the supply of electricity from the plants. However, it is noted at several times that power plants could not maintain the desired fuel inventory for the reported reason that CPPA-G did not make due payments on account of CPP and EPP within the stipulated time.

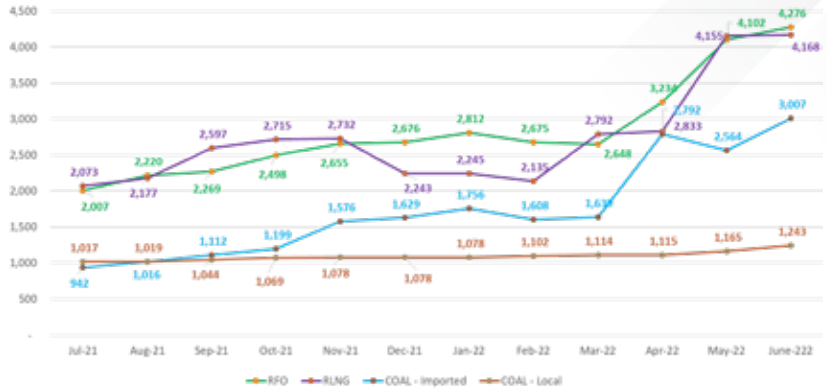
In this way, on several occasions, the available power generation capacity could not be utilized due to the non-availability of fuel but the consumer had to pay capacity payments for the capacity that was never utilized. It is noted that in several cases, CPPA-G treated the non-availability of fuel as the Other Force Majeure Event (OFME). Details already given under the head of Liquidated Damages.

Since the financial impact of non-utilization and/or under-utilization of efficient power plants is huge, therefore, it is necessary to give priority to fuel supply management through timely and accurate planning, sourcing, and management to ensure the availability of fuel for power generation. Load management/load shedding while having the efficient generation capacity on 'Take or Pay' basis is neither a prudent utility practice nor it is financially/economically feasible.

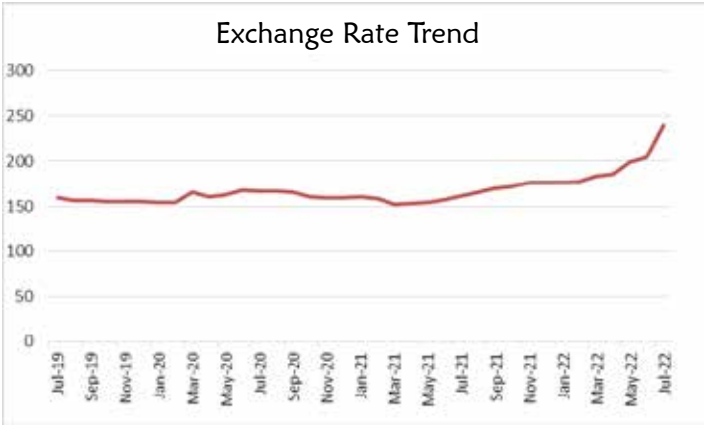
2.2.17 Fuel Price Adjustment Variations:

During the period of the last one year, fuel prices have witnessed unprecedented hikes. The prices of different fuel sources have almost jumped three times, due to an increase in international prices coupled with the devaluation of Pak Rupees. The global fuel price hike has raised the cost of generation from imported fuels, resulting in unparalleled monthly FCAs, thus eventually impacting the bills of the end-consumers. The price trend of various imported fuels for the last one year has been depicted in the below graph:

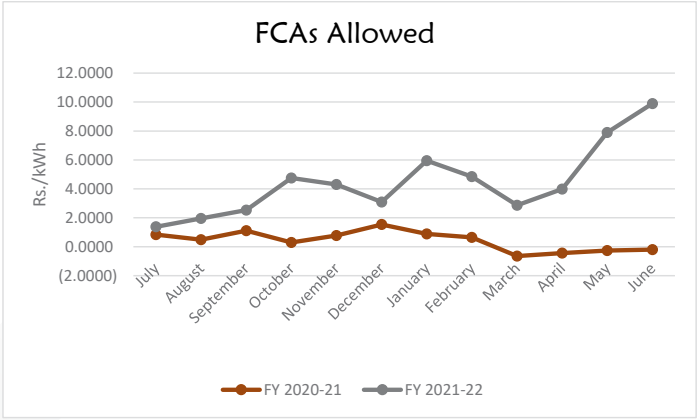
Fuel Price Trend



Similarly, PKR vs US$ exchange rate imparity for the last one year is also given hereunder:



As mentioned above, the above factors have resulted in very high monthly FCAs. A comparison of monthly FCAs for the FY 2020-21 viz-a-viz FY 2021-22 is as under:



In view of the unprecedented increase in FPA, the Government gave relief of Rs. 5/kWh on FCA for a

period of four months from March, 2022 to June, 2022. The impact of this relief package in the form of subsidies was around Rs. 126 billion.

Thus it is necessary to develop the base load power plants on indigenous fuel like Thar Coal, dedicated local wellhead gas, etc., and also develop more and more RE resources like Wind, Solar, bagasse, etc. for electricity generation preferably by distributed generation.

Further, there is a lag of almost one month in the recovery of FCA which need to be eliminated in view of the time value of money as well as to ensure, in time, sufficient cash flow to avoid borrowing cost.

2.2.18 Fuel Pricing of Coal Power Projects:

Coal-fired power plants in Pakistan are importing coal mainly from South Africa and Indonesia. The global economy has been experiencing a commodity super-cycle due to many factors including but not limited to the current Russia-Ukraine conflict combined with COVID-related logistical issues. Coal is among the commodities whose prices have surged many times over the last one year. The delivered price of South African coal increased from US$ 177/Ton to US$ 407/Ton during the last one year. Resultantly, per unit cost of energy generated from imported coal increased from Rs. 10.17/kWh to Rs. 29.12/kWh while the per unit cost of energy generated from local Thar Coal during FY 2021-22 remained around Rs. 7-9/kWh.

Considering the surge in prices of imported coal and scarcity of foreign exchange, the power plants have been exploring alternate cheaper sources of coal. NEPRA has accorded approval for the import of coal from Afghanistan provided that the delivered price per MMBTU of Afghanistan coal is lower than its existing coal imports and payment is made in Pak Rupees.

However, there are issues with the Afghanistan coal. The existing capacity of the Afghanistan coal market is not sufficient to meet the demand for power plants. Moreover, there is no published price index for Afghanistan coal which is liquid, transparent, and reflective of the market.

Considering all the above, a proposal is under consideration to convert imported coal based power plants already set up in the country to Thar Coal. PPIB is leading the process. PPIB apprised that as per the initial findings, imported coal power plants can use Thar Coal for some percentage without any plant modification of their power plant. Therefore, maximum utilization of local coal needs to be encouraged in order to reduce reliance on imported fuel. Further commissioning of the power plants based on Thar Coal needs to be expedited. Furthermore, the work of development of coal mines at Thar needs to be expedited to meet the requirement of coal in the country.

2.2.19 RLNG Prices during the FY 2021-22:

The RLNG power plants i.e. HBS, Balloki, QATPL etc. are the most efficient power plants in the power system. These RLNG based power projects were brought to the generation mix to bring efficient power generation, reduce dependency upon diesel and RFO and help reducing the consumer-end tariff. However, from the procurement data of Oil and Gas Regulatory Authority (OGRA), it can be seen that the price of RLNG at the spot market increased from US$ 12.1726/ MMBTU in July, 2021 to US$ 19.0737/MMBTUs in June 2022, which resulted in an increase in fuel cost component from Rs. 12.1308/ kWh, to Rs. 23.9026/kWh. Under such circumstances, some suppliers defaulted in terms of their long term contractual agreements and stopped supplying the contracted volume of RLNG. The identification of venues and government-to-government arrangements are required to ensure the required volume of RLNG at competitive, affordable, and predictable rates to keep our most efficient plants running at full load. The EPP and utilization factor for some RLNG power plants during the months of July, 2021 and June, 2022 are given below:

Month	Description	Balloki	QATPL	HBS	Sapphire Electric	Halmore Power	Orient Power	Saif Power
July, 2021	EPP Rs./kWh	10.31	10.88	10.30	14.75	13.95	15.71	15.31
	Utilization Factor (%)	77	75	72	78	26	64	76
June, 2022	EPP Rs./kWh	26.80	27.53	25.86	32.14	31.87	31.71	31.91
	Utilization Factor (%)	81	78	93	79	76	75	78

Source: CPPA-G/NEPRA

Since the variation/increase in price is for all fuels therefore it is noted that during the most period of the year, the operation of these RLNG plants is still competitive due to their higher efficiency. Therefore, all efforts shall be made to generate electricity from the cheapest source and to avoid generation from costlier RFO and HSD fuel.

2.2.20 Utilization of RFO Power Projects:

In order to compensate for the reduction in generation of hydro and RLNG based power plants, the RFO based power plants were operated. The challenge of increase in prices of RFO was also faced during the FY 2021-22 as the per Ton cost of RFO increased from Rs. 80,963/Ton in July, 2021 to Rs. 176,933/Ton in June, 2022.

The EPP of a few RFO power plants and their utilization in July, 2021 and June, 2022 are given below:

Month	Description	Jamshoro Power	Hub Power	Saba Power	Lalpir Power	Pakgen Power
July, 2021	EPP Rs./kWh	23.56	16.87	19.56	19.46	19.73
	Utilization Factor (%)	15	23	33	53	58
June, 2022	EPP Rs./kWh	44.31	38.99	38.25	39.17	39.21
	Utilization Factor (%)	10	15	31	58	63

Source: CPPA-G/NEPRA

It is noted that on several occasions, the RLNG power plants with lesser per unit cost were available but could not be operated due to non-availability of RLNG while costlier power plants on RFO/HSD fuel were operated. Since RLNG is also an imported fuel and its supply can be managed through a better supply chain, therefore efforts shall be made to operate power plants with cheaper EPP. The RFO/HSD plants shall only be operated once it is cheaper than RLNG or there is no generation capacity available in the cheaper fuel.

2.2.21 Induction of RE Power Projects:

Reliance on imported fuel has hampered the generation capability of the thermal power plants due to various reasons including:

(i) Lack of firm fuel supply agreements,
(ii) Flaws/delays in arranging fuel and managing the supply chain,
(iii) Supply disruptions due to COVID-19,
(iv) Extraordinary increase in fuel costs,
(v) Default by some RLNG suppliers, and
(vi) Involvement of foreign exchange, etc.

Due to these issues, the country has faced shortages in electricity generation, despite having installed capacity up above the electricity demand, and thermal power plants paid the capacity payments for unutilized power generation capacity. It is also noted that on several occasions, a considerable amount

of electricity was also purchased from RFO based power plants that have already completed their 'Take or Pay' contract life like Tapal Energy, Gul Ahmed, KAPCO, etc. This requires maximizing the share of an indigenous resource based electricity generation, particularly cheap and clean renewable power generation.

However contrary to this it is noted that in the past 27 bagasse-based power projects with high pressure boilers, with an accumulated capacity of 940 MW got an upfront tariff to set up power plants on bagasse. However, out of 27 projects, only 08 projects with an accumulated capacity of 260 MW could be developed. The main reason for the non-development of the remaining power projects was the unwelcoming attitude of some relevant entities who even approached the Courts in the matter. The developed projects have been supplying electricity at around Rs. 13/kWh during FY 2021-22 that too with indigenous fuel without involving any foreign exchange. The development of these bagasse-based projects could have saved billions of rupees of electricity consumers and precious foreign reserves of the country. Another advantage of these plants was that the share of the local component in the development of the plant was quite large which could result in economic activities locally.

Similar is the case with 12 RE (wind & solar) power plants with an accumulated capacity of around 616 MW which for reasons one or another could not be commissioned again due to the unwelcoming behavior of some relevant entities. NEPRA granted generation licenses and determined the tariffs of 12 Nos. wind and solar PV projects (cumulative capacity of 616 MW) during 2019 and 2020 with a view to add the capacity with replacement of costlier energy through imported fuel-based power projects. The levelized tariffs of these projects range between US Cents 3.12/kWh to US Cents 3.80/kWh. The price of electricity from these power plants would have been less than half of the price of electricity currently being procured from thermal sources. However, the tariffs of these 12 Nos. renewable energy projects were not notified and these power plants could not be constructed and resultantly the consumers are purchasing electricity from costlier sources too by spending foreign exchange. Subsequently, it was decided that several RE projects will be developed through the process of bidding for which NEPRA has approved RFP with benchmark; however, the relevant agency failed to carry out bidding, and once again development of cheaper RE projects was delayed.

In case these projects had been developed, they would have been supplying electricity at a very low cost without the requirement of any imported fuel and thus foreign exchange. Due to non-development of such projects, the power sector is losing billions of rupees and the country is losing precious foreign exchange for the import of fuel. Further, due to the delay in commissioning, the project cost for such projects has also been increased. Thus there is an urgent need to induct cheaper RE projects to replace the costlier energy being generated using imported fuel.

2.2.22 Deployment Renewable Energy as Distributed Generation:

The global studies and data indicate that the REs are best suited to be commissioned as distributed generation, specifically for the scattered load. The preferable proposition for induction of REs should be at the distribution network, near the load centers, and at locations where the adequate resource is available so that their induction should not require much augmentation in the transmission network. The less utilization factor of transmission facilities in the case of some RE power projects is making them unviable. Therefore, every effort should be made to develop REs as distributed generation unless a utility-scale RE project is established as economically viable while considering consumer-end tariff.

2.2.23 Indicative Generation Capacity Expansion Plan:

The Authority approved Grid Code, 2005 requires the submission of a yearly iteration of 10-year IGCEP by the month of April each year for approval. The IGCEP 2021 as submitted by NTDC during FY 2020-21 was approved in September, 2021. While approving the IGCEP assumptions, the CCI in its 48th meeting also decided the following:

(i) Subsequent iterations of IGCEP may be expedited and completed every year as per the timeline provided under Grid Code.
(ii) Power Division shall develop the methodology and criteria for strategic projects in consultation with the provinces under the National Electricity Plan within three months.
(iii) Wheeling policy, rates, and mechanism shall be finalized within two months.
(iv) Power Division shall develop the criteria for factoring in transmission costs as a part of least cost generation calculations in consultation with provinces within three months.
(v) A revised draft of the Generation Policy (including hydel generation) may be finalized by the Power Division within three months after consultation with the provinces and presented to the Council of Common Interest (CCI).

The next iteration of the IGCEP-2022 was due in April 2022, which NTDC could not submit. The delay in the submission of IGCEP-2022 for approval has once again caused disruption and non-compliance with the requirement under the regulatory framework. The concerned entities are required to vigilantly follow the timelines given in the regulatory framework to streamline the planning process for induction of power generation and system expansion in a more systematic manner. This would also facilitate complying with relevant provisions of the National Electricity Policy, 2021, and ARE Policy, 2019, which require that all future procurement of electricity must be based on the approved IGCEP.

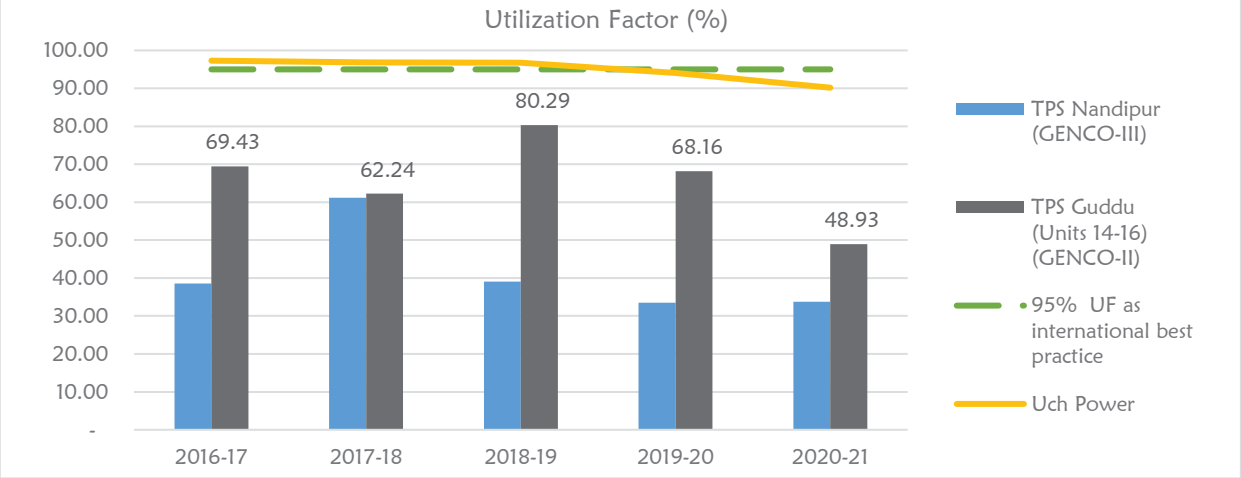
2.2.24 Inducting Least Cost Generation to bring down Electricity Prices:

As per the breakdown of the electricity costs, the generation cost of electricity is nearly 80% of the consumer-end tariff, net of taxes. Induction of least cost generation capacity is essential to bring down the electricity cost. The whole premise of developing the IGCEP is to plan for the least cost power generation in the system. In order to manage the increasing cost of electricity, it is essential that the principle of least cost power generation must be followed in all future power procurements, the inductions of generation capacity should also be carried out to displace the expensive electricity as well as replace the retiring expensive generation capacity. It is a matter of concern that still RFO based power which have already completed their life are supplying electricity in the generation basket. It is necessary that while evaluating generation plant, the cost of transmission and/or distribution facilities for the supply of electric power to end-consumers shall also be considered.

2.2.25 Development and Operation of Power Plants Public Sector after Power Sector Reforms:

Keeping in view the macroeconomic imbalances, reducing the fiscal deficit, bringing efficiency in the public sector entities, and increasing private sector participation in the power sector, Government of Pakistan developed the 1992 Strategic Plan with a vision to minimize, if not rule out, its role in the generation sector. The basic objective was to improve public expenditure allocation and efficient utilization in various other sectors.

For this purpose, the power policy framework was introduced in 1994 and NEPRA was established. Generation, transmission and distribution segments was unbundled to achieve the goal of corporatization, privatization, competition and efficiency. However, it has been observed that Guddu 747 MW gas power project and Nandipur Power Project were established in the public sector after implementation of power sector reforms. The issues involved in the development, as well as operation of these power plants, do not depict a very good picture. Nandipur Power Plant lost its designed efficiency considerably before commissioning. Delay in construction not only resulted in cost overruns but also disturbed the planning/cost-effectiveness of the project due to delayed commissioning. Due to its lower efficiency its utilization factor is quite low and yet getting capacity payment even for unutilized capacity as having the 'Take or Pay' tariff. Similarly, the operational performance of Guddu 747 is very poor which is clearly depicted from following graph and table:



The annual plant utilization factor and CPP of TPS Guddu Unit 14-16 and Nandipur are listed below:

Particulars	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Guddu 747 MW				
Installed Capacity (MW)	747	747	747	747
Efficiency (%)	49.46	55.98	55.55	54.43
Generation (GWh)	5,070	4,315	3,124	2,610
Utilization Factor (%)	80.29	68.16	48.93	42.55
CPP (Rs./kWh)	-	-	-	5.51
Nandipur Power Plant				
Installed Capacity (MW)	567	567	567	567
Efficiency (%)	46.02	46.87	49.01	48.52
Generation (GWh)	1,729	1,476	1,482	1,641
Utilization Factor (%)	39.10	33.47	33.73	37.21
CPP (Rs./kWh)	-	-	-	3.71

Source: GENCOs/CPPA-G/NEPRA

The above figure shows that the utilization factor of both plants remained significantly lower over the past five years whereas Uch Power, a private power producer that was granted a generation license in 2003, operated at above 90% utilization factor during the same reported five years as shown in the figure above. It is an important fact to mention that both of these plants are supplying electricity on a 'Take or Pay' basis. Thus, their low utilization is affecting the power sector adversely.

2.2.26 Promote Large Hydel and Micro Hydel Power Projects:

Hydropower is an indigenous resource therefore; the development of hydropower is critical for sustainable energy and diversity in the supply of electricity. Given the immense potential for hydropower generation in the country, it needs special attention at the Federal and Provincial levels. NEPRA has already proposed to the Ministry of Energy to consider hydropower as RE source and include the same in the RE Policy.

The cost of HPPs is always dependent upon the nature of the power projects i.e. run of river, reservoir, tunnel, rock structure, head height, etc. needs to be carefully analyzed while contemplating the increase of the share of HPPs in the generation mix. Although the per unit cost of Hydel Power Projects is higher during the initial years due to the factors above and the long construction period however due to the long-life cycle it becomes a more viable and cheaper source of electricity.

Another factor is the interconnection of the hydropower projects which required heavy investment to evacuate power from HPPs. The transmission facilities need to be developed for the maximum

generation capacity of HPP; however, due to seasonal variation, the transmission facilities can't be utilized up to their maximum capabilities during winter which also increases the cost of electricity generation by the HPP. Therefore, while planning for induction of HPP in the power system, the power system planner need to keep in view the overall cost of the HPP duly factoring-in the costs of back up generation capacity, construction and operational cost of transmission system, and the impact of T&D losses to transport power from point of generation to load centers.

Generally, the HPPs have a comparatively long operational life which can be used as an advantage for reducing their tariff through a large spread of the cost over the life of the project and the soft loan repayment conditions.

2.2.27 Solar Re-Powering of Expensive Public Sector GENCOs:

Induction of solar power projects for maximum utilization of the indigenous resource is required in order to minimize the costlier generation. For this purpose, the grid stations already established at power plants like TPS Lakhra, TPS Jamshoro, GTPS Kotri, TPS Muzaffargarh, GTPS Faisalabad, and GTPS Multan can be used to install solar power plants, comparatively at a very low cost, in order to maximize the least cost generation during day hours and minimize the generation cost. The infrastructure is already available and with certain modifications solar power plants can be installed and energy can be obtained from these sites. The same analogy can be used for other grid stations available with different power projects.

2.2.28 Debt Restructuring and Swapping of Debt Component:

The RE based power projects are contracted for a period of 25 years on 'Take and Pay' with 'Must Run' or Priority Despatch Conditions. Most of such IPPs have been developed on the basis of front-loaded tariff i.e. their debt servicing period is generally 10-15 years. This makes the cost of electricity higher during the debt servicing period. The longer debt servicing period, wherever possible may help to give relief to consumers in terms of electricity tariff. Further, wherever possible, the expensive foreign debt may be swapped for cheaper local currency debt. Lending by State Bank of Pakistan (SBP) for RE projects at lower rates is an example of cheaper debt. Therefore, efforts shall be made to swap expensive debt with cheaper ones and pass on the impact of savings to the consumers.

2.2.29 Locations of Private Sector Power Plants Developed on Build Own Operate basis:

Except for hydropower plants, all IPPs have been developed on a Build Own Operate (BOO) basis. It is noted that the locations in which IPPs have been developed were of primary importance with respect to transmission/sub-transmission/distribution network as well as the load. The importance of location increases with time for several reasons including, but not limited to the development of the area in terms of infrastructure and population. In many cases like HUBCO, HCPC, GENCOs, KAPCO etc., the System Operator, NTDC, and CPPA-G are in favor to extend their PPAs after completing their initial term despite cheaper 'Take or Pay' capacity being available in the system with their low utilization factor. In various cases, their operation is not economically feasible but reliance for their operation was made on their strategic location. However, under the BOO basis, even after the expiry of the control period of the IPPs, the land, and the other infrastructure shall not be available and shall be at the sole disposal of IPPs which creates problems. Therefore, it is appropriate that in future projects, provisions shall be made in the PPAs to use such land and infrastructure or make these available for the overall benefit of the power sector of the country.

2.2.30 Need for National Electricity Plan under National Electricity Policy, 2021:

The CCI approved the National Electricity Policy, 2021 (NEP-2021) in pursuant to the Section 14A of the NEPRA Act, 1997. The NEP-2021 provides for context, vision, and action plan of the Federal Government to develop the efficient and liquid power sector. According to Section 6.1.2 of the NEP-2021, it serves as the overarching umbrella for reform, development, improvement, and sustainability of the power sector. In furtherance of the same, the Government will, with the mutual consultation of Provincial Governments, prepare a National Electricity Plan (NEP). The NEP will be a five year plan

with fifteen years of perspective.

It was observed that the NEP-2021 was not elaborative on certain issues like sustainable development of the power market, efficient generation mix with a high share of indigenous clean energy resources, development, improvements, and reforms in the generation, transmission, and distribution of electricity. The Federal Government, upon inquiries of the Authority, had responded that most of the issues highlighted above will be addressed in the NEP being developed under the NEP as envisaged in Section 14A of the NEPRA Act, 1997. Such details are to be made clear within the NEP for sustainable development of sector.

It is, therefore, necessary to formulate the requisite NE Plan in consultation with all stakeholders as quickly as possible to provide a comprehensive framework and mechanism for implementation and realization of the goals of NEP-2021 duly addressing the issues highlighted by the NEPRA.

2.2.31 Exploring Cost Effective New Technologies:

Hydrogen is being considered as one of the promising energy sources to meet global future energy needs given the depletion of the natural gas reserves, price volatility of the fossil fuels, their sustainable supply and management constraints, global conflicts, and a global pact to reduce emissions of greenhouse gases (GHGs) to combat climate changes. The advanced economies are already developing medium to long-term strategies for transition to hydrogen as a fuel for the future development of economy.
Hydrogen is usually found in form of compounds, mixtures, and ores. Extraction of hydrogen from various sources requires energy. Due to this, it is still not being considered as a primary energy supply, however, keeping in view the fact that hydrogen can produce base load electricity and it emits water only (in form of vapors). The global energy market trends indicate that due to recent global conflicts, the advanced countries have already started developing their infrastructure to switch over to hydrogen; the mixing of hydrogen in natural gas has already been started in some countries and 100% hydrogen based electricity generation plants are being developed. Similarly, other new technologies need to be developed i.e. hybrid projects wind solar, floating solar/hydro, Battery Energy Storage System (BESS), marine energy, waste to energy, pump storage, etc. in order to maximize the utilization of the indigenous resources.

2.3 ISSUES IN THE TRANSMISSION SECTOR

2.3.1 Underutilization of Transmission System of NTDC:

As in the previous FY 2020-21, during the FY 2021-22 the NTDC 500 kV and 220 kV power transformers and transmission lines were underutilized. The details are as under:

Year	Underutilized Power Transformers		Underutilized Transmission Lines	
	500 kV	220 kV	500 kV	220 kV
FY 2020-21	10	21	39	59
FY 2021-22	7	24	43	71

Source: NTDC

2.3.2 Over-Loading Position of NTDC's 500 kV and 220 kV Network:

The maximum number of overloaded transformers (above 80%) in the 500 kV system was recorded in September 2021, which was 30, while the minimum number was zero in February, 2022. Similarly, the maximum number of overloaded transformers (above 80%) in the 220 kV system was recorded in July, 2021 as 106 while the minimum number was in November, 2021 and January 2022, which was 20.

2.3.3 Transmission and Transformation Losses of NTDC:

The NTDC has been allowed 2.5% T&T losses for FY 2021-22. The actual T&T losses reported by NTDC for the FY 2021-22 are 2.63% with lost units of 3,696 GWh having a cost effect of around Rs. 72 billion.

2.3.4 Transmission Losses of 660 kV HVDC Line:

The PMLTC has been allowed 4.3% T&T losses. The actual T&T losses reported by PMLTC for the FY 2021-22 are 2.87% with lost units of 341.43 GWh having a cost of around Rs. 2,721 million. Therefore the optimum utilization of the power plants needs to be required in order to maximize the benefits of the transmission line.

2.3.5 Transmission System Constraints:

NTDC, being the NGC is responsible to provide efficient transmission network services for the evacuation of electric power from the power plants spread from north to south and its transmission to the load centers without constraints. It is, however, noted that the technical constraints and congestions in the existing transmission network like congestions in the Sarfraz Nagar, Gatti, New Multan, Peeran Ghaib, Lahore-Shiekhupura, etc. have been affecting the economic dispatch and operations of the power plants, and appropriate dispatch of the cheaper electric power generation besides compromising the reliability of the transmission system. During FY 2021-22, the financial impact of plant operations in violation of EMO due to transmission constraints has been calculated as Rs. 3,670 million. Similarly, in several cases, the transmission facilities have not been completed as per the design, within the given timelines, and approved cost. This has an additional financial burden on the power sector and end-consumers.

It is therefore necessary for the NTDC that it shall remove all the constraints in the transmission network on a war footing basis to save the power sector from avoidable loss occurring due to their system shortcomings. The development of the HVAC system to receive power from the HVDC line at Lahore should be given importance. Similarly, congestion in the evacuation of power from most efficient RLNG plants, HUBCO, China Power Hub, etc. is needed to be removed on priority. Furthermore, transmission links with the transmission system of KE to export electricity in higher quantum should also be looked into and made part of TSEP.

2.3.6 IGCEP and TSEP:

The Grid Code requires that the System Operator must submit the IGCEP and TSEP to NEPRA in April of each year for approval. NTDC had submitted the IGCEP for the year 2021, however, failed to submit the TSEP with the referred IGCEP. Further, the IGCEP along with TSEP for the FY 2022 was not received as of 30-06-2022, which needs to be expedited.

2.3.7 Timely Project Development and Interconnection:

It has been observed that NTDC in most of the cases has been unable to meet the timeline as stated in the approved PC-I. The interconnection timelines are revised time and again which results in cost overruns. Delay in interconnection as per design delays evacuation of power from cheaper sources in a reliable manner. In view, thereof NTDC has to ensure the timely completion of under-process projects as per design in order to achieve the performance level as per NEPRA specified performance standards.

2.3.8 Improved Forecasting and Planning by System Operator:

Short term load forecasting has great impact for the efficient dispatch and operations. Being cognizant of this fact, NEPRA has issued several directions to System Operator for the deployment of the commercial tools for the same. In absence of SCADA, forecasting and planning are entirely dependent upon human assessment which compromises transparency and accuracy. It is therefore essential that the System Operator must ensure installing SCADA at the earliest to confirm better system operations, planning, optimum utilization of the available generation resources, and better forecasting.

2.3.9 Activation of Provincial Grid Companies:

The amended NEPRA Act, 2018 has provided for the grant of Licence for PGC allowing the Provincial Governments to engage in the transmission of electric power within the territorial limits of the respective province. So far, NEPRA has granted Licenses of PGC to the Government of Sindh and the Government of Khyber Pakhtunkhwa in November, 2019 and February, 2021 respectively. The whole purpose of

issuing the licenses to the provincial entities was to enhance the utilization of local resources, fast-tracking the development of cheaper power generation plants, develop a regional grid to share the burden of NGC for transmission of electric power within the province, improve efficiencies and bring competition in the transmission services. However, to date, no progress by these companies has been witnessed on ground regarding the development of their transmission network and rendering transmission services. It is therefore required that the PGCs should be activated to start developing their networks, work in conjunction with the NGC, help reduce the burden on the network of NGC and improve the state of electric power transmission in the respective province.

2.3.10 Need for Independent System Operator:

To ensure that the power generation plants are operated on the principle of central economic dispatch and effective long term system planning, particularly in the wake of the 'Take or Pay' regime, the efficient functioning of the system operator gets extreme significance. Under Section 18(2)(e) of the NEPRA (Amendment) Act 2018, NGC is to perform the function of a System Operator. Whereas, as per Section 23G of NEPRA (Amendment) Act 2018, the system operator is a licensed activity. NTDC being the NGC, was deemed to be System Operator for a period of 02 years which has expired in 2020 therefore NPCC is required to obtain the licence.

For transparent monitoring of transmission and distribution networks, and dispatch of power generation plants as per EMO, to eliminate the inefficiency and bring in transparency, it is required that the System Operator must function independently. With the issuance of the licence of the Market Operator and launch of the CTBCM regime in May, 2022 for six-month dry run, the importance of an independent System Operator has further increased, particularly to ensure open access of transmission facilities of NGC and DISCOs to all the participants of the power market. Under the approved roadmap for implementation of CTBCM, one of the key steps is to separate the system operator from NTDC as an association of the System Operator with NTDC is a conflict of interest and establish an independent System Operator under the licence granted by NEPRA. NEPRA has directed NTDC to obtain a licence from NEPRA.

2.3.11 One System Operator for the Whole of Pakistan:

The NEPRA (Amendment) Act, 2018 requires that there should be a single System Operator for the whole of Pakistan to ensure single merit order in the whole country and country-wide centralized economic dispatch for optimal utilization of available resources to undertake long term system planning. The design and roadmap for the CTBCM also require that there should be one System Operator for the whole country. As of current, NTDC is acting as a System Operator for the whole of Pakistan except the service territory of KE, while KE is operating as a System Operator for its service territory as per provisions given in its licence. Moving forward, it has been agreed among the concerned entities that there will be one System Operator for the whole of Pakistan as per the NEPRA Act and the CTBCM, and the same is stipulated in the relevant applicable document.

However, in order to ensure proper functioning and operations of the System Operator in the whole country including the service territory of KE, it is required that an adequate transmission system between NTDC and KE must be developed. Further, there is an immediate need to clearly devise the relationship between KE and CPPA-G with regard to power import and export as well as dispatch of power in two systems to ensure the operation of plants according to the Merit Order. Approval of any such relationship shall be required from the competent Authority/forum.

2.3.12 Deviation from Economic Merit Order:

Operation of the power generation plants in violation of EMO has also remained an issue for a long time. It has a negative impact on the cost of electricity. NEPRA has been stressing the System Operator to ensure compliance to EMO as it is inevitable for least cost generation. NEPRA also has been requiring NGC to eliminate all the technical constraints to enable the System Operator to operate the system

efficiently. Realizing the negative impact of violation of EMO, the Authority directed NPCC that in case of dispatch of generation plant(s) out of merit order, for reasons whatsoever, System Operator shall report the same to CPPA-G within 24 hours with its copy to NEPRA along with reasons of such dispatch. NEPRA has also directed CPPA-G to scrutinize the NPCC dispatch report in terms of SDC of Grid Code and prepare a report comprising of all dispatch deviation from merit order, the plants available but not dispatched, and justification of the dispatch deviation in terms of SDC of Grid Code along with Financial Impact. CPPA-G was also directed to share the report with the System Operator and also submit it to NEPRA at the time of filing the monthly FCA requests.

However, despite the gravity of the issue, the required information in the desired form and material is not submitted by the concerned entities. Such laxity on the part of concerned entities towards matters of deep financial consequence needs to be checked to make things better going forward. NEPRA has already initiated the assessment of operations of NPCC for the past three years i.e. FY 2018-19, FY 2019-20 and FY 2020-21. Proceeding against CPPA-G has also been initiated for not following the direction of the Authority. Further, NEPRA is also in the process to carry out the assessment of the operations of CPPA-G for the past 03 years i.e. FY 2018-19, FY 2019-20 and FY 2020-21.

2.3.13 Criteria for determining Economic Merit Order:

In order to make the EMO more effective and efficient, the criteria for developing the EMO need to be revised. At present, the EMO is prepared based on the fuel cost and variable O&M (V O&M) of the power plants available in the power system. Lower fuel cost and V O&M of a generation plant may not always mean that its overall cost of electricity generation for end-consumers is also lower. Certain other important parameters and their eventual cost impacts also need to be taken into account in addition to the fuel cost and V O&M to prepare the EMO including PLAC, degradation factors, start-up charges, plant location, plant availability, fuel availability, dual fuel operations, transmission, and operational constraints/technical limits, etc. Further, since the power generation plants are contracting on either of 'Take or Pay', 'Take and Pay', 'Must Run', merchant power plants, or ancillary services, it is needed that the EMO should take these contractual frameworks into account. Criteria for purchase of electricity from merchant plants shall need to be developed which enable procurement of electricity on Price base, whenever it is cheaper. Also, as per the CTBCM, the System Operator would also have to operate the power plants to suffice the requirements of those consumers contracting with competitive suppliers. The EMO needs to ensure that the marginal price of operating the generation plants should remain as consistent and low as possible to keep the cost of electricity generation low for the end-consumers. In some instances, the System Operator would have to take into account the locational marginal price of the generation plants, particularly due to the technical constraints at the point of interconnection of these plants.

2.3.14 Factors Not Accounted For in Merit Order:

Historically the indigenous natural (pipeline quality) gas was the cheapest fuel due to its price, and the plants operated on this fuel, even inefficient, appeared on top in the EMO. Due to depletion, the indigenous pipeline quality gas has not been available for power generation for the last 2-3 years. However, despite the non-availability of pipeline-quality natural gas, the EMO is still being prepared considering this fuel, alone or in combination with other fuels, which is misleading and causes confusion for stakeholders. The Authority, through its FCA decisions, has highlighted this issue and directed the concerned entities to prepare the EMO only based on fuels available for power generation to show a true picture of merit order. However, concerned entities are still reluctant to do so.

2.3.15 Enhancement of Interconnection Capacity between KE and NTDC:

The record indicates that KE has drawn up to a maximum of 1,100 MW from the national grid at Jamshoro and NTDC-KE Interconnection (NKI). It may be noted that K-2, K3, Port Qasim, HUBCO, China Hub Power and Lucky Electric Power are located nearby to the service area of KE. These plants in the vicinity of KE are not only cheaper than plants operating in the KE system but are also underutilized.

In order to optimize the operations, better utilization of the available resources, and supply electricity to KE with minimal cost and transmission losses, it would be more prudent that the interconnection capacity of grid systems adjacent to the aforementioned power plants should be enhanced. However, before committing to any such arrangements, the concerned entities must come to an agreement, finalize the terms and conditions of the agreement and get the agreement approved by the competent Authority/forum.

2.3.16 Legislation for Right of Way (ROW) Issues:

While probing the delays in the transmission system enhancement and construction projects, it has been reported that acquiring the Right of Way (ROW) is a big challenge. It has been observed that most of the transmission lines are delayed due to these ROW issues. The delays caused have various consequences and impacts including delays in the construction time period, delays in the commissioning time of the generation plants, cost escalation, financial loss in terms of delays in procuring cheap electricity to meet the electricity demand, extensions in operations of expensive and retiring power plants, particularly thermal power plants, business loss of various entities as the DISCOs are not provided with project electricity supply, the partial demand is met with expensive electricity, and the consumers get a financial hit due to increase in basket price of electricity. At the same time, non/partial evacuation of generation from 'Take or Pay' or 'Must Run' IPPs poise additional financial burden either in terms of LDs, or payment of capacity charges. In order to amicably resolve this issue, the concerned Federal and Provincial entities need to carve out a harmonized approach and make a well-coordinated effort. It would be appropriate if the Federal and Provincial entities may agree upon enabling legislation that would help resolve the issues of ROW. In addition, NTDC also needs to involve the concerned provincial governments in obtaining ROW and timely completing the transmission projects.

2.3.17 Utilization of 660 kV HVDC:

Parallel with generation capacity induction during the second half of the last decade it was decided to establish a High Voltage Direct Current (HVDC) Transmission Line for the transmission of electricity particularly from the coal-based power from the south to the central part of the country to be developed by the private sector. NEPRA granted a Special Purpose Transmission Licence (SPTL) to PMLTC for constructing an 886 km dedicated ±660 kV HVDC transmission line from Matiari to Lahore with a capability to transmit 4,000 MW power. Due to the delay in the commissioning of various coal-based power projects, and the non-availability of required electric power, the Capability Demonstration Test of HVDC has been carried out with maximum available power of 2,800 MW. NTDC has declared that the COD of the 4,000 MW PMLTC HVDC Line occurred on 01-09-2021, based on the said Capability Demonstration Test. Due to the lack of required generation capacity, the HVDC remained underutilized during FY 2021-22 and is causing a financial burden on end-consumer in terms of per unit cost of electricity. The capacity payments of PMLTC during the period 01-09-2021 to 30-06-2022 was Rs. 49 billion while total electrons transmitted through this line during same period was 11,560 GWh with utilization factor of around 36% which is quite low as compared to which was envisaged.

2.3.18 Private Sector Inclusion on BOOT Basis:

The Transmission Policy 2015 has provided a broad framework for the inclusion of the private sector in transmission system operations. Currently, due to technical/financial constraints, NTDC is finding it difficult to meet the timeline and interconnection of the different power projects. In addition, the indigenous resources available in the province requires to interconnect the same with the national grid and tap the available resources in order to provide sustainable, reliable, and affordable electricity to the end-consumers. However, it has been observed that only the PMLTC transmission line has been completed under the policy framework, after which no bidding has been carried out. Also, no action has been taken to identify the transmission projects with details including sites to attract private sector investors.

To lessen the burden upon the NGC, bring competition, maximize the private sector investment in

+the transmission system, and ensure the evacuation of cheap electricity in the country promptly, it is required that a list of all those transmission line projects with all technical details may be prepared, which NTDC is finding it difficult to finance and execute due to techno-commercial constraints, and competitive process may be initiated to involve the private sector investment.

2.3.19 Use of Locally Manufactured Material and Equipment:

It has been observed that very large portion of material and equipment used in the construction of the transmission lines were imported and almost no local material and equipment was used for this purpose. In the better interest of the country, and to contribute more towards sustainable economic growth, it is essential that the share of locally manufactured items should be increased. For this purpose, the concerned entities shall survey to determine the capacity and capability of the local industry to manufacture the material and equipment, list down all those which are already being manufactured locally, and encourage the manufacturers to manufacture those items as per the applicable standards and industry best practices, if needed; carry out assessments to establish which additional equipment and material can be manufactured with some capacity enhancements, investments, and human resource development and support the local industry in this regard. In order to boost the local manufacturing and usage of local materials, while conducting the bidding process, the RFPs for the development of transmission lines may include provisions for locally manufactured equipment and material, to the extent possible. This will not only develop the local capacity but will also result in the creation of jobs as well as economic development.

2.4 DISTRIBUTION SYSTEM OF DISCOS

Distribution of electricity is a licensed activity and an important function for the provision of electricity to the end-consumers. As of 30-06-2022, there were ten public sector DISCOs responsible for the supply of electricity in their respective service territories. These DISCOs are performing distribution functions under licenses granted by NEPRA. In addition, KE also possesses a Distribution licence to supply the electricity in its designated service area.

Besides DISCOs and KE, Distribution licenses have also been granted to Bahria Town (Pvt.) Limited (BTPL), Bahria Town, Rawalpindi, Defence Housing Authority, Lahore, and Aujla Associates, Gujranwala to supply the electricity in the territory specified in their respective distribution licenses. Out of these distribution licenses, on the request of Bahria Town (Pvt.) Limited, the license to BTPL was canceled on 20th October, 2020. Further, Distribution licenses were also granted to nine (09) Small Power Producers to supply electricity to their designated Bulk Power Consumers (BPCs). The distribution license granted to DISCOs except TESCO and SEPCO expired during FY 2021-22. The respective DISCOs applied for renewal of their distribution licenses. Upon submission of applications, NEPRA issued provisional approval to continue business for a period of six months while NEPRA is processing their cases for final licenses.

Furthermore, under the NEPRA Amendment Act, 2018, the business of supply of electric power has been bifurcated from distribution as a separate licensed activity to be granted by NEPRA. As per the provisions of the NEPRA Amendment Act, 2018, the distribution business is now confined to the wire business only. For supplying electricity to the end-consumers, the respective entities have to obtain a licence as Electricity Supplier. However, as per Section 23E, the holders of the distribution licence on the date of coming into effect the NEPRA Amendment Act, 2018 are deemed to hold the licence for the supply of electric power for a period of five years.

2.5 ISSUES OF THE DISTRIBUTION SECTOR

The power sector supply chain starts from primary energy supplies, electricity generation, transmission, distribution, and supply to the end-consumers. The revenues in the power sector are primarily earned from the recovery of the bills of respective consumers against their consumption. The revenues so accrued are spent to pay for the charges of suppliers, distribution, transmission, and generation companies and

compensate the primary fuel-supplying entities. Thus, the whole supply chain is dependent upon the performance of the DISCOs which are also the Supplier of the Last Resort and are liable to recover the billed amount and meet the targeted T&D losses.

During the FY 2021-22, the allowed T&D losses for the DISCOs were 13.41% whereas actual losses were 17.13%. Due to the difference of 3.72%, the financial loss on this account has been worked out around Rs. 113 billion. In addition, NEPRA determines the revenue requirement on 100% receivables. During the FY 2021-22 the receivable amount in terms of percentage was around 90.51% thus incurring the loss of Rs. 230 billion of the billed amounts. The overall impact on account of additional T&D Losses and less recovery works out as Rs. 343 billion. This whole contributes to the accumulation of circular debt.

The performance of the DISCOs is the major concern as highlighted in the previous SIRs which are affected due to higher T&D losses and less recovery affecting the cash flow with the CPPA-G for onward payments to the transmission and generation companies. The higher T&D losses are much of the concern keeping in view the higher average fuel cost, which is increasing the difference of loss due to costlier fuel and devaluation of US$/PKR impact. Further, the revenue loss in case of non-delivery of the generated electricity is another issue. Besides load shedding on AT&C loss basis, it has been observed that forced load shedding was made in order to avoid costlier generation as well as to keep the feeder losses at targeted level. NEPRA received multiple complaints regarding forced load shedding, which was contradictory to the schedule load shedding indicated by the DISCOs. In addition, the fatal incidents have been enhanced, which raise the question mark on the safety SOPs adopted by the DISCOs. Overloading of the power transformers and events of burning/blasting of the distribution transformers in different DISCOs questions the quality services, equipment procurement, quality control & quality assurance, and its maintenance and monitoring system of the concerned DISCOs. Issues pertaining to the performance of the DISCOs are as under:

2.5.1 AT&C Loss Based Load Shedding:

The load shedding based on A&TC losses is observed in many DISCOs including PESCO, QESCO, HESCO and SEPCO. The criteria for AT&C losses as defined is the feeder which has a minimum of 20% and larger AT&C losses. NEPRA does not support and endorse the AT&C losses-based load shedding. NEPRA is of the considered view that under any law, DISCOs cannot punish the majority of law-abiding and regularly paying consumers on the pretext of theft by only a handful of consumers. Under the constitution, electricity is the basic right of every citizen. The inefficiency of DISCOs due to higher T&D losses and less recovery does not permit them to enforce AT&C loss-based load shedding. It has been further observed that due to the load shedding the recovery of the Capacity Charges from the respective feeders is also lost which is another issue for the power sector.

In addition to the above forced load shedding for avoiding costlier generation has been observed in the DISCOs. Even in IESCO, LESCO, GEPCO, MEPCO and FESCO regions, forced load shedding has been incurred thus underutilizing the available capacity for which capacity charges are paid to the generation companies.

The load shedding enforced by the DISCOs is hurting the power sector in many ways i.e. the available generation capacity remains under-utilized for which the capacity charges are being paid, the RE power plants are paid for NPMV and the thermal power plants are operated on part load, due to which PLAC and compensation for degradation are being paid; the transmission capacity is underutilized resulting in an increase in transmission use charge to compensate for its required liquidity; at the DISCOs end, the demand is not served as projected, and the desired sales growth is not achieved, which result in increasing the distribution margin to ensure availability of required finances. This all contributed to increasing the consumer end tariff. It is required that proper economic analysis shall be carried out to ascertain the financial impact of the exercising load shedding against the zero-load shedding scenario keeping in view the above factors, and accordingly, an informed decision should be made in this regard.

Further, it has been observed that while exercising the load shedding the relevant feeders are shut down as a whole. Load shedding on the entire feeder on account of AT&C loss basis is not justified at all. Such load shedding in urban areas is a matter of much more concern regarding the working and governance of respective DISCOs. The DISCOs are therefore required to improve governance in their area to discontinue the load shedding which on one hand is disturbing the life of people while on other hand it is burdening the electric power sector as well as the national exchequer by various means.

2.5.2 Fatal Accidents/Poor Safety Environment:

It has been observed that DISCOs are unable to implement the SOPs regarding safety measures due to which 196 fatal accidents have occurred during FY 2021-22 against 189 fatal accidents recorded during FY 2020-21. NEPRA, in order to facilitate the DISCOs, has published the Safety booklet for the field staff which is a big step towards saving the life of the valuable resource of the DISCOs. In addition, Rs. 483.5 million fine has been imposed upon the DISCOs due to the fatal accidents and these have been directed to compensate the families (approx. 76) of the deceased on account of fatal accidents that occurred due to their negligence and non-compliance to the relevant standards, which was required to be adopted by the DISCOs.

The Supreme Court of Pakistan, in 2020 SCMR 1,488 titled 'Naimutullah Khan Advocate and others vs Federation of Pakistan and others' has, inter alia, directed that KE shall ensure and take all steps and measures that in future no electrocution at all takes place to the residents of Karachi and in case any such incident occurs, the CEO and other officers of KE shall be taken to task and the exceptional amount of damages shall be recovered from them. Further, criminal cases shall also be registered against the CEO and other officers of KE. Although the observation in the referred case relates to KE however, the fundamental principles/standards may equally be applicable in cases of the DISCOs. Therefore, DISCOs need to be more careful and shall ensure all necessary steps to avoid fatal accidents in their respective areas.

2.5.3 Overloading/Technical Constraints:

Overloading and technical constraints are other issues, which have been highlighted by the NEPRA in its previous SIRs. However, it has been observed that no significant improvements have been made in this regard. The power transformer overloading was recorded as almost 20% in FY 2021-22 as against 18% during FY 2020-21. Similarly, around 19% overloading has been observed at 11 kV feeders during FY 2021-22 as against the 22% during FY 2020-21. In addition, around 5% of distribution transformers were overloaded during FY 2021-22, which is equivalent to the previous year. This overloading is more alarming keeping in view the AT&C losses and forced load shedding.

2.5.4 Higher T&D Losses:

NEPRA has been continuously indicating that the governance issues in DISCOs are required to be addressed to reduce their losses, which are resulting in enhancing the circular debt. However, no significant improvement has been seen on the part of DISCOs in this regard. During FY 2021-22, the overall actual losses of DISCOs are 17.13% as against the actual loss of 17.95% during FY 2020-21. This increase in T&D losses is much higher than the allowed T&D Losses for FY 2021-22, which was 13.41%. DISCOs need to focus on higher T&D losses and effort should be made to bring it down at least to the level of given targets.

2.5.5 Less Recoveries:

NEPRA determines the consumer-end tariff for the DISCOs on a 100% receivables basis and does not allow any inefficiency on this account. NEPRA consistently highlighted this issue in the previous SIRs and has been stressing to take remedial actions to address this. During FY 2021-22, it has been observed that the recovery was 90.51% as compared to 97.30% during FY 2020-21, i.e. almost 7% less than the previous financial year. This is alarming keeping in view the current average per unit cost of the billed

amount, which is over and above the higher T&D losses. Necessary steps are required for corrective measures and improvement in the distribution system. The Government being the owner of the DISCOs may adopt different strategies which may include but not limited to the option for the outsourcing of high AT&C loss feeders. High T&D losses and low recoveries are the main causes of the accumulation of circular debt which stood at Rs. 2,252,750 million as of 30-06-2022. The losses and recoveries of DISCOs, particularly TESCO, HESCO, SEPCO, PESCO and QESCO need to be improved.

In addition, installation of the AMI meters at the distribution transformer level is required in order to record the actual loss figures. Efforts should be made to identify/pinpoint the areas with less recovery instead of closing the whole feeder, which is causing a loss of revenue for the DISCO.

2.5.6 High Receivables:

Receivables of the DISCOs is one of the major issues that NEPRA has highlighted in past many years through the SIRs, determinations, etc. During FY 2020-21, the receivable amount of DISCOs including KE was around Rs. 1,398,194 million, whereas during the FY 2021-22 the receivable amount is Rs. 1,680,426 million, showing an increase of Rs. 282,232 million.

2.5.7 Pending Connections:

During FY 2020-21, the total pending connections were 501,843 with a cumulative load of 945 MW in the whole of Pakistan. Whereas, in FY 2021-22, the total pending connections were 176,829 with a cumulative load of 1,215 MW, which indicates that the numbers of pending connections are comparatively lower however, the cumulative pending load is on the higher side. It is also repeated that DISCOs are even delaying works of dedicated feeders as well as deposit works. The review of pending connections indicates that a large number of industrial, agriculture and commercial consumers remained unserved resulting in slowing down the economic growth of the country. This also indicates the inefficiency of the DISCOs in not only enhancing their consumer base and sales growth, but also improving utilization of the power sector assets, and recoveries. The pending connections together with the load shedding are the main reasons for lesser utilization (i.e. 43%) of the installed generation capacity of 43,775 MW. It may be noted that during the FY 2021-22, peak demand was reported as 28,253 MW on non-coincidental basis, which is considered as suppressed demand due to the above-stated factors. Actual demand would be higher compared to the reported demand, which requires adequate planning in expanding the generation, transmission, and distribution network. Timely provision of connections is imperative for DISCOs to increase/improve their sales and resultant utilization of generation capacity besides providing relief to the applicant.

2.5.8 Centralized Control of DISCOs:

NEPRA has long been highlighting that centralized control of DISCOs is one of the main reasons for their inability to grow as commercially viable entities and their inability to take their financial and commercial decisions independently. Although DISCOs have been incorporated as companies to be managed by their respective Board of Directors; however, it appears that there may be difficulties in independent decisions making especially in financial and commercial matters. In pursuance of the 'Strategic Plan for Restructuring of Pakistan Power Sector' PEPCO was incorporated in 1998 to facilitate the transition process in WAPDA Power Wing and effective corporatization of new entities after unbundling of WAPDA. PEPCO was required to complete its tasks within 02 years and dissolve thereafter. However, instead of preparing DISCOs, as viable corporate entities, PEPCO assumed managerial/supervisory roles, and DISCOs, despite having incorporated as companies, could not get away from central control. Although now PEPCO is dissolved in 2021, still DISCOs and other public sector entities in the power sector seem to be seen or unseen under centralized control.

The financial health of the whole power sector depends on the performance of the distribution segment which is responsible to supply electricity to the end-consumers, collect revenue and pay back to the

transmission and generation companies through CPPA-G. However, the limited autonomy of the DISCOs may be one of the major impediments to their progress. Apparently, the restricted financial independence bars their ability to, perform, formulate and implement business plans and make investment decisions based on commercial and financial viability and cost-effectiveness.

The independence of the DISCOs is inevitably required to enable them to think commercially and focus on efficiency rather than take the owner's shelter for their survival despite continued losses. Over the years, the performance of DISCOs in all key areas has not shown any significant improvement despite having a separate Board of Directors and CEOs. The Boards of Directors of the DISCOs are required to take the necessary actions to improve the performance of DISCOs in every aspect including T&D losses, receivables, sustainable supply, increasing consumer base, enhancing sales, improving quality of service to end-consumers, embracing new business models and becoming more consumer friendly. Especial attention shall be given to end the load shedding by improving governance.

2.5.9 Sustainable Sales Growth:

During FY 2021-22, the overall sales of DISCOs and KE increased by around 7% compared to the sales of FY 2020-21. Keeping in view the forced load shedding by the DISCOs, pending connections, the trend of consumers to switch to solar, and addition from net metering-based connections the sales growth has remained on the lower side, which needs to be enhanced. The Government's initiative to stimulate industrial activity through a discount on electricity prices is welcoming for the increase in sales of DISCOs and resultant economic growth in the short-run. However, this increase in sales of DISCOs has come at a cost of the additional subsidy to be picked by the Government and is against the development budget of the country which is already very less. For sustainable growth of their sales, DISCOs need to improve their efficiency and service standards necessary to retain and expand their consumer base by supplying electricity at competitive rates.

2.5.10 Off-Grid Solutions - Mini/Micro Grids:

As per World Bank Data, 26% of the population of Pakistan does not have any access to electricity (World Bank Data 2019). RE based decentralized energy generation in the form of small-scale, locally controlled distributed generation (DG) units coupled in a single entity, a micro-grid, is developing in different parts of the world to electrify remote villages and to meet with increasing and multidimensional energy needs of the society. NEPRA has notified Regulations for Micro-grid Licensing in FY 2021-22 with a vision to give access to electricity to the remote, far-flung areas of the country. This will enable complying with the sustainable development goals of the UN duly adapted by Government of Pakistan and encourage economic development in the remote areas of the country. However, the DISCOs also need to embrace these new technological developments to serve their consumers in a more reliable manner and at competitive rates. The development of smart grids in the existing network and micro-grids in those unserved villages that are under their village electrification programs, can be very viable and cost-effective options.

2.5.11 Circular Debt - Stock, Flow, and Accumulation:

The biggest challenge for the country is to overcome the Circular Debt which is hampering the power sector, particularly investors and end-consumers at the same time. This has detrimental impacts on the economic growth of the country. As of 30-06-2022, the circular debt stood at Rs. 2,252,750 million as against Rs. 2,280,149 million during FY 2020-21, thus decreasing the amount of Rs. 300 million during the year. Besides losses, recoveries, underutilization of the assets, running defaulters, and delays in payment of subsidies are among the contributory factors towards circular debt. The financial impact of running defaulters is around Rs. 700 million, which is alarming as these consumers are still connected with the system and no action has been taken by the respective DISCOs to recover their billed amount from these defaulters. Further, non-payment of subsidies by the Federal/Provincial governments promptly is another issue that can easily be settled through timely payment. The volume of circular debt can be reduced with some innovations and transformations like outsourcing the meter

reading and revenue collection business in the high loss areas to minimize the loss on this account. In order to curb the existing Circular Debt, bridge financing in form of loans on the existing power supply network to the end-consumers has been obtained which is a vicious cycle. The permanent solution to the problem of Circular Debt lies in developing the efficiency-driven and financially viable power sector.

2.5.12 High Electricity Cost - Emergent Situation in the Power System:

The power sector of Pakistan is dependent upon the imported fuel price which at present has put pressure on the exchequer. This also contributes to the devaluation of the PKR vs US$. Since as per the policy of the Government, currency indexation is allowed on the foreign debt payment, foreign O&M, and ROE/ROEDC, this further enhances the consumer-end tariff. Higher T&D losses, less recoveries, and inefficient public sector GENCOs are resultantly putting the power sector currently at high risk. The performance in each segment of the electric power services i.e. generation, transmission, distribution, and supply is highly questionable. Due to all these factors, the country has been frequently facing electricity crises situation. To turn around the situation, it is required to undertake emergent actions including improving the performance of the public sector DISCOs by privatization or outsourcing their operations and maintenance in public-private participation. Further, involving provinces with clear responsibility may also improve the issue of recoveries of electricity dues and lower the theft of electricity.

2.5.13 Regulatory Compliance-based Regime:

The role of the Regulator was introduced in order to bring transparency and efficiency and provide an advisory role for better decision-making; however, the power sector of Pakistan is not still ready to learn the regulatory culture and regulatory compliance mechanisms. The main reason for such apathy is probably that a larger portion of the power sector especially the transmission and distribution segment is still owned by the public sector. The management of these entities is least concerned with the financial health and efficiency of the organization. It has been seen time and again that the electricity regulator is mostly disregarded in the decision-making process. The mandate is not acknowledged in certain actions. Due to this, different entities, particularly the public sector entities are not working in a regulatory compliance environment. There is a dire need for compliance with the regulatory regime for achieving the desired results of efficiency in the power sector.

2.5.14 Higher Taxation Recovered through Electricity Bills:

The catharsis of the electricity prices indicates that through electricity bills the Federal Governments have imposed various taxes, charges, and fees, which are not directly related to the electricity sector. Certain surcharges are also imposed on the consumers that are not linked to the consumption of the electricity and a few surcharges are being imposed to overcome the system inefficiencies. All these factors increase the volume of the overall price of electricity. Under the constitution of Pakistan electricity is the basic right of every citizen. Recovering taxes, duties, fees (like TV fee), and other charges through electricity bills raise questions about the role of the relevant departments and delivery, which are unable to directly recover the same from the relevant people. Higher electricity cost also enhances the taxes, and duties which infringe on the basic right to electricity. It is therefore needed to restructure the electricity billing volume by either eliminating/reducing the burden of unrelated taxes and surcharges from the price of electricity.

2.5.15 Subsidies Reform Program and its Timely Adjustment:

Ideally, there should be no subsidies and the full cost of service should be recovered in an efficiency-driven power sector. The cross-subsidization among various categories of consumers within the DISCOs is being exercised to support the low-income groups. However, the socio-economic compulsions of the Government, the high cost of electricity, and the low affordability of a large segment of society necessitate for subsidies on electricity.

The Government has the policy to maintain uniform tariffs across the country and the tariff differential is picked by the Government as a subsidy namely the tariff differential subsidy. Further, from time

to time, the Government has been offering discount packages like the industrial support program, winter package, etc. for different categories of consumers for which also subsidies are to be paid by the Government. As of 30-06-2022, a total amount of Rs. 83,399 million is payable to DISCOs on account of subsidies.

Payment of subsidies has remained a big challenge for the Government. On the other hand, non-payment of subsidy amount to DISCOs on time affects their ability to pay back to the transmission and generation companies which is one of the main reasons for requires liquidity and sufficient cash flow in the country. To minimize the subsidy burden, efficiency in all segments of the power sector will have to be improved to reduce the cost of electricity and make it affordable for the majority of electric consumers, and minimizing the cross-subsidizing of the low-income group of consumers by higher income group of consumers.

However, till such time the subsidy regime is alive, it is necessary that the due amounts of subsidy must be paid to DISCO on time to meet their payment obligations to the transmission and generation companies. The borrowing to meet the cash flows and financial charges therein for the business which has already been allowed to recover through tariff is neither provided nor justified to recover through consumers.

2.5.16 Maintenance of Fund for Post-Retirement Benefits:

The Government's owned power sector entities including DISCOs, GENCOs, NTDC and WAPDA have pensionable service structure of their employees. To meet their pension liability, these entities are required to maintain separate fund to provide required monetary resources to pay pensions and the facilities like free electricity and medical treatment. However, DISCOs failed to maintain such a fund to meet with the expenses in respect of post-retirement benefits and kept on including such cost of pension in the consumer end tariff. Upon Authority's directions, DISCOs have though created pension fund; however, these funds are not still sufficient to meet with the requirement of the post-retirement benefits of the retired employees. All public sector organizations are therefore required to maintain these funds with sufficient amount to meet with the requirement. The details of actual/projected payments by six DISCOs whose MYT have been determined in recent past are given below:

Payment (Actual/Projected) against Pension Benefit for the Employees of DISCOs

Paid (Rs. in million)	Actual Payment				Projected					Total
	2017	2018	2019	2020	2021	2022	2023	2024	2025	
PESCO										
Post-Retirement Benefits	2,852	4,043	4,863	5,481	8,825	9,744	10,916	12,235	13,361	72,320
Medical Facilities	14	13	7	9	14	16	18	20	21	132
Free Electricity	62	62	66	82	132	146	164	184	200	1,098
Total	**2,928**	**4,118**	**4,936**	**5,572**	**8,971**	**9,906**	**11,098**	**12,439**	**13,582**	**73,550**
GEPCO										
Post-Retirement Benefits	1,668	2,041	2,659	2,748	6,774	7,126	7,517	7,847	8,157	46,537
Medical Facilities	203	270	317	337	832	875	923	963	1,001	5,721
Free Electricity	82	93	12	113	280	294	310	324	337	1,845
Total	**1,953**	**2,404**	**2,988**	**3,198**	**7,886**	**8,295**	**8,750**	**9,134**	**9,495**	**54,103**
MEPCO										
Post-Retirement Benefits	2,198	2,887	3,940	4,072	8,086	8,895	9,785	10,763	11,840	62,466
Medical Facilities	11	12	15	12	23	26	28	31	34	192
Free Electricity	84	87	81	104	207	228	251	276	303	1,621
Total	**2,293**	**2,986**	**4,036**	**4,188**	**8,316**	**9,149**	**10,064**	**11,070**	**12,177**	**64,279**
HESCO										
Post-Retirement Benefits	1,093	1,519	2,089	2,140	3,701	3,998	4,238	4,492	4,762	28,033
Medical Facilities	84	116	149	190	329	355	376	399	423	2,421

Free Electricity	7	35	53	67	116	125	132	140	149	824
Total	**1,184**	**1,670**	**2,291**	**2,397**	**4,147**	**4,478**	**4,746**	**5,031**	**5,334**	**31,278**
Paid (Rs. in million)	**Actual Payment**				**Projected**					**Total**
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	
SEPCO										
Post-Retirement Benefits	746	1,144	1,281	1,435	3,521	3,649	4,068	4,377	4,711	24,932
Medical Facilities	80	99	126	-	345	358	399	429	462	2,298
Free Electricity	2	1	-	-	1	1	2	2	2	11
Total	**828**	**1,244**	**1,407**	**1,435**	**3,867**	**4,008**	**4,469**	**4,808**	**5,175**	**27,241**
QESCO										
Post-Retirement Benefits	610	696	909	1,227	1,746	1,921	2,112	2,324	2,556	14,101
Medical Facilities	4	4	4	3	5	5	6	7	7	45
Free Electricity	26	24	33	51	72	79	87	96	105	573
Total	**640**	**724**	**946**	**1,281**	**1,823**	**2,005**	**2,205**	**2,427**	**2,668**	**14,719**

Source: DISCOs

2.5.17 Free Electricity for the Employees Government owned Power Sector Entities:

The serving as well as retired employees of DISCOs, GENCOs, NTDC and WAPDA Hydro are entitled to facility of free electricity units corresponding to their pay scales. Due to higher electricity tariff the amount in respect of free electricity being provided is steeply increasing which during the year FY 2021-22 reached around Rs. 6.4 billion excluding WAPDA employees.

2.5.18 Commercial Contract between KE and CPPA-G:

Presently, KE is purchasing electric power from CPPA-G system to the tune of 1,100 MW. It is observed that the payment against purchase of electricity by KE from CPPA-G system is adjusted against the tariff differential subsidy owed by the Federal Government to KE due to policy of maintaining uniform tariff across the country. Indirect payment to CPPA-G, against sold electricity to KE, generally causes delay in payment of due amount and thus impacts CPPA-G to meet its payment obligations. It is, therefore, advisable that the payments against all transactions between KE and CPPA-G and/or any other entity shall be made by KE under a commercial contract instead of linking with the payments of subsidies by the Federal Government.

2.5.19 Payments against Supply of Electric Power to Government of AJ&K:

NEPRA has determined the following tariffs for supply of electricity to AJ&K by three DISCOs namely, IESCO, PESCO and GEPCO:

Name of DISCO	NEPRA's determined tariff for supply to AJ&K (Rs./kWh)
PESCO	31.00
IESCO	27.58
GEPCO	28.01

Source: NEPRA

Later on, upon Federal Government's Motion, a uniform rate of Rs. 24.19/kWh has been determined for supply of electricity by DISCOs to AJ&K. However, the Government of AJ&K is paying @ Rs. 2.59 /kWh and subsidies are picked by Government of Pakistan. The gap between the determined uniform tariff and the actual payments by AJ&K is an issue creating revenue problems for the CPPA-G. This issue needs to be resolved to bring financial discipline and to ensure timely payment to CPPA-G to meet with its payment obligations.

2.6 NATIONAL ENERGY EFFICIENCY AND CONSERVATION POLICY/DEMAND SIDE MANAGEMENT

NEECA drafted National Energy Efficiency and Conservation Policy, 2022 is appreciated as it is a much-needed document. As per experts a 5% energy saving may reduce the energy import bill by 12%.

2.7 ENERGY INTENSITY AND ECONOMIC GROWTH

The higher energy prices shrink energy consumption as people and businesses start conserving energy. In anticipation of higher energy prices, households discipline themselves to use less energy during peak seasons and businesses undertake less energy-intensive forms of economic activities by indulging in research and development for energy-efficient technologies. Energy savings achieved through energy efficiency improvements reduce the amount of energy needed for a given output i.e. goods, services, comfort, etc. Pakistan has been witnessing higher energy prices for the past four years. Further, exchange rate inflation has threatened foreign reserves to an alarming rate since the country's economy depends absolutely on imported fuels. This situation demands more energy efficiency improvements to save energy and ease the burden on foreign reserves.

Countries can secure higher gains in energy efficiency improvements when their economies transit from higher energy-intensive to lower energy-intensive economies. Such efficiency gains can be attributed to structural changes, efficient production through lower energy demand per unit of output, and fuel switching. The table below gives energy intensity for Pakistan. The energy intensity of 1.420 for FY 2019-20 reveals that 1.420 TOE of energy is utilized to produce one unit of economic output, which is on the higher side and needs improvement.

Years	Final Energy Consumption by Source (TOE)	GDP (Rs. in million)	Energy Intensity (TOE per Unit of Economic Output)
2015-16	45,385,026	32,725,049	1.387
2016-17	50,122,303	34,175,628	1.467
2017-18	54,992,889	36,278,011	1.516
2018-19	54,995,685	37,184,104	1.479
2019-20	52,135,439	36,710,346	1.420

Source: HDIP

2.8 COMPETITIVE TRADING BILATERAL CONTRACT MARKET

The development of a competitive wholesale electricity market has been a longstanding goal envisaged through the 1992 Strategic Plan of the Government of Pakistan to move from a monopoly structure to competition through unbundling, corporatization, and privatization of generation, distribution, and retail/supply of the electric power. However, due to reasons one or another, the wholesale electricity market implementation had got delayed.

The FY 2021-22 also marked the targeted formal launch of the CTBCM regime through the grant of the Market Operator Licence to CPPA-G within the specific timelines, approval of the Market Commercial Code, and the test-run plan, dated 31-05-2022. Consequently, the Market Operator has now been tasked with conducting a test run of the wholesale electricity market, without any financial implications and obligations, to execute the market transactions and ensure the accuracy of the processes, methodologies, and formulas approved in the Market Commercial Code and test the associated IT systems and tools deployed so that any issues in the same are identified and addressed before commercial market operations date is declared by the Authority.

2.9 LIFTING OF MORATORIUM

In terms of Section 1(3) of the NEPRA Act, as amended through the NEPRA Amendment Act 2018, sections 23A, 23B, 23G and 23H are to come into force after five (05) years of coming into effect of the Amended NEPRA Act, i.e. April 2023, or any earlier date if the Federal Government so notifies. The above mentioned sections deal with the roles of Market Operator and System Operator, which are critical to the functioning of CTBCM. Therefore, the moratorium on these sections needs to be lifted immediately so that commercial operations of the market could start after the completion of the 06 month test-run period i.e. 30-11-2022.

NEPRA approved Market Commercial Code states the enrollment of Market Participants (MPs) and Service Providers (SPs), contracts registration, energy imbalances and capacity obligations calculations,

payment settlement, security cover requirements, dispute resolution mechanism, etc. Further aligning with the above activities, the NTDC has been directed to submit the updated Grid Code along with the System Operator Licence application to the Authority for approval. The Authority also has directed CPPA-G to submit the draft Agency Code along with the application for registration as Special Purpose Agent (SPA).

2.10 DISTRIBUTION CODE

After the commencement of the CTBCM, the existing Distribution Code requires extensive revision to include provisions about the competitive electric power market i.e. non-discriminatory open access, coordination with the MSP, etc. It is important to highlight that under the NEPRA Amendment Act 2018, the supply functions have been separated from the distribution functions, therefore, the revised Distribution Code shall exclude functions about the supply of electric power which will be addressed in the Consumer Supply Manual. In this regard, DSICOs have hired a consultant to review and revamp the Distribution Code 2005.

2.11 ELECTRIC VEHICLES

Pakistan is also facing environmental issues due to multiple factors including transport, coal emissions, industrial emissions, etc. Keeping in view the environmental issues world is moving towards environment-friendly technologies. Electric Vehicles (EVs) have the potential to solve critical challenges faced by Pakistan in the 21st century. Since EVs do not emit any pollutants, the introduction of EVs will limit emissions in the transport sector to a large extent.

The Government of Pakistan, announced National Electric Vehicle (EV) Policy 2020, in June, 2020. The EV Policy 2020 has set the goal of cutting air pollution and curbing climate change. It aims to bring half a million electric motorcycles and rickshaws, along with more than 100,000 electric cars, buses and trucks, into the transportation system over the next five years. The EV Policy 2020 also focuses on the development of a nationwide charging infrastructure for electric vehicles.

EVs have now become a reality in Pakistan. The number of EVs are continuously increasing in the country. At the same time, the charging infrastructure is being deployed in different parts of the country to serve EVs. NEPRA at its end has announced the tariff that the owners of the EV charging stations are going to charge for their services. The owners of the public EV charging stations are regarded as commercial consumers of category A-2, the DISCOs are to charge a single part Rs. 25.02/kWh tariff for both off-peak and peak, with zero fixed charges and waiver of monthly FCAs.

The owners of public EV charging stations are allowed a maximum cap of Rs. 50/kWh net of taxes to charge for their services. NEPRA also has announced standards and specifications that the owners of the public EV charging stations have to comply with and included them in the Consumer Services Manual. It is believed that by promoting EVs, air pollution can be curtailed and climate change can be addressed. To encourage the EV charging business, the DISCOs are required to allow connections to EVs on a priority basis. The uninterrupted power supply is necessary for EV charging stations to carry out their business. To do so, the DISCOs are required to enhance their distribution system for better services, especially on highways and motorways.

Since the number of EVs is increasing, and the EV charging stations are being installed in different parts of the country, therefore to ensure safety and reliability and to avoid fatal incidents, the technical and safety standards as given in the Consumer Services Manual for awarding connection for public EV charging stations must be complied with. In addition, relevant agencies must ensure that only those equipment and material allowed to import and installed, are compliant with international standards.

2.12 POWER SECTOR HSE/CSR/CYBER SECURITY

NEPRA conducted on-site HSE performance evaluation of licensees to ensure that they maintain an

acceptable level of occupational health, safety, and environment management system. Moreover, Safety Manuals and Power Safety Code 2021 was reviewed and approved by Authority during FY 2021-22. Furthermore, NEPRA awarded HSE Top Performer awards based on the HSE performance of licensees. NEPRA also issued Social Investment Guidelines to encourage initiatives to protect the environment and effectively mitigate adverse climate change and promote the well-being of local communities.

NEPRA in line with its initiative called 'Power with Security' hosted an in-house seminar on Cyber Security. The main objective was to create awareness about the power assets of Pakistan among NEPRA Professionals on Cyber Security with special emphasis on the protection of the SCADA system; a computer-based system used for gathering and analyzing real-time data to monitor and control equipment dealing with critical and time-sensitive materials/events and then roll out the same initiative by engaging NEPRA's Licensees and other Stakeholders.

During FY 2021-22, NEPRA continued with enhancing its portfolio towards the Corporate Social Responsibility (CSR) initiative. Under this initiative, NEPRA achieved great milestones by bringing 232 Licensees on board and serving as a catalyst for the transformation of the inclusive development model into reality and impacting approximately 19 million people. In pursuance of NEPRA's CSR Drive, Akhuwat established a Power with Prosperity (PwP) Fund wherein, 04 NEPRA Licensees participated under PwP Fund for the provision of Interest-Free Solar Loans to the local communities in easy installments. In recognition of the commendable services on the CSR Front by the Licensees, NEPRA held CSR awards where KE won Gold Award and followed by WAPDA/PAEC and Engro Energy for Silver and Bronze Awards respectively.

2.13 KEY RECOMMENDATIONS

Besides the remedial measures suggested for above discussed issues, some key recommendations in the areas of Generation, Transmission, and Distribution segments are given below:

Area	Recommendations

Generation	(i) Optimum mix of 'Take or Pay' and 'Take and Pay' Contracts (ii) Generation Mix shift from Imported to Indigenous Fuel (iii) Least-cost procurement through IGCEP and DISCO's demand based (iv) Debt Restructuring and Swapping of Expensive Debt (esp. CPEC) (v) Optimal Capacity Utilization (vi) Fuel Supply Planning, Sourcing and Management (vii) RLNG Contract renegotiation with Qatar/Other countries (viii) Promote Large Hydel and Micro-Hydel Projects (ix) Timely payments by CPPA-G to IPPs (x) Solar Repowering Expensive GENCOs (Lakhra, Jamshoro, Muzaffargarh, Faisalabad, Multan) (xi) Tariff Notification of 12 RE projects (xii) Expediting new RE projects through Competitive Bidding (Quaid-e-Azam Solar Park) (xiii) Exploring Cost-Effective new Technologies (xiv) Hybrid projects, wind-solar, floating solar-hydro, batteries, pumped storage hydro (xv) Off-grid solutions for Rural Electrification (xvi) Promote Bilateral Trade between buyer and seller through CTBCM (xvii) Promote Net-Metering and Distributed Energy Solutions (xviii) Closure of inefficient Public Sector GENCOs
Area	**Recommendations**
Transmission	(i) Constraints Removal (ii) IGCEP/TSEP - (Integrated System Planning) (iii) Project Delivery On Time and within Budget (iv) SCADA-III (v) Improved Forecasting and Planning by NPCC (vi) Enhancement of Interconnection Capacity between KE and NTDC systems (vii) Activation of Provincial Grid Companies (viii) Increasing number of Regional Control Centers for better control of system operation (ix) Separation of NPCC from NTDC - making Independent System Operator (x) Procurement process to be made fast (xi) Provincial support for ROW issues (xii) Private Sector Investment on BOOT basis
Distribution	(i) Privatization of DISCOs (Public-Private Partnership with Provincial Contribution) (ii) Breaking DISCOs up into smaller sizes (Horizontal Restructuring) (iii) AT&C losses to be discontinued - Use of Modern Technology (iv) Autonomy of DISCOs, Improve Governance and Independence (v) Customer Oriented Business Approach (vi) Sales Growth: Reduction in Pending Connection (vii) Timely Payment of Subsidies to DISCOs (viii) Recoveries and Loss-Reduction to be Improved (ix) Outsourcing High Loss Feeders through Supplier Regime (x) Outsource meter reading and Revenue officer in one Division on experiment basis (xi) Over taxation on Consumer Billing to be reviewed (xii) AMI, AMR at PMT level with ABC Cable (xiii) Pre-paid Meters in DISCOs (xiv) Industry to operate at night to reduce peak and encourage industries with captives to connect with Grid (xv) Capacity Building of DISCOs (xvi) Seasonal Tariff (xvii) Develop SEZs for increasing demand (xviii) Solarization of Tube Wells (xix) Demand Side Management (xx) Improve the DISCO's planning cycle, demand forecast and timely provision of investment and Power Acquisition Program

03 PERFORMANCE OF GENERATION SECTOR

3.1 GENERAL

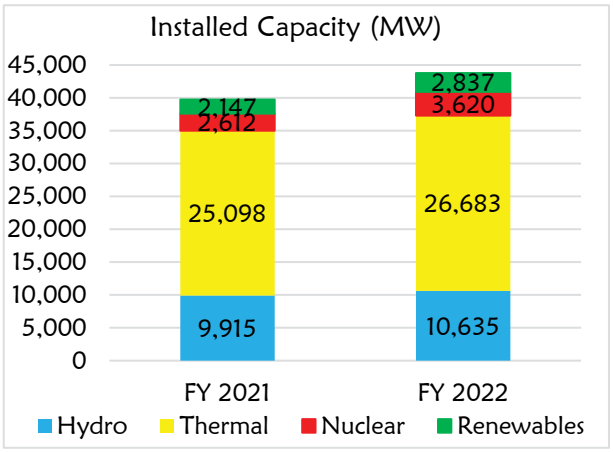
Pakistan power generation mix is diversified which comprises of hydropower plants, thermal power plants, nuclear power plants, RE power plants including wind, solar and bagasse/biomass power plants. For the remote areas of Baluchistan province, Pakistan also imports electric power from Iran. In addition to mitigate the demand supply gap in Gwadar, recently Government of Pakistan have signed an agreement with Iran to build the transmission line and provide electricity. Besides public sector power generation plants, IPPs are actively contributing to the power generation in the country.

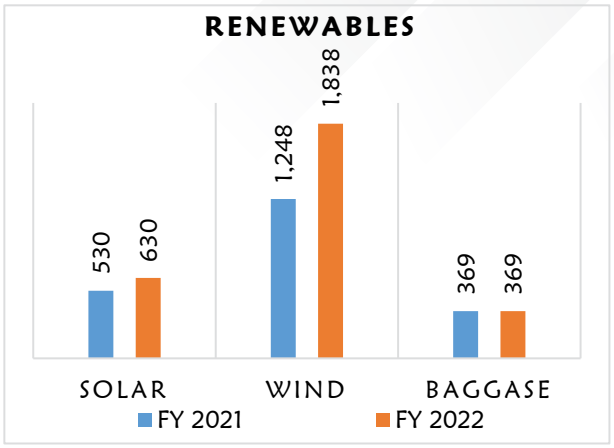
3.2 INSTALLED CAPACITY

	As on 30-06-2021	As on 30-06-2022	Variation		Comments
			Capacity (MW)	(%)	
A. CPPA-G SYSTEM					
WAPDA Hydel	9,443	9,443	0	0	**Additions** (a) Karot HPP (b) Lucky Electric (c) KANUPP-III (d) 12 Wind IPPs (e) Zhenfa Energy (f) Punjab Thermal (under testing) (g) BQPS-III Unit I (h) (under testing) **License Expired** (a) GENCO-IV (b) Reshma Power (c) Gulf Power (d) Southern Electric (e) Japan Power (f) Altern Energy **Decommissioned** (a) BQPS-I Unit-III (b) KANUPP
IPPs Hydel	472	1,192	720	152.54	
Total: Hydel	**9,915**	**10,635**	**720**	**7.26**	
GENCOs	4,881	4,731	-150	-3.07	
IPPs	17,276	18,750	1,474	8.53	
SPPs/CPPs	340	340	0	0.00	
Nuclear	2,475	3,620	1,145	46.26	
Total: Thermal including Nuclear	**24,972**	**27,441**	**2,469**	**52.47**	
Wind	1,248	1,838	590	47.28	
Solar	430	530	100	23.26	
Bagasse/Biomass	369	369	0	0.00	
Total: CPPA-G System	**36,934**	**40,813**	**3,879**	**10.50**	
B. KE SYSTEM					
KE Own	2,084	2,345	261	12.52	
IPPs	366	366	0	0.00	
SPPs/CPPs	151	151	0	0.00	
KANUPP	137	0	-137	-100.00	
Solar	100	100	0	0.00	
Total: KE System	**2,838**	**2,962**	**124**	**4.37**	
Grand Total:	**39,772**	**43,775**	**4,003**	**10.06**	

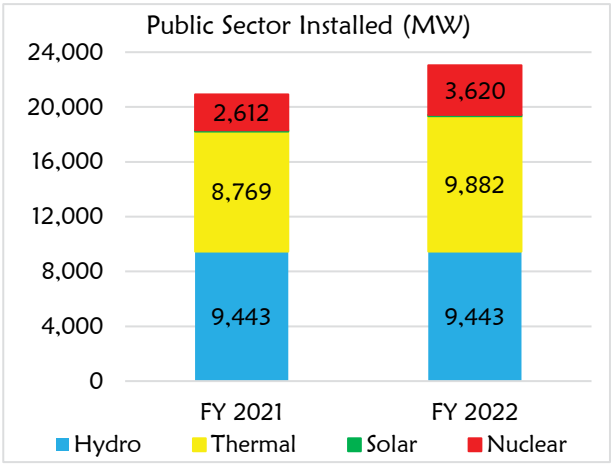
Source: GENCOs/WAPDA/IPPs/DISCOs/KE

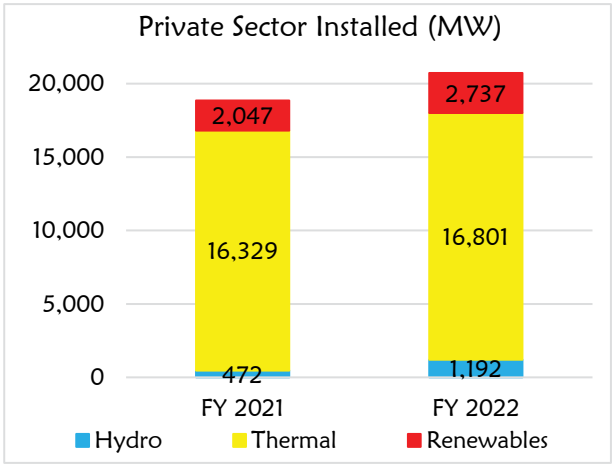
The graphical representation of installed capacity and bifurcation of Renewables for FY 2020-21 and FY 2021-22 is given below:





The total installed generation capacity of public sector power plants in the country as on 30-06-2022 was 23,045 MW while the installed generation capacity of private sector power plants, including KE, was 20,730 MW.





The installed capacity of CPPA-G system is 40,813 MW out of which 23,821 MW is thermal (GENCOs, IPPs, SPPs), 10,635 MW hydroelectric, 1,838 MW wind, 530 MW solar, 369 MW bagasse and 3,620 MW nuclear. The addition of 1,145 K-3 Nuclear Power Plant has significantly increased the nuclear power generation capacity in the country. Whereas, the installed capacity of KE's own generation is 2,345 MW. It is noted that KE's own generation capacity is not sufficient to meet the demand. Therefore, KE also purchased electric power from external sources including 366 MW Thermal (including 262 MW from Retired IPPs, Tapal Energy and Gul Ahmad), 100 MW Solar, 151 MW SPPs/CPPs and around 1,100 MW from CPPA-G system.

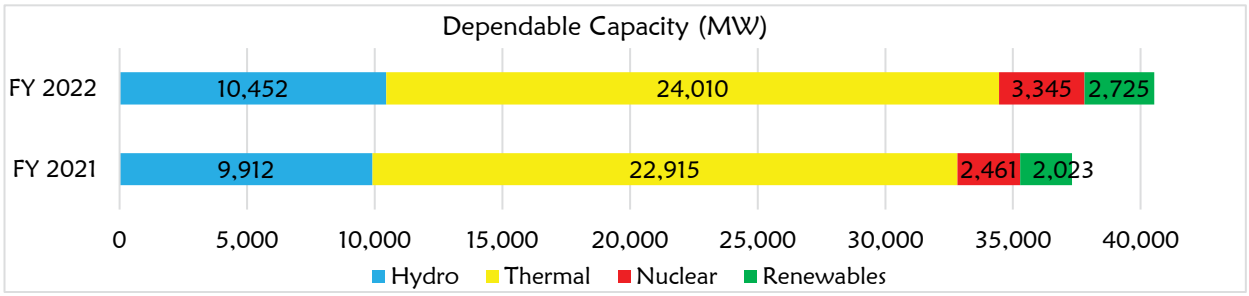
3.3 DEPENDABLE CAPACITY:

The total dependable generation capacity of the country, including CPPA-G and KE Systems as on 30-06-2022 was 40,532 MW comprising of 37,858 MW capacity in CPPA-G System and 2,674 MW in KE System.

	As on 30-6-2021	As on 30-6-2022	Variation	
			(MW)	(%)
A. CPPA-G SYSTEM				
WAPDA Hydel	9,443	9,443	0	0.00
IPPs Hydel	469	1,009	540	115.14
Total: Hydel	**9,912**	**10,452**	**540**	**5.45**
GENCOs	4,083	3,900	-183	-4.48
IPPs	16,341	17,258	917	5.61
SPPs/CPPs	257	257	0	0.00
Nuclear	2,395	3,345	950	39.67
Total: Thermal including Nuclear	**23,076**	**24,760**	**1,684**	**7.30**
Wind	1,235	1,838	603	48.83
Solar	436	530	94	21.56
Bagasse/Biomass	252	278	26	10.32
Total: CPPA-G System	**34,911**	**37,858**	**2,947**	**8.44**
B. KE SYSTEM				
KE Own	1,774	2,135	361	20.35
IPPs	354	354	0	0.00
SPPs/CPPs	106	106	0	0.00
KANUPP	66	0	0	0.00
Solar	100	79	-21	-21.00
Total: KE System	**2,400**	**2,674**	**274**	**11.42**
Grand Total	**37,311**	**40,532**	**3,221**	**8.63**

Source: GENCOs/WAPDA/IPPs/DISCOs/KE

The graphical representation of dependable capacity FY 2020-21 and FY 2021-22 is given below:



3.4 ELECTRICITY GENERATION

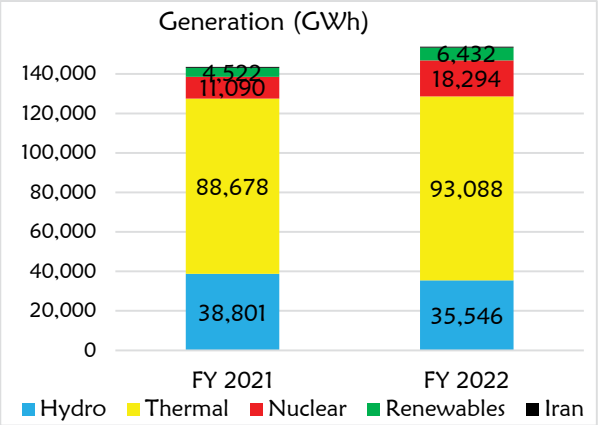
During FY 2021-22, the total electricity generation in the country including the power plants in CPPA-G and KE Systems was recorded as 153,874.20 GWh compared to 143,588.61 GWh electric power generation of FY 2020-21. Besides the local generation, 514.36 GWh were imported during FY 2021-22 as compared to 498.37 GWh import during FY 2020-21.

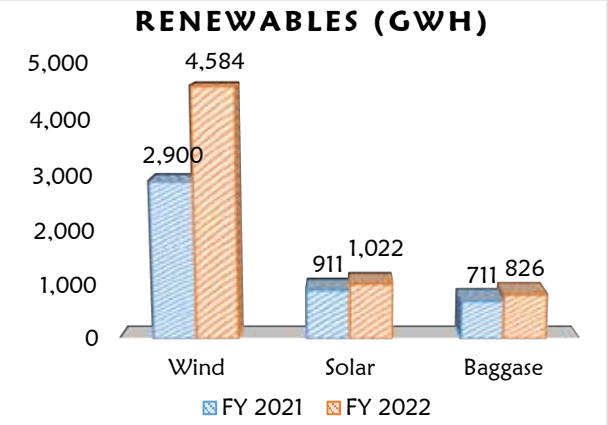
As on 30th June	FY 2021	FY 2022	Variation	
			(GWh)	(%)
A. CPPA-G SYSTEM				
WAPDA Hydel	36,982.54	32,694.31	-4,288.23	-11.60
IPPs Hydel	1,818.01	2,851.97	1,033.96	56.87
Total: Hydel	**38,800.55**	**35,546.28**	**-3,254.27**	**-8.39**
GENCOs	6,802.93	6,349.56	-453.37	-6.66
IPPs	68,708.63	76,118.75	7,410.12	10.78
SPPs/CPPs	216.8	136.31	-80.49	-37.13
Nuclear	10,871.01	18,247.77	7,376.76	67.86
Import From Iran	498.37	514.36	15.99	3.21
Total: Thermal including Nuclear	**87,097.74**	**101,366.75**	**14,269.01**	**16.38**

As on 30th June	FY 2021	FY 2022	Variation	
			(GWh)	(%)
Wind	2,899.94	4,584.19	1,684.25	58.08
Solar	711.63	785.42	73.79	10.37
Bagasse/Biomass	710.56	826.05	115.49	16.25
Total RE	**4,322.13**	**6,195.66**	**1,873.53**	**43.35**
Total: CPPA-G System	**130,220.42**	**143,108.69**	**12,888.27**	**9.90**
B. KE SYSTEM				
KE Own	10,186.00	7,890.50	-2,295.50	-22.54
IPPs	2,184.57	2,110.16	-74.41	-3.41
SPPs/CPPs	579.02	482.5	-96.52	-16.67
KANUPP	219.04	45.77	-173.27	-79.10
Solar	199.56	236.58	37.02	18.55
Total: KE System	**13,368.19**	**10,765.51**	**-2,602.68**	**-19.47**
Grand Total:	**143,588.61**	**153,874.20**	**10,285.59**	**7.16**

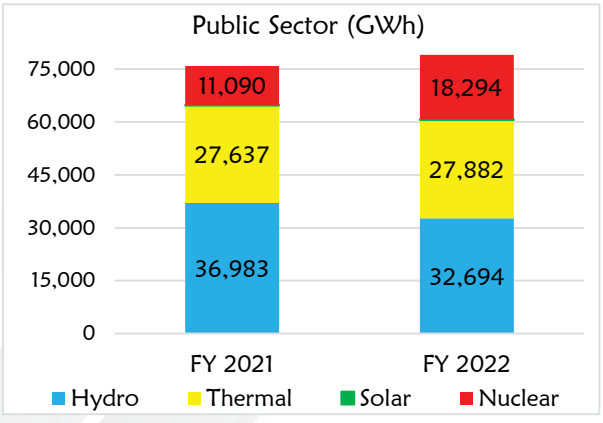
Source: GENCOs/WAPDA/IPPs/DISCOs/KE

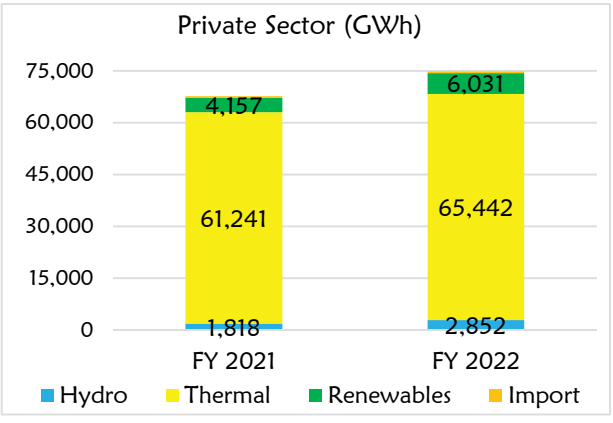
The graphical representation of electricity generation and bifurcation of RE generation for FY 2020-21 and FY 2021-22 is given below:





The total generation from public sector power plants in the country during FY 2022 remained 79,034.77 GWh which is 51% of total generation whereas generation of private sector power plants, including KE, has been recorded as 74,839.44 GWh which is around 49% of total generation. The bifurcation of generation by technology in public and private sector is shown in graphs:





The total generation in CPPA-G area remained 143,108.69 GWh which is 93% of total generation. This comprises of 35,546.28 GWh from hydro, 82,604.62 GWh from thermal sources (GENCOs, IPPs, SPPs), 18,247.77 GWh from nuclear, 6,195.66 GWh from renewables including wind, solar & bagasse and 514.36 GWh import from Iran.

Similarly, generation in KE area has been recorded as 10,765.51 GWh which constitutes 7% of total generation. Besides 7,890.50 GWh from own resources, KE also imports power from IPPs, SPPs/CPPs, Nuclear and CPPA-G.

04 PERFORMANCE OF TRANSMISSION SECTOR

4.1 GENERAL

Transmission of electric power is a licensed activity under the following Sections of NEPRA Act, 1997:

(i) Section 16 of the Act provides for granting the Transmission Licence.
(i) Section 17 of the Act stipulates grant of Transmission Licence for National Grid Company.
(ii) Section 18(A) of the Act authorizing a company owned by a Provincial Government to engage in the transmission of electric power within the territorial limits of such Province.
(iii) Section 19 of the Act stipulates grant of Special Purpose Transmission Licence.

4.2 NATIONAL GRID COMPANY

At one time only one company can be granted a licence to act as NGC to engage in the transmission of electric power. NTDC holding the Transmission Licence is presently acting as NGC under Section 17 of the Act engaged in transmission of electric power at voltage levels of 220 kV and above.

Under the NEPRA Act, the NGC is responsible to operate and provide safe, reliable transmission and inter-connection services on a nondiscriminatory basis, including to a BPC who proposes to become directly connected to its facilities. NGC is, inter alia, responsible (a) to make available to the general public the tariff specifying the Authority's approved rates, charges and other terms and conditions for transmission and inter-connection services and (b) it shall not levy any rate or charge or impose any condition for the transmission of electric power which has not been approved by the Authority as a tariff. The responsibilities of NTDC as NGC are stipulated in detail under Section 18 of the NEPRA Act, 1997, its transmission licence granted by NEPRA and other applicable documents.

As of 30th June 2022, NTDC is maintaining:

(i) Seventeen (17) 500 kV grid stations with transformation capacity of 32,700 MVA.
(ii) Forty-Six (46) 500/220 kV transformers.
(iii) Sixty-Seven (67) 500 kV circuits having length of 8,388 km.
(iv) Fifty (50) 220 kV grid stations with transformation capacity of 28,160 MVA.
(v) Thirty-Six (36) 220/132 kV transformers installed at 500/220 kV grid stations.
(vi) One Hundred & Forty (140) 220/132 kV transformers installed at 220 kV grid stations.
(vii) One Hundred & Sixty-Three (163) 220 kV circuits having length of 11,611 km.

Pursuant to Section 23(G) of NEPRA Act, 2018, no person shall, unless licensed by the Authority under this Act, undertake functions as a System Operator. Provided that the NGC shall be deemed to be a System Operator for a period of two years from the commencement of the NEPRA (Amendment) Act, 2018. The given period of two (02) years to obtain the licence has been expired on 29th April, 2020. In this regard, NEPRA has directed NTDC to submit application for obtaining licence for System Operator immediately.

4.3 POWER BALANCES IN NTDC SYSTEM

The installed electric power generation capacity does not fully contribute to energy production due to various factors like auxiliary consumption, impact of site reference conditions and seasonality effects on the renewables and large hydropower plants. After accounting for above factors, the capacity, known as the generation capability, is effectively used for meeting the electricity demand. The data about electric power generation capability and future demand reported by NTDC is given in the following table:

A: Actual Figures				
FY ending 30th June	Generation Capability (MW)	Demand During NTDC's System Peak Hours (MW) (including KE Supply)		Surplus/ (Deficit) (MW)
2018	23,766	26,741		-2,975
2019	24,565*	25,627*		-1,062
2020	27,780*	26,252*		1,528
2021	27,819*	28,253*		-434
2022	27,748*	24,564		3,184
B: Projected Figures				
FY ending 30th June	Planned Generation Capability as per NTDC (MW)	NTDC Projected Demand Growth Rate (%)	NTDC's Projected Demand during Peak Hours (MW)	Surplus/ (Deficit) (MW)
2023	34,729	4.9	25,779	8,950
2024	37,226	8.7	28,027	9,199
2025	40,213	4.9	29,389	10,824
2026	43,380	4.8	30,814	12,566
2027	44,950	4.7	32,276	12,674

**: Actual values.*
a: Planned generation capability as per IGCEP 2021.
b: Projected Peak Demand (MW) starting from served demand based on Assumption Set approved by CCI, as per IGCEP 2021-30.
Source: NTDC

The surplus capacity as provided during FY 2021-22 is 3,184 MW which is on increasing trend in the years to come and will reach to 12,674 MW in FY 2026-27. This huge surplus quantum of electric power capacity, if with the 'Take or Pay' and/or 'Must Run' conditions, will be a challenge for power sector of Pakistan due to huge capacity payments on account of unutilized capacity.

4.4 UNDERUTILIZATION OF TRANSMISSION SYSTEM OF NTDC

The impact of underutilization has resulted in increased core/iron losses, reduced life and efficiency of equipment used in electric power transmission system. The following table shows number of underutilized (less than 30% loading of rated capacity) power transformers and transmission lines (circuits) of NTDC at 500 kV and 220 kV level during FY 2020-21 and FY 2021-22:

Financial Year	No. of Underutilized Power Transformers		No. of Underutilized Transmission Lines	
	500 kV	220 kV	500 kV	220 kV
2020-21	10	21	39	59
2021-22	7	24	43	71

Source: NTDC

4.5 OVER-LOADING POSITION OF NTDC'S 500 KV AND 220 KV NETWORK

The impact of overloading has resulted in increased copper losses, more heating effect and insulation

failure in equipment used to transmit electric power. The following table shows monthly loading position (80% and above) of power transformers installed at 500 kV and 220 kV grid stations of NTDC:

Month	500/220 kV Transformers		220/132 kV Transformers		Grand Total		
	Total No. of Power Trans.	No. of Over Loaded Power Trans.	Total No. of Power Trans.	No. of Over Loaded Power Trans.	Total No. of Power Trans.	No. of Over Loaded Power Trans.	%
July, 2021	44	29	164	106	208	135	64.90
August, 2021	44	29	161	98	205	127	61.95
September, 2021	44	30	165	89	209	119	56.94
October, 2021	44	9	162	49	206	58	28.16
November, 2021	44	5	161	20	205	25	12.20
December, 2021	44	1	163	31	207	32	15.46
January, 2022	44	1	161	20	205	21	10.24
February, 2022	45	0	165	41	210	41	19.52
March, 2022	45	10	172	48	217	58	26.73
April, 2022	45	22	171	62	216	84	38.89
May, 2022	45	20	172	67	217	87	40.09
June, 2022	46	19	174	96	220	115	52.27

Source: NTDC

4.6 TRANSMISSION AND TRANSFORMATION (T&T) LOSSES OF NTDC

NTDC reported the following month-wise T&T losses during FY 2021-22:

Month	Energy Received by NTDC at CDPs (GWh)	Energy Delivered by NTDC at CDPs (GWh)	Units Lost (GWh)	T&T Losses (%)	Amount of Units Lost (Million Rs.)
July, 2021	14,680.84	14,257.79	423.05	2.882	7,150
August, 2021	15,682.47	15,236.96	445.51	2.841	7,775
September, 2021	13,948.91	13,594.70	354.21	2.539	6,385
October, 2021	10,238.28	9,995.25	243.03	2.374	4,856
November, 2021	8,575.49	8,383.88	191.62	2.234	3,743
December, 2021	9,300.42	9,056.85	243.57	2.619	4,470
January, 2022	10,221.39	9,923.58	297.82	2.914	6,299
February, 2022	8,486.52	8,247.03	239.49	2.822	4,659
March, 2022	10,527.80	10,264.40	263.40	2.502	4,594
April, 2022	12,642.02	12,309.50	332.52	2.630	6,174
May, 2022	13,344.80	13,021.53	323.27	2.422	7,452
June, 2022	12,688.41	12,349.80	338.61	2.669	8,615
Total	**140,337.34**	**136,641.25**	**3696.09**	**2.634**	**72,172**

Source: NTDC

4.7 INVESTMENT DETAILS OF NTDC

A summary of investments allowed by NEPRA to NTDC and actual expenditure by NTDC during last 05 years is given below:

(Million Rs.)

Description	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21
Requested by NTDC	74,700	46,428	49,815	39,062	56,443
Allowed by NEPRA	49,810	42,336	41,380	36,245	40,526
Actual expenditure by NTDC	44,194	42,336	47,406	36,245	40,526

Source: NTDC

4.8 NEPRA PERFORMANCE STANDARDS (TRANSMISSION) RULES, 2005

In order to encourage safe, efficient and reliable transmission service, NEPRA has framed the Performance

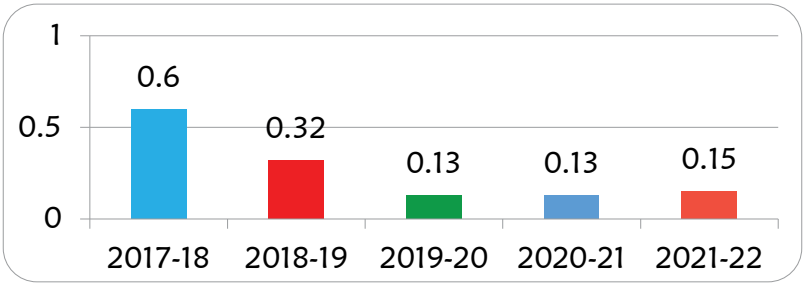
Standards (Transmission) Rules, 2005 (PSTR). Under PSTR, each transmission licensee is required to submit to NEPRA an Annual Performance Report (APR) in a manner prescribed therein. In compliance therein NTDC has submitted its report of FY 2021-22. The same was analyzed in light of the performance parameters such as System duration of interruption, System Frequency of Interruption, Energy Not Served, Loss of Supply Incidents, Voltage and Frequency Variations violating limits prescribed in PSTR. Highlights of the analysis/findings are given in succeeding paras:

4.8.1 System Reliability

NTDC Reported System Reliability Indicators as follows

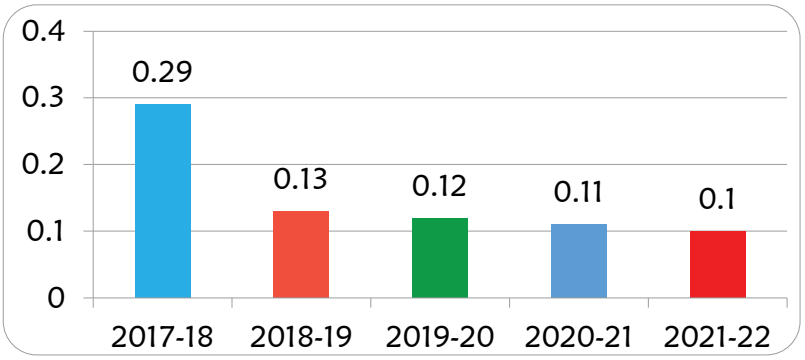
i. **System Duration of Interruption (Hrs./Point)**

This indicator shows the average duration of outage an interconnection point observes during a year and it remained 0.15 hrs. in the FY 2021-22 indicating around 15.4% increase in comparison to the preceding year as shown in the following figure:



ii. **System Frequency of Interruption (Nos./Circuit)**

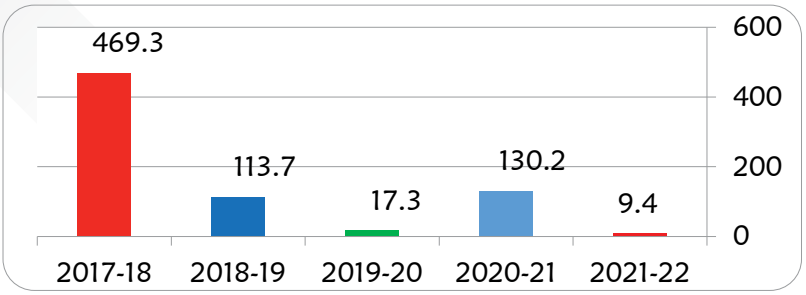
It indicates the average number of outages at a circuit during a year. During FY 2021-22 it remained 0.10 as shown in the following figure that indicates 9% decrease in average number of outages per circuit as compared to preceding year:



4.8.2 System Security

This KPI shows the estimates of the total energy not served (ENS) contributed by loss of supply incidents during the FY 2021-22. Detail is as under:

i. **Energy Not Served (ENS) (MkWh)**



ii. **Loss of Supply Incidents, Average ENS per Incident and Average duration per Incident**

Financial Year	Loss of Supply Incidents (Nos.)	Average ENS per Incident (MkWh)	Average Duration per Incident (Hrs.)
2017-18	142	3.3	2.1
2018-19	66	1.7	2.4
2019-20	62	0.3	1.1
2020-21	57	2.3	1.2
2021-22	51	0.2	1.6

4.8.3 Major Disturbances

These 'loss of Supply Incidents' includes 03 number of major disturbances. Detail for the last four years is as under:

Date	Details of Breakdowns
03-11-2017	Partial Breakdown
01-05-2018	Partial Breakdown
21-05-2018	Partial system collapse
27-06-2018	Grid Fault at Port Qasim
20-10-2018	Partial Collapse in South
21-01-2019	System Splitting
23-01-2019	System Splitting
25-01-2019	Shikarpur-HUBCO-KE Collapse
26-02-2019	Chashnupp Complex Tripping
05-07-2019	500 kV Guddu – DG Khan, 500 kV Guddu – Muzaffargarh, 500 kV Guddu – Guddu 747, 500 kV RYK – Guddu 747 and 220 kV Dadu – Khuzdar circuits tripped interrupting a load of 100 MW for 4.6 hours.
29-07-2019	500 kV Moro – Engro Thar, 500 kV Engro Thar – Jamshoro, 500 kV Jamshoro – Dadu, 500 kV Jamshoro – Port Qasim, 500 kV Jamshoro – Hala Road, and 220 kV Jhimpir – TM Khan circuits tripped interrupting a load of 90 MW for 2.2 hours.
21-08-2019	220 kV Kala Shah Kaku – Bund Road, 220 kV – Gakkhar – Sialkot, 220 kV Mangla – Gakkhar, 220 kV Kala Shah Kaku – Sialkot, 220 kV Kala Shah Kaku-Ghazi Road circuits tripped interrupting a load of 226 MW for 2.7 hours.
20-05-2020	500 kV circuits New Gakkhar – Neelum Jhelum, Rawat – Neelum Jhelum, New Gakkhar – New Lahore, and New Gakkhar – Lahore Sheikhupura affected.
30-06-2020	Fire incident at 132 Jamshoro switchyard resulting in tripping of T1, T2 & T3 at Jamshoro, 220 kV G/S Jhimpir, T. M. Khan, Hala Road, and loss of generation of all wind power plants occurred.
23-08-2020	500/220 kV, 450 MVA Auto Transformer T-1 affected for a time period of 1 hour & 44 mins interrupting a load of 345 MW.
23-08-2020	220 kV Guddu-Shikarpur circuit # 01 & 02, 220 kV Guddu-Sibbi circuit and 500/220 kV, 450 MVA T-2 & T-3 was affected interrupting a total load of 110 MW for time duration of 2 hours and 10 mins.

Date	Details of Breakdowns
09-01-2021	Major System Blackout 500 kV circuits Guddu – Shikarpur 1, Guddu – Shikarpur 2, Guddu – DG Khan, Guddu – Muzaffargarh, Guddu – 747 and 500/220 kV, 450 MVA T-2 transformer At Guddu were affected. The load interrupted was 10311 MW for a time Duration of 20 hours.
29-04-2021	Tripping of KAPCO Power Plant and associated transmission lines 220 kV Muzaffargarh Phase-I – KAPCO circuit 1 along with 220 kV Bus Bar 2 at KAPCO, 220 kV circuits KAPCO – Multan 4, KAPCO – Multan 5 and KAPCO – Multan 6 tripped interrupting a total load of 590 MW for a time duration of 31 mins.
22-05-2021	Tripping of lines and tower collapse of 500 kV Port Qasim – Matiari Circuit 1 & 2 220 kV circuits NKI – Baldia, NKI – KDA, and 500 kV circuits NKI – Jamshoro, Dadu – Matiari, Dadu – Jamshoro and Matiari – Port Qasim circuit 1 & 2 interrupting a total load of 2097 MW for a time duration of 35 mins.
25-05-2021	Tripping at 220 kV TPS Muzaffargarh (Phase-I) and associated transmission lines 220 kV circuits Muzaffargarh Phase-I – Multan 4, Muzaffargarh Phase-I – Muzaffargarh Phase-II, Muzaffargarh Phase-I – Bahawalpur 2, Muzaffargarh Phase-II – Pakgen, Muzaffargarh Phase-I – Lalpir 1, Muzaffargarh Phase-II – Lalpir 2 and 220 kV Bus Bar 1 & 2 at Muzaffargarh Phase-I and 500/220 kV Transformer T1 at 500 kV Muzaffargarh tripped. Total 850 MW load interrupted for time duration of 17 mins.
01-09-2021	Blackout from Jamshoro to KE All 500 & 220 kV transmission lines emanating from 500 kV Jamshoro grid station along with 500/220 kV and 220/132 kV Auto T/F's tripped at Jamshoro grid station. The event resulted in power supply failure to KE and HESCO, K2 (1030) MW, Hub Power (0 MW), China Hub Power (600 MW) and all Wind Power Plants (310 MW).
23-03-2021	500 kV Jamshoro grid station, K2, KE splitted from NTDC network Circuits affected are given hereunder; 500 kV Jamshoro – Matiari Circuit 1 & 2, 500 kV Jamshoro – Dadu Circuit, 500 kV Jamshoro – China Hub Circuit, 500 kV Jamshoro – K2 Circuit and 220 kV Jamshoro – T. M. Khan Circuit 1 & 2.
16-04-2022	220 kV circuits Mangla-NRWT circuit-I, Mangla-NRWT circuit-II, Mangla-Gujrat circuit-I, Mangla-Gujrat circuit-II, Mangla-KSK circuit-I, Mangla-KSK circuit-II, Mangla-KSK circuit-III, Mangla-GKR circuit, Bandala-KSK circuit-II and KSK Sahuwala circuit were affected and 3701 MW load was interrupted thereby.

4.8.4 Frequency

Rule 8 of Performance Standards (Transmission) Rules 2005 prescribes limits for frequency. The frequency data as reported by NTDC indicated variation in frequency limits beyond the upper permissible limit of 50.5 Hz and highest frequency recorded was 50.66 Hz that comes out to be 1.32% variation with respect to nominal frequency of 50 Hz in the year 2021-22. The detail is given hereunder with a comparison to the preceding years.

i. **NTDC System Frequency**

Financial Year	Number of times Frequency remained outside the Limits			Time duration the Frequency remained outside the Limits		
	In a year	Average/month	Average/day	hours	Min	% of year
2017-18	25	2.1	0.07	4.1	246	0.047
2018-19	25	2.1	0.07	2.98	179	0.34
2019-20	9	0.8	0.02	0.8	48	0.009
2020-21	4	0.3	0.01	0.6	36	0.007
2021-22	4	0.3	0.01	0.44	26	0.005

ii. **NTDC Monthly Highest System Frequency Violating Limit (Hz):**

Month	2017-18	2018-19	2019-20	2020-21	2021-22
July	50.55	50.66	50.62	50.72	50.59
August	50.56	50.54	50.55	NIL	NIL
September	50.56	50.6	NIL	50.54	NIL
October	NIL	50.58	50.59	NIL	NIL

Month	2017-18	2018-19	2019-20	2020-21	2021-22
November	NIL	NIL	NIL	NIL	NIL
December	NIL	50.64	NIL	NIL	NIL
January	50.64	50.67	50.58	NIL	NIL
February	NIL	NIL	NIL	NIL	NIL
March	50.54	50.59	NIL	NIL	NIL
April	50.56	50.68	NIL	NIL	NIL
May	50.62	NIL	50.60	NIL	50.61
June	50.6	50.79	50.54	NIL	50.66

iii. **NTDC Monthly Lowest System Frequency Violating Limit (Hz):**

Month	2017-18	2018-19	2019-20	2020-21	2021-22
July	50.51	50.51	NIL	NIL	NIL
August	50.51	50.51	NIL	NIL	NIL
September	50.51	50.51	NIL	NIL	NIL
October	NIL	50.51	NIL	NIL	NIL
November	NIL	NIL	NIL	NIL	NIL
December	NIL	50.51	NIL	NIL	NIL
January	NIL	49.44	NIL	NIL	NIL
February	NIL	NIL	NIL	NIL	NIL
March	NIL	50.51	NIL	NIL	NIL
April	NIL	50.52	NIL	NIL	NIL
May	NIL	NIL	NIL	NIL	NIL
June	NIL	50.51	NIL	NIL	NIL

4.9 TRANSMISSION NETWORK OF KE

KE has also been granted a Transmission Licence under Section 16 of NEPRA Act, 1997, for transmission of electric power in its territory. KE is operating under the licence issued by NEPRA to carry out electricity transmission business within its service area. KE owns, operates and maintains transmission network of 220 kV and 132 kV. The details of existing transmission network of KE at 220 kV and 132 kV level is as under:

(i) 364 km of 220 kV Transmission Lines (321 km overhead and 43 km underground)
(ii) 11 Nos. of 220 kV Grid Stations with transformation capacity of 4,580 MVA
(iii) 838 km of 132 kV Transmission Lines 652 km overhead and 186 km underground)
(iv) 69 Nos. of 132 kV Grid Stations having transformation capacity of 7,465 MVA

4.10 POWER BALANCES IN KE SYSTEM

The power supply and demand position in KE system based on the investment plans as submitted by KE is shown in the following table. The given data shows that till year ending in 2022, despite purchase of power from external sources, KE was not able to meet the demand at peak times.

A: Actual Figures			
FY ending 30th June	**Generation Capability (MW)***	**Demand During KE's System Peak Hours (MW)**	**Surplus/(Deficit) (MW)*****
2018	3,008 (including IPPs+NTDC)	3,527	(519)
2019	3,196 (including IPPs+NTDC)	3,530	(334)
2020	3,202 (including IPPs+NTDC)	3,604**	(402)
2021	3,424 (including IPPs+NTDC)	3,604**	(180)
2022	3,383(including IPPs+NTDC)	3670	(287)

B: Projected Figures				
FY ending 30th June	Generation Capability (MW)*	Demand During KE's System Peak Hours (MW)	Surplus/(Deficit) (MW)***	
2023	4,056	4.3%	4,011	45
2024	4,656		4,168	488
2025	4,405		4,290	115
2026	4,710		4,404	306
2027	4,825		4,522	303

** Based on maximum supply achieved in KE's system. ** Peak demand recorded on July 3, 2020.*
**** Deficit based on peak demand and maximum supply achieved during the year.*
[1] Including own generation/import from all sources.
[2] This is subject to timely Government & regulatory approval/confirmation.
[3] Demand projections are based on Management's best estimates which may be subject to revisions due to changes in macroeconomic factors or any other factor beyond KE's control, hence timelines for planned additions may be adjusted accordingly.
Source: KE

4.11 LOADING POSITION OF POWER TRANSFORMERS IN KE SYSTEM

KE has 11 grid stations of 220/132 kV level with 13 auto transformers of 4,580 MVA transformation capacity, 69 grid stations of 132/11 kV level with 175 Nos. power transformers of 7,465 MVA transformation capacity. Operational record of 220/132 kV grid stations provided by the KE shows no over-loading during the reported period of FY 2021-22 whereas, 46 out of 175 of KE's power transformers at 132/11 kV level were reported over-loaded in the same period.

4.12 SPECIAL PURPOSE TRANSMISSION LICENCE

Under Section 19 of the NEPRA Act, NEPRA is empowered to grant SPTL authorizing the licensee to engage in the construction, ownership, maintenance and operation of specified transmission facilities. The responsibilities of the SPTL are given in detail in the NEPRA Act as well as in the licenses granted to the companies. NEPRA has, so far, issued SPTL to the following three (03) private sector companies:

(i) Fatima Transmission Company Limited has been granted SPTL on 28-08-2015 to establish special purpose transmission lines to evacuate power from its 120 MW cogeneration power plant.
(ii) STDC has been granted SPTL on 17-12-2015 to evacuate power from the power plants of SNPC-I and SNPC-II and transmit it to KE's 132 kV network. STDC has constructed Transmission Line of 132 kV Double Circuit from SNPC-I & II to 132 kV KDA-33 Grid Station of KE at Karachi. The length of the line is around 95 km.
(iii) PMLTC has been granted SPTL on 19-02-2018 for constructing first-ever 878 km Bipole ±660 kV HVDC transmission line from Matiari to Lahore with a capability to transmit 4,000 MW power.

4.13 TRANSMISSION LOSSES OF 660 kV HVDC LINE

NEPRA allowed a maximum margin of 4.30% transmission losses on yearly basis for 660 kV HVDC transmission line. The following table shows month-wise transmission losses of 660 kV HVDC transmission line of PMLTC during FY 2021-22:

Month	Energy Received by HVDC at CDPs (GWh)	Energy Delivered by HVDC at CDPs (GWh)	Units Lost (GWh)	Losses (%)	Amount of Units Lost (Rs. in million)
July, 2021	861.12	834.23	26.89	3.12	158
August, 2021	944.88	912.75	32.13	3.40	192
September, 2021	747.25	724.10	23.15	3.10	157
October, 2021	680.98	660.43	20.55	3.02	150
November, 2021	490.51	474.70	15.81	3.22	101
December, 2021	876.11	852.89	23.22	2.65	201

Month	Energy Received by HVDC at CDPs (GWh)	Energy Delivered by HVDC at CDPs (GWh)	Units Lost (GWh)	Losses (%)	Amount of Units Lost (Rs. in million)
January, 2022	1,165.53	1,136.31	29.22	2.51	305
February, 2022	813.63	790.73	22.90	2.81	243
March, 2022	1,131.43	1,101.37	30.06	2.66	219
April, 2022	1,684.81	1,638.40	46.41	2.75	315
May, 2022	1,506.88	1,464.44	42.44	2.82	351
June, 2022	999.03	970.38	28.65	2.87	329
Total	**11,902.16**	**11,560.73**	**341.43**	**2.87**	**2,721**

Source: CDP Metering Data of NTDC

4.14 TRANSMISSION LOSSES OF STDC

NEPRA allowed a maximum yearly margin of 2.0% transmission losses to STDC for its 132 kV transmission line from SNPC-I and SNPC-II power plants to KDA-33 grid station of KE. In this respect, STDC reported following transmission losses from its COD till date:

Months	2018	2019	2020	2021	2022
January	1.70%	1.58%	1.41%	1.23%	1.08%
February	1.83%	1.48%	1.67%	1.42%	1.28%
March	1.99%	1.85%	1.82%	1.80%	1.80%
April	1.67%	1.86%	1.82%	1.89%	1.65%
May	2.14%	1.87%	1.97%	1.90%	2.04%
June	2.01%	2.09%	2.01%	1.93%	-
July	2.20%	2.13%	1.87%	2.06%	-
August	2.01%	2.12%	1.86%	2.25%	-
September	2.08%	2.24%	1.76%	1.73%	-
October	2.17%	2.18%	1.92%	1.62%	-
November	2.99%	1.97%	1.73%	1.65%	-
December	1.85%	1.55%	1.47%	1.31%	-
Average	**2.05%**	**1.91%**	**1.78%**	**1.73%**	-

Source: STDC

4.15 DURATION OF TRANSMISSION LINE OUTAGES OF STDC

The following table shows duration of transmission line outages on monthly basis from COD of the transmission project of STDC:

S. No.	Months	2018	2019	2020	2021	2022
1	January	No Outage	No Outage	No Outage	No Outage	No Outage
2	February	No Outage	No Outage	No Outage	7 hrs. 33 mins.	No Outage
3	March	No Outage	No Outage	No Outage	No Outage	No Outage
4	April	No Outage	No Outage	No Outage	No Outage	3 hrs. 15 mins.
5	May	3 hrs. 55 mins.	3 hrs. 8 mins.	7 hrs. 39 mins.	No Outage	24 mins.
6	June	11 hrs. 58 mins.	No Outage	No Outage	No Outage	-
7	July	22 mins	16 hrs. 52 mins.	No Outage	No Outage	-
8	August	4 hrs. 43 mins.	No Outage	No Outage	No Outage	-
9	September	23 hrs. 37 mins.	No Outage	No Outage	8 hrs. 17 mins.	-

S. No.	Months	2018	2019	2020	2021	2022
10	October	16 hrs. 29 mins.	No Outage	No Outage	No Outage	-
11	November	No Outage	4 hrs.	No Outage	4 hrs. 32 mins.	-
12	December	No Outage	No Outage	No Outage	No Outage	-
Total Duration		**61 hrs. 4 mins.**	**24 hrs.**	**7 hrs. 39 mins.**	**20 hrs. 22 mins.**	-

Source: STDC

4.16 PROVINCIAL GRID COMPANY

The Section 18A of the NEPRA (Amendment) Act, 2018 provides that the Government of a Province may construct powerhouses and grid stations and lay transmission lines for use within the province and determine the tariff for distribution of electricity within the province and such tariff shall not be called into question by the Authority.

The NEPRA (Amendment) Act, 2018 further provides for grant of licence to PGC owned by a Provincial Government to engage in the transmission of electric power within the territorial limits of such province. So far, two PGC Licenses have been granted; first one granted to STDC on 5th November, 2019 for transmission of electric power within the province of Sindh while the other one is granted to Khyber Pakhtunkhwa Transmission and Grid Company on 26th February, 2021 to engage in the transmission of electric power in the province of Khyber Pakhtunkhwa.

Under the NEPRA Act, PGC is mainly responsible to operate and provide safe and reliable transmission services on a nondiscriminatory basis, including to a BPC who proposes to become directly connected to its facilities. The responsibilities of the PGCs are stipulated in detail under Section 18(B) of the NEPRA Act, 1997, their transmission licenses granted by NEPRA and other applicable documents.

05 PERFORMANCE OF DISTRIBUTION SECTOR

5.1 GENERAL

Distribution of electric power is a licensed activity under Section 20 of NEPRA Act, 1997. At present ten (10) DISCOs fully owned by the Federal Government and KE are performing the function of electric power distribution in their territories under the license granted by NEPRA. Prior to amendments in NEPRA Act in April 2018, the distribution of electricity included the wire business as well as sale of electricity to the end-consumers. However, after the promulgation of NEPRA (Amendment) Act, 2018, the sale of electricity has been excluded from the ambit of distribution while for sale of electricity, 'Electric Power Supply Licence' is required under Section 23E of the Act. Further, under Section 23E(1) of NEPRA (Amendment) Act, 2018, the existing distribution licensees shall be deemed to hold a licence for supply of electric power for a period of five years from coming into effect of NEPRA (Amendment) Act, 2018.

In the reporting year FY 2021-22, distribution licenses granted to DISCOs, except KE, SEPCO and TESCO, have been expired. The respective DISCOs have applied for renewal of their licenses. Upon submission of renewal applications NEPRA issued provisional licence for a period of six (06) months while NEPRA is processing for final licenses. The details of expiry of licence and submission of application by DISCOs is given in the following table:

DISCO	Distribution Licence Expiry Date	Date of Application for Licence Renewal	Provisional Licence Issuance Date
PESCO	29th April, 2022	14th January, 2022	31st May, 2022
IESCO	1st November, 2021	27th August, 2021	29th October, 2021
GEPCO	22nd April, 2022	24th December, 2021	31st May, 2022
LESCO	31st March, 2022	21st December, 2021	31st May, 2022
FESCO	1st March, 2022	28th October, 2021	31st May, 2022
MEPCO	24th April, 2022	21st January, 2022	31st May, 2022
HESCO	22nd April, 2022	21st January, 2022	31st May, 2022
QESCO	30th April, 2022	26th January, 2022	31st May, 2022

Source: NEPRA

5.2 DISCO'S AND KE'S INFRASTRUCTURE

The following table shows details of DISCOs and KE assets i.e., transmission lines, grid stations, power transformers, 11 kV feeders, distribution transformers and number of consumers as on 30-06-2022 in comparison with the assets as well as number of consumers in FY 2020-21:

DISCO	FY	T/Lines 132 kV (km)	G/ Station 132 kV (Nos.)	Power Transformer		11 kV Feeders		Distribution Transformer		No. of Consumers
				No.	MVA	No.	km	No.	MVA	
PESCO	2020-21	2967	95	252	6925	1138	37177	79437	6264	3848951
	2021-22	2999	97	259	7365	1193	37695	81149	6424	4038313
TESCO	2020-21	441	11	55	974	266	10567	18827	1378	443180
	2021-22	441	13	57	1243	302	10543	19194	1440	444146
IESCO	2020-21	3482	111	267	6679	1211	26237	51988	4279	3276164
	2021-22	3512	114	273	6939	1293	26932	53616	4395	3485617
GEPCO	2020-21	2611	59	174	5110	910	24659	76125	4745	3933086
	2021-22	2682	59	181	5255	949	24996	80085	4798	4159712
LESCO	2020-21	3051	167	428	12953	2011	30055	122124	9245	5527854
	2021-22	3110	172	441	13443	2058	31562	126758	9479	5887248
FESCO	2020-21	2337	102	240	6039	1185	45690	120446	7628	4641802
	2021-22	2322	108	249	6261	1265	46281	124801	7934	4869142
MEPCO	2020-21	4072	134	312	8720	1652	79837	187791	9102	7217677
	2021-22	4110	135	317	8990	1726	80962	223922	12960	7614953
HESCO	2020-21	2771	70	122	2791	570	28471	43873	2680	1172990
	2021-22	2778	72	128	2934	583	28502	44317	2720	1196494
SEPCO	2020-21	2262	60	133	3010	548	24722	39076	2178	805717
	2021-22	2308	62	134	3101	562	24824	39437	2253	814778
QESCO	2020-21	5500	73	179	3465	688	40822	64119	3339	662168
	2021-22	6258	75	180	3636	735	41606	66119	3466	679391
Total CPPA-G	**2020-21**	**29495**	**882**	**2162**	**56670**	**10179**	**348237**	**803806**	**50839**	**31529589**
	2021-22	**30520**	**907**	**2219**	**59169**	**10666**	**353903**	**859398**	**55871**	**33189794**
KE	2020-21	833	69	172	6536	1937	10283	29702	8153	3185332
	2021-22	838	69	179	6803	2001	10520	30771	8685	3405332

Source: DISCOs/KE

During FY 2021-22, overall assets of DISCOs including KE have increased as a result of investments made by the distribution licensees. Similarly, during the reporting period, total 1,880,205 new electricity consumers were added in the system. The new addition of electricity consumers included 1,660,205 consumers added in CPPA-G System and 220,000 consumers added in KE System. This addititon of electricity consumers have also contributed towards increase in the sales of DISCOs as well as KE; in DISCOs, the sale of electricity reaches to 107,860 GWh during FY 2021-22 as compared to 99,370 GWh during FY 2020-21. While in KE, sale of electricity reaches to 16,763 GWh during FY 2021-22 as compared to 16,068 GWh during FY 2020-21.

5.3 SALES OF DISCOS AND KE

The following table shows the sales of DISCOs and KE to different categories of consumers in GWh during FY 2021-22 in comparison with the sales of FY 2020-21:

DISCO	Domestic		Commercial		Industrial		Agricultural	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
PESCO	5372	5688	801	874	2274	2527	78	77
TESCO	1401	1468	5	5	553	547	30	26
IESCO	5325	5757	1166	1305	1521	1685	26	35
GEPCO	6372	6816	671	757	2775	2797	543	535
LESCO	9663	10353	1662	1867	8351	9775	1187	1332
FESCO	7061	7390	769	847	4937	5821	1267	1367
MEPCO	9825	10243	980	1077	2860	3460	3201	3736

DISCO	Domestic		Commercial		Industrial		Agricultural	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
HESCO	2408	2298	265	263	823	914	200	208
SEPCO	1795	1794	227	235	375	412	84	87
QESCO	587	591	138	151	191	172	3485	3516
Total DISCOs	49809	52398	6684	7381	24660	28110	10101	10919
Sales Growth in DISCOs (%)	-	5.20	-	10.43	-	13.99	-	8.10
Total CPPA-G (GWh)	49814	52404	6687	7386	24664	28115	10115	10921
Sales Growth in CPPA-G (%)	-	5.20	-	10.45	-	13.99	-	7.97
KE (GWh)	8041	8004	1708	1846	5220	5848	121	110
Sales Growth in KE (%)	-	-0.46	-	8.08	-	12.03	-	-9.09
Overall Country (GWh)	57855	60408	8395	9232	29884	33963	10236	11031
Overall Sales Growth (%)	-	4.41	-	9.97	-	13.65	-	7.77

DISCO	Public Lighting		Bulk Supply		Others		Total		Sales Growth (%)
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22	
PESCO	46	12	641	698	392	476	9607	10355	7.79
TESCO	0	0	12	12	8	10	2012	2071	2.93
IESCO	81	83	918	1034	1898	2060	10944	11961	9.29
GEPCO	7	9	156	160	390	434	10922	11528	5.55
LESCO	139	138	654	720	693	882	22352	25070	12.16
FESCO	13	17	237	213	213	259	14501	15918	9.77
MEPCO	20	23	275	294	302	367	17466	19202	9.94
HESCO	4	8	105	113	205	228	4014	4034	0.50
SEPCO	165	40	22	206	105	113	2777	2890	4.07
QESCO	10	10	130	140	229	247	4775	4831	1.17
Total DISCOs	485	340	3150	3590	4435	5076	99370	107860	8.54
Sales Growth in DISCOs (%)	-	-29.90	-	13.97	-	14.45	-	8.54	-
Supplied to KE	-	-	-	-	-	-	6118	9036	47.70
Total CPPA-G (GWh)	491	344	3158	3611	4439	5081	99372	107865	10.81
Sales Growth in CPPA-G (%)	-	-29.94	-	14.34	-	14.46	-	10.81	-
KE (GWh)	98	63	454	467	423	426	16068	16763	4.33
Sales Growth in KE (%)	-	-35.71	-	2.86	-	0.71	-	4.33	-
Overall Country (GWh)	589	407	3612	4078	4862	5507	121556	133659	9.96
Overall Sales Growth (%)	-	-30.90	-	12.90	-	13.27	-	9.96	-

Source: DISCOS

During FY 2021-22, around 9.96% overall country-wide growth has been recorded in the sales of DISCOs including all DISCOs and KE. In DISCOs, sales growth of 8.54% has been noted. CPPA-G supplied 47.70% additional energy to KE in FY 2021-22 as compared to last year. Overall sales growth of 10.81% has been reported in CPPA-G system. In KE, sales growth of 4.33% has been reported. DISCO-wise highest growth of 12.16% has been noted in LESCO while lowest growth of 0.50% has been observed in HESCO during the reporting year.

5.4 TRANSMISSION AND DISTRIBUTION LOSSES OF DISCOS

The following table shows a comparison between of T&D losses for the FY 2020-21 and FY 2021-22 in each DISCO:

DISCO	FY 2021-22 (Units in GWh)			Target Losses (%)	Actual Losses (%)		Amount of Actual Units Lost (Rs. in billion)
	Purchase	Sold	Lost	2021-22	2020-21	2021-22	2021-22
PESCO	16560	10355	6205	20.73	38.18	37.47	153.80
TESCO	2284	2071	213	9.31	9.58	9.33	3.70
IESCO	13027	11961	1066	8.15	8.54	8.18	21.90
GEPCO	12678	11528	1150	9.2	9.23	9.07	24.70
LESCO	28334	25070	3264	9.08	11.96	11.52	72.70
FESCO	17512	15918	1594	9.34	9.28	9.10	33.40
MEPCO	22548	19202	3346	12.79	14.93	14.84	75.10
HESCO	6010	4034	1976	19.07	38.55	32.88	45.00
SEPCO	4489	2890	1599	17.41	35.27	35.62	43.70
QESCO	6716	4831	1885	14.49	27.92	28.07	46.30
Overall Average	**130158**	**107860**	**22298**	**13.41**	**17.95**	**17.13**	**520.30**

Source: DISCOs

5.5 RECOVERY RATIOS IN DISCOS SYSTEM

A comparison of recovery percentages of DISCOs over last two years is given below:

Description	PESCO	TESCO	IESCO	GEPCO	LESCO	FESCO	MEPCO	HESCO	SEPCO	QESCO	Overall DISCOs
Amount Billed (Mln. Rs.)	233591	43386	289977	252986	587306	366707	400711	88892	63209	96523	2423292
Amount Realized (Mln. Rs.)	214419	28728	277284	248407	567887	347777	368972	65530	40314	34053	2193375
Recovery 2021-22 (%)	91.79	66.22	95.62	98.19	96.69	94.84	92.08	73.72	63.78	35.28	**90.51**
Recovery 2020-21 (%)	101.87	83.27	116.87	105.1	98.72	97.2	102.15	75.63	64.48	39.8	**97.30**
Inc./(Dec.)	**-10.08**	**-17.05**	**-21.25**	**-6.91**	**-2.03**	**-2.36**	**-10.07**	**-1.91**	**-0.7**	**-4.52**	**-6.79**

Source: DISCOs

5.6 RECEIVABLES OF DISCOS

As on 30th June 2022, total receivables of all DISCOs stood at Rs. 1,498 billion whereas, the receivables were Rs. 1,189 billion as on 30th June, 2021 showing an increase of Rs. 309 billion during the reporting FY 2021-22 shown hereunder:

DISCO	Category	June 2021 (Rs. in million)				June 2022 (Rs. in million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
PESCO	Federal Govt.	21372.2	1160.55	6511.55	16021.2	16614.65	1712.84	943.64	17374.25
	Provincial Govt.	1743.24	868.26	1392.61	1218.88	1843.73	1291.13	1228.05	1916.7
	Private	127942	14804.7	13374.3	129372	143602.31	19883.32	16994.79	146490.58
	Total	**151057**	**16834**	**21279**	**146612**	**162060.7**	**22887.29**	**19166.49**	**165781.53**

DISCO	Category	June 2021 (Rs. in million)				June 2022 (Rs. in million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
TESCO	Federal Govt.	1297.4	74.7	112.55	1259.55	1000.28	55.04	105.71	949.61
	Provincial Govt.	1031.25	19	44.27	1005.98	1565.98	65.64	84.35	1547.27
	Private	72039.07	2495.93	15480.02	59054.98	72657.93	4042.9	3218.74	73482.09
	Total	**74367.72**	**2589.63**	**15636.84**	**63224.75**	**75224.19**	**4163.58**	**3408.8**	**75978.97**
IESCO	Federal Govt.	87098	5802	24438	68485	79797.77	6827.85	4882.22	81743.71
	Provincial Govt.	733	330	386	679	836.71	153.9	1357.4	-366.3
	Private	11557	19282	17907	12934	18383.41	24038.48	23050.44	19371.42
	Total	**99388**	**25415**	**42731**	**82098**	**99017.89**	**31020.24**	**29290.06**	**100748.83**
GEPCO	Federal Govt.	14179.8	907	3937	11149.8	9652.4	1090.21	716.51	10026.1
	Provincial Govt.	1641.3	339	494	1486.3	2362.34	325.7	728.42	1959.62
	Private	18651.9	20404	18786	20269.9	30663.16	27454.94	24710.88	33407.22
	Total	**34473**	**21650**	**23217**	**32906**	**42677.9**	**28870.85**	**26155.81**	**45392.94**
LESCO	Federal Govt.	3344	9345	9833	2856	2855.81	10970.36	10511.17	3315
	Provincial Govt.	8712	20551	21659	7603	7603.19	24065.59	24294.78	7374
	Private	114834	401707	397438	119102	119101.77	585816.12	552476.89	152441
	Total	**126890**	**431602**	**428931**	**129561**	**129560.77**	**620852.07**	**587282.84**	**163130**
FESCO	Federal Govt.	421.87	519.35	485.31	455.92	810.55	610.86	477.97	943.66
	Provincial Govt.	2359.56	680.17	1273.29	1767.96	2393.04	835.57	1380.22	1849.28
	Private	53107.9	26763.2	27874.1	51998.6	69507.62	37353.15	36495.31	70364.63
	Total	**55889**	**27963**	**29633**	**54223**	**72711.21**	**38799.58**	**38353.5**	**73157.57**
MEPCO	Federal Govt.	611.8	612.52	796.05	428.62	774.57	706.47	752.42	728.95
	Provincial Govt.	2882.54	1060.46	1440.69	2503.26	4686.83	1221.64	2508.34	3400.77
	Private	66140.2	28919.3	28650	66411.6	95531.41	40046.42	38599.44	96623.73
	Total	**69634.5**	**30592**	**30887**	**69343**	100992.81	**41974.53**	**41860.2**	**100753.44**
HESCO	Federal Govt.	4534.47	348.04	444.33	4438.17	4968.35	285.92	445.07	4809.2
	Provincial Govt.	9979.89	693.92	537.43	10082.4	12798.36	594.57	13.85	13379.08
	Private	99802.9	7108.73	4864.85	102047	119414.67	8408.59	6078.73	121744.53
	Total	**114317**	**8096.7**	**5846.6**	**116568**	**137181.38**	**9289.08**	**6537.65**	**139932.81**
SEPCO	Federal Govt.	1911.84	220.76	587.97	1534	2707.67	595.03	533.39	2787.31
	Provincial Govt.	13035.5	318.96	234.57	13609	15417.24	718.93	279.34	15991.78
	Private	128718	5104.33	2749.38	132916	150867.89	5696.23	3429.53	153456.58
	Total	**143666**	**5644.1**	**3571.9**	**148058**	**168992.8**	**7010.19**	**4242.26**	**172235.67**
QESCO	Federal Govt.	1893.05	261.98	842.64	1312.39	1752.15	451.8	524.88	1679.07
	Provincial Govt.	21664.5	586.75	622.97	21628.3	27743.2	780.83	751.45	27772.58
	Private	321784	7203.49	5023.08	323965	430781.46	8084.1	7361.5	431504.06
	Total	**345342**	**8052.2**	**6488.7**	**346905**	**460276.81**	**9316.73**	**8637.83**	**460955.71**
Total CPPA-G	Federal Govt.	136664.43	19251.9	47988.4	107940.65	120934.2	23306.38	19892.98	124356.86
	Provincial Govt.	63782.78	25447.52	28084.83	61584.08	77250.62	30053.5	32626.2	74824.78
	Private	1014576.97	533792.68	532146.73	1018071.08	1250511.63	760824.25	712416.25	1298885.84
	Total	**1215024.2**	**578438.6**	**608222.04**	**1189498.75**	**1448696.46**	**814184.14**	**764935.44**	**1498067.47**

Source: *DISCOs*

5.7 OVER-LOADING POSITION IN DISCOS

Power delivery through DISCOs' networks mainly depends on the adequacy of three major components including power transformers (mostly 132/11 kV transformers), 11 kV feeders and finally the distribution transformers.

5.7.1 Power Transformers:

The following table shows the overloading position (above 80%) of power transformers of DISCOs:

DISCO	Total No. of Power Transformers		Total No. of Over-Loaded Power Transformers		Percentage of Total Over-Loaded Power Transformers	
Up to June	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
PESCO	252	259	95	95	37.70	36.68
TESCO	55	57	14	8	25.45	14.04
IESCO	267	273	9	23	3.37	8.42
GEPCO	174	181	34	51	19.54	28.18
LESCO	428	441	74	70	17.29	15.87
FESCO	240	249	45	45	18.75	18.07
MEPCO	312	317	30	46	9.62	14.51
HESCO	122	128	14	25	11.48	19.53
SEPCO	133	134	20	32	15.04	23.88
QESCO	179	180	49	47	27.37	26.11
Total	**2,162**	**2,219**	**384**	**442**	**17.76**	**19.92**

Source: DISCOs

During FY 2021-22:

(i) On an overall basis, over-loading on power transformers has increased from 17.76% in FY 2020-21 to 19.92% in FY 2021-22.

(ii) On DISCO-to-DISCO comparison, PESCO with above 36%, has the highest number of over-loaded power transformers among all the DISCOs followed by GEPCO with 28.18%, QESCO with 26.11% and SEPCO with 23.88%.

(iii) IESCO, GEPCO, MEPCO, HESCO and SEPCO have shown increase in percentage of overloaded power transformers over last year reflecting decline in their performance.

(iv) The percentage of overloaded transformers in PESCO, TESCO, LESCO, FESCO and QESCO have shown improvement during FY 2021-22 over last year.

5.7.2 11 kV Feeders:

The following tables provide a comparison of over-loaded components (above 80%) in all DISCOs for FY 2020-21 and FY 2021-22:

DISCO	Total No. of 11 kV Feeders		Total No. of Over-Loaded 11 kV Feeders		Percentage of Total Over-Loaded 11 kV Feeders	
Up to June	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
PESCO	1,138	1,193	435	386	38.22	32.36
TESCO	266	302	144	141	54.14	46.69
IESCO	1,211	1,293	26	49	2.15	3.79
GEPCO	910	949	106	156	11.65	16.44
LESCO	2,011	2,058	285	451	14.17	21.91
FESCO	1,185	1,265	75	129	6.33	10.20
MEPCO	1,652	1,726	323	318	19.55	18.42
HESCO	570	583	77	93	13.51	15.95
SEPCO	548	562	83	93	15.15	16.55
QESCO	688	735	688	302	100.00	41.09
Total	**10,179**	**10,666**	**2,208**	**2,118**	**21.69**	**19.86**

Source: DISCOs

During FY 2021-22:

(i) On an overall basis, over-loading on 11 kV feeders has decreased from 21.69% of FY 2020-21 to 19.86% in FY 2021-22.

(ii) On individual DISCO level, TESCO has the highest percentage i.e. 46.69% of over-loaded 11 kV feeders followed by QESCO with 41.09%, PESCO with 32.36% and LESCO with 21.91%.

(iii) The percentage of overloaded feeders in PESCO, TESCO, MEPCO, and QESCO during FY 2021-22 has decreased showing improvement over last year.

(iv) The percentage of overloaded feeders in IESCO, GEPCO, LESCO, FESCO, HESCO and SEPCO has increased during FY 2021-22 showing decline in their 11 kV feeder loading position.

5.7.3 Distribution Transformers:

The following table shows the over-loading position (above 80%) of distribution transformers of DISCOs:

DISCO	Total No. of Dist. Transformers		Total No. of Over-Loaded Dist. Transformers		Percentage of Total Over-Loaded Dist. Transformers	
Up to June	**2021**	**2022**	**2021**	**2022**	**2021**	**2022**
PESCO	79,437	81,149	2,441	2,442	3.07	3.01
TESCO	18,827	19,194	751	3,502	3.99	18.25
IESCO	51,988	53,616	950	1,503	1.83	2.80
GEPCO	76,125	80,085	1,883	1,972	2.47	2.46
LESCO	122,124	126,758	20,447	20,140	16.74	15.89
FESCO	120,446	124,801	1,198	1,383	0.99	1.11
MEPCO	187,791	223,922	4,157	6,732	2.16	3.01
HESCO	43,873	44,317	1,114	1,133	2.54	2.56
SEPCO	39,076	39,437	2,677	2,436	6.85	6.18
QESCO	64,119	66,119	5,343	5,026	8.33	7.60
Total	**803,806**	**859,398**	**46,341**	**46,269**	**5.77**	**5.38**

Source: DISCOs

During FY 2021-22:

(i) On overall basis, the over-loading of distribution transformers has decreased from 5.77% in FY 2020-21 to 5.38% during FY 2021-22.

(ii) On individual DISCO level, TESCO has the highest percentage i.e. 18.25% of over-loaded distribution transformers followed by LESCO with 15.89%.

(iii) The percentage of overloaded distribution transformers in PESCO, GEPCO, LESCO, SEPCO, and QESCO during FY 2021-22 has decreased showing improvement over last year.

(iv) The percentage of overloaded distribution transformers in TESCO, IESCO, FESCO, MEPCO, and HESCO has increased during FY 2021-22 showing decline in the loading position of distribution transformers.

5.8 STATUS OF PENDING APPLICATIONS FOR NEW CONNECTIONS

The number of applications for provision of new electricity connection pending as on 30-06-2022 in each DISCO is given in the following table:

DISCO	New Connections Installed during FY 2021-22	Closing Balance of Pending Applications as on 30-06-2022
PESCO	171,607	1,988
TESCO	393	57
IESCO	204,951	10,892
GEPCO	232,001	11,114
LESCO	357,818	12,827
FESCO	191,387	50,832
MEPCO	384,812	80,031
HESCO	23,504	1,297
SEPCO	9,061	754
QESCO	14,826	713
KE	253,716	6,324
Total	**1,844,076**	**176,829**

Source: DISCOs

5.9 NUMBER OF FATAL ACCIDENTS

The following table shows the DISCO-wise number of fatal accidents during FY 2021-22:

DISCO	Total No. of Fatal Accidents FY 2020-21	Total No. of Fatal Accidents FY 2021-22	Inc./Dec.
PESCO	23	39	16
TESCO	8	2	-6
IESCO	22	27	5
GEPCO	7	10	3
FESCO	9	16	7
LESCO	9	5	-4
MEPCO	13	8	-5
HESCO	6	35	29
SEPCO	14	13	-1
QESCO	32	8	-24
KE	46	33	-13
Total	**189**	**196**	**7**

Source: DISCOs

5.10 INVESTMENT ALLOWED AND MADE BY DISCOS DURING LAST FIVE YEARS

The details of investment allowed by NEPRA to DISCOs from FY 2016-17 to FY 2020-21 and actual expenditure against the allowed investments are given below:

(Rs. in million)

DISCOs	Description	2016-17	2017-18	2018-19	2019-20	2020-21
PESCO	Allowed	8,366	9,610	7,029	8,450	9,982
	Actual	8,366	11,347	7,029	5,725	13,938
TESCO	Allowed	971	770	2,150	2,500	4,053
	Actual	971	744	2,150	2,500	n.p.
IESCO	Allowed	10,090	6,719	11,918	10,090	6,719
	Actual	5,313	7,451	10,259	7,413	8,625
GEPCO	Allowed	2,775	3,200	5,295	5,500	5,554
	Actual	2,775	1,617	5,295	6,749	5,942
LESCO	Allowed	19,781	21,459	10,826	19,781	21,459
	Actual	9,758	12,081	10,527	10,238	n.p
FESCO	Allowed	7,140	7,857	11,084	8,803	7,857
	Actual	8,033	3,502	6,244	7,640	10,268
MEPCO	Allowed	11,416	13,000	13,439	14,000	8,369
	Actual	11,416	12,924	13,439	13,887	10,927
HESCO	Allowed	4,729	5,500	3,072	4,597	2,227
	Actual	4,729	4,804	3,072	1,971	n.p
SEPCO	Allowed	977	3,400	3,467	4,000	3,981
	Actual	977	3,062	3,467	2,137	n.p
QESCO	Allowed	3,080	8,000	4,308	3,763	4,243
	Actual	3,080	4,748	4,308	2,619	3,765
TOTAL	**Allowed**	**69,325**	**79,515**	**72,588**	**81,484**	**74,444**
	Actual	**55,418**	**62,280**	**65,790**	**58,379**	**53,465**

Source: DISCOs

5.11 STATUS OF NET-METERING

The below table provides the data regarding the number of consumers of various categories adopted net metering, the number of electricity units exported by these consumers to the DISCOs, and the number of electricity units imported by them during the FY 2021-22:

DISCOs	Tariff Category	No of Consumers	Exported Units (kWh)	Imported Units (kWh)	Net (Import-Export) (kWh)
			By Distributed Generators		
LESCO	Domestic	20,784	30,748,267	159,465,410	128,717,143
	Commercial	999	2,928,361	33,028,619	30,100,258
	Industrial	726	6,817,075	315,147,155	308,330,080
	Agriculture	12	11,838	521,558	509,720
	General Services	270	1,849,089	54,507,709	52,658,620
	Total	**22,791**	**42,354,630**	**562,670,451**	**520,315,821**
GEPCO	Domestic	1,087	4,335,518	6,074,916	1,739,398
	Commercial	190	1,447,694	4,877,144	3,429,450
	Industrial	211	5,672,265	36,718,586	31,046,321
	Agriculture	12	49,810	111,731	61,921
	General Services	76	1,225,706	3,003,216	1,777,510
	Other	2	335,080	2,753,100	2,418,020
	Total	**1,578**	**13,066,073**	**53,538,693**	**40,472,620**
FESCO	Domestic	1,153	5,433,974	9,218,450	3,784,476
	Commercial	219	2,027,649	8,097,451	6,069,802
	Industrial	174	4,306,380	44,740,741	40,434,361
	Agriculture	10	3,241	24,530	21,289
	General Services	59	1,766,468	5,102,775	3,336,307
	Other	5	82,567	370,370	287,803
	Total	**1,620**	**13,620,279**	**67,554,317**	**53,934,038**
IESCO	Domestic	6,365	35,257,878	41,780,643	6,522,765
	Commercial	359	3,021,826	9,733,912	6,712,086
	Industrial	77	1,547,882	5,845,853	4,297,971
	Agriculture	17	84,925	118,868	33,943
	General Services	95	3,253,471	13,502,685	10,249,214
	Other	2	243,380	402,000	158,620
	Total	**6,915**	**43,409,362**	**71,383,961**	**27,974,599**
MEPCO	Domestic	2,453	11,547,941	13,296,115	1,748,174
	Commercial	508	3,553,976	7,529,467	3,975,491
	Industrial	345	8,990,096	61,394,261	52,404,165
	Agriculture	45	205,802	938,795	732,993
	General Services	106	1,862,592	2,931,312	1,068,720
	Other	2	77,200	36,400	-40,800
	Total	**3,459**	**26,237,607**	**86,126,350**	**59,888,743**
PESCO	Domestic	1,196	5,449,668	6,574,187	1,124,519
	Commercial	79	710,090	2,991,948	2,281,858
	Industrial	23	941,791	2,932,574	1,990,783
	Agriculture	3	2,672	1,481	-1,191
	General Services	43	748,746	2,846,877	2,098,131
	Other	6	276,399	1,188,150	911,751
	Total	**1,350**	**8,129,366**	**16,535,217**	**8,405,851**
HESCO	Domestic	10	486,122	520,519	34,397
	Commercial	2	91,510	301,502	209,992
	Industrial	2	211,828	1,462,802	1,250,974
	Agriculture	0	0	0	0
	General Services	0	0	0	0
	Total	**14**	**789,460**	**2,284,823**	**1,495,363**
SEPCO	Domestic	10	690,884	1,934,000	1,243,116
	Commercial	5	44,590	212,839	168,249
	Industrial	8	303,500	1,087,313	783,813
	Agriculture	0	0	0	0
	General Services	0	0	0	0
	Other	4	426,643	1,934,267	1,507,624
	Total	**27**	**1,465,617**	**5,168,419**	**3,702,802**
QESCO	Domestic	7	242,177	1,475,207	1,233,030
	Commercial	2	17,535	75,502	57,967
	Industrial	1	62,880	17,204	-45,676
	Agriculture	0	0	0	0
	General Services	5	1,274,162	2,698,722	1,424,560
	Total	**15**	**1,596,754**	**4,266,635**	**2,669,881**
Grand Total		**37,769**	**150,669,148**	**869,528,866**	**718,859,718**

Source: PITC

The total units generated and exported by net metering consumers in all DISCOs are around 150.67 MWh. This energy has avoided the cost of power generation from the costliest power plants to the tune of around Rs. 30/kWh and above. Further, this generation helped DISCOs in improving voltage in respective areas, reduction of T&D losses and transformer overloading, earning revenues by selling these units to their neighboring consumers, and providing flexibility in investments for augmentation or development of distribution facilities. The load shedding is adversely affecting the generation through net-metering faced systems and due to loss of generation during load shedding duration, both the electricity consumers as well as DISCOs are suffering. Net metering is in the interest of the power sector and needs to be encouraged. However, reportedly, DISCO's behavior towards net-metering connections is not encouraging. Further, it is reported that DISCOs in most cases are not paying the payable amount to consumers with net metering licenses for those electricity units supplied more than their use.

5.12 TRANSMISSION AND DISTRIBUTION LOSSES IN KE

Multi-Year Tariff (MYT) was determined by NEPRA for KE from 2016-17 to 2022-23. Following table shows a comparison of losses allowed to KE and actual losses reported by KE during 7-years period:

T&D Losses (%)	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Allowed	20.90	19.80	18.75	17.76	16.80	15.95	15.36
Actual	23.70	20.28	19.17	19.79	17.54	15.35	-

5.13 RECOVERY OF BILLED AMOUNT IN KE SYSTEM

The following table shows KE's recovery position for different consumer categories during FY 2021-22 in comparison to FY 2020-21.

Category	Amount of Billed Units		Amount Realized and %age Recovery to Billed Amount			
	(Rs. in million)		(Rs. in million)		(%)	
	2020-21	2021-22	2020-21	2021-22	2020-21	2021-22
Domestic	133,515	147,442	120,138	133,011	89.98	90.21
Commercial	49,511	63,112	48,131	61,922	97.21	98.11
Industrial	107,778	149,916	108,337	151,546	100.52	101.09
Agricultural	1,361	1,387	312	282	22.94	20.37
Public Lighting	2,399	2,132	1,446	4,009	60.29	187.96
Bulk Supply	11,051	13,332	11,792	13,243	106.71	99.33
Others	10,255	12,910	9,514	13,318	92.78	103.16
Total	**315,872**	**390,235**	**299,672**	**377,334**	**94.87**	**96.69**

Source: KE

The overall recovery ratio of 96.69% has increased over the last year's ratio of 94.87% meaning thereby showing an improvement of 1.82% in the recovery position. The recovery position in the domestic, commercial, industrial, public lighting and others sectors have improved whereas, the recovery percentages in agricultural and bulk supply categories have dropped in FY 2021-22 as compared to FY 2020-21.

5.14 OVER-LOADING POSITION OF POWER TRANSFORMERS, 11 KV FEEDERS AND DISTRIBUTION TRANSFORMERS IN KE

The following table provides over-loading position of network components in KE for FY 2020-21 and FY 2021-22:

Description	FY 2020-21	FY 2021-22
Total No. of Power Transformers	172	179
Total No. of Over-Loaded Power Transformers (above 80%)	50	48
Percentage of Total Over-Loaded Power Transformers (above 80%)	**29.07**	**26.82**

Description	FY 2020-21	FY 2021-22
Total No. of 11 kV Feeders	1937	2001
Total No. of Over-Loaded 11 kV Feeders (above 80%)	24	56
Percentage of Total Over-Loaded 11 kV Feeders (above 80%)	**1.24**	**2.80**
Total No. of Distribution Transformers	29702	30771
Total No. of Over-Loaded Distribution Transformers (above 80%)	2567	4364
Percentage of Total Over-Loaded Distribution Transformers (above 80%)	**8.64**	**14.18**

Source: KE

The above table shows around 27% power transformers of KE are over-loaded in FY 2021-22 as compared to around 29% during FY 2020-21. Further, an increase from 1.24% to 2.80% relative to the previous year is noted in the over-loading of 11 kV feeders. The percentage of total over-loaded distribution transformers has increased in FY 2021-22 to 14.18% as compared to 8.64% recorded during FY 2020-21.

5.15 RECEIVABLES OF KE

As on 30th June 2022, total receivables of KE stood at Rs. 195 billion whereas, the receivables were Rs. 198 billion as on 30-06-2021 showing a decrease of Rs. 3 billion during the reporting year FY 2021-22 shown hereunder:

Category	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
June, 2021 (Rs. in million)				
Federal Government	4,401.42	14,456.53	-14,646.02	4,637.67
Provincial Government	44,780.51	13,697.22	-12,970.83	46,340.18
Private	150,915.09	287,719.09	-272,055.53	147,667.80
Total	**200,097.01**	**315,872.84**	**-299,672.38**	**198,645.66**
June, 2022 (Rs. in million)				
Federal Government	4,637.67	16,481.06	-17,637.05	3,727.43
Provincial Government	46,340.18	16,507.94	-18,770.86	44,581.53
Private	147,667.80	357,246.72	-340,926.67	146,804.20
Total	**198,645.66**	**390,235.72**	**-377,334.58**	**195,113.16**

Source: KE

06 MONITORING OF THE POWER SECTOR

6.1 GENERAL

NEPRA Act, Rules, Regulations and Performance Standards (promulgated under the Act) provide a framework for regulating the power sector. Monitoring the performance of licensees is one of the key elements in this respect. Monitoring activities are also carried out pursuant to NEPRA decisions, determinations and applicable documents on different matters. Consequently, responsibilities of licensees are evaluated pursuant to their roles during different phases, including planning, design, implementation and operation. In the following sections, details about monitoring and enforcement including legal proceedings initiated by NEPRA against reported violations by its licensees and their compliance with the relevant rules and regulations, terms and conditions of their licenses and other applicable documents are presented.

6.2 MONITORING ACTIVITIES IN GENERATION SECTOR:

Following activities have been carried out during FY 2021-22 for monitoring of the Generation Sector:

6.2.1 Data Exchange Portal:

A data exchange portal was developed for online acquisition of daily data pertaining to Key Performance Indicators (KPIs) from all operational generation licensees in respect of their generation facilities. Initially, the beta version of the portal was launched after approval of the Authority and data was being obtained from 09 power plants only. However, after successful functioning of the beta version, all remaining operational generation licensees have been directed to register on the portal. Now, as on 30-06-2022, a total number of 111 power plants have registered on the portal and providing data on given formats.

6.2.2 Performance Evaluation Reports of IPPs:

The quarterly reports submitted by 13 No. of IPPs, namely KAPCO, HUBCO, PakGen Power, Lalpir Power, TNB Liberty, Uch, Uch-II, Bhikki, Balloki, Haveli Bahadur Shah, Port Qasim, Sahiwal Coal and China Power Hub under NEPRA Performance Standards (Generation) Rules 2009, were reviewed and a comprehensive Performance Evaluation Report (PER) was prepared and also approved by the Authority.

6.2.3 Conversion of Tariff Structure of Old/Small WAPDA Hydel Power Stations:

A techno-commercial analysis of WAPDA hydel power stations was carried out for the FY 2018-19 and FY 2019-20. The Authority after detailed deliberations principally decided to convert the tariff structure of non-performing old and small WAPDA hydel power stations from 'Take or Pay' to 'Take and Pay' once the tariff petition is filed by WAPDA Hydroelectric for the FY 2021-22. The tariff of WAPDA for FY 2021-22 is under process in NEPRA.

6.2.4 Efficiency and Availability of Existing Power Plants in Public Sector GENCOs:

The public sector thermal plants commonly called GENCOs have three different entities called

GENCO-I (Jamshoro Power Company Limited), GENCO-II (Central Power Generation Company Limited) and GENCO-III (Northern Power Generation Company Limited). A brief overview of GENCOs is as under:

(i) Jamshoro Power Company Limited (JPCL):

TPS Jamshoro complex has an installed capacity of 850 MW and it comprises of four units. The unit wise efficiency, availability and utilization for FY 2021-22 is shown below:

Description	Unit 1	Unit 2	Unit 3	Unit 4	Complex Total
Installed Capacity (MW)	250	210	210	210	880
Dependable Capacity (MW)	200	170	170	170	710
Actual Efficiency (Net) (%)	28.30	17.86	24.53	24.13	-
Plant Utilization (%)	9.06	0.72	3.01	4.34	4.28
Capacity Payment (Rs. million)	-	-	-	-	3,381.92
Net Generation (GWh)	146.46	6.57	38.50	53.99	245.513
Per Unit CPP (Rs./kWh)	-	-	-	-	13.775

Source: GENCO/NEPRA

Retaining 880 MW inefficient power generation capacity that too on 'Take or Pay' basis with very low plant utilization factor is huge burden on power sector and economy of the country as well as on the electricity consumers' of Pakistan. Therefore, considering all these factors, Authority shifted the tariff of JPCL from 'Take or Pay' to 'Take and Pay' basis. However, upon Writ Petition WP No. 3414/2021 the Honourable Islamabad High Court suspended the impugned decision of NEPRA. Due to lower utilization factor the per unit capacity charges for combined 1-4 units during FY 2021-22 remained Rs. 13.75/kWh which is quite high.

(ii) Central Power Generation Company Limited (CPGCL):

TPS Guddu comprises of 9 old units (Guddu Old) and 3 new units (Guddu 747) are operating under CPGCL. All these units are operating on dedicated indigenous gas therefore despite comparatively low efficiencies, per unit EPP is quite low and their operation on full load is in the benefit of power sector and electricity consumers. However, performance of CPGCL is not satisfactory and thus burdening power sector electricity consumers adversely. The performance of each block as well as of the whole complex can be analyzed from following table:

a) **Guddu Old**

Description	Block 1				Block 2								
	GTs		ST	Block 1 Total	GTs		ST	Sub-Block A	GTs		ST	Sub-Block B	Block 2 Total
	Unit 11	Unit 12	Unit 13		Unit 7	Unit 8	Unit 5		Unit 9	Unit 10	Unit 6		
Installed Cap. (MW)	136	136	143	415	100	100	100	300	100	100	100	300	600
Dependable Cap. (MW)	130	130	140	400	95	95	85	275	95	95	85	275	550
Actual Effi. Net (%)	27.35	-	-	27.87	26.57	26.83	-	-	26.55	22.53	-	-	CC - 34.54 OC - 27.34
Plant Utili. (%)	13.1	-	-	4.26	58.71	68.95	22.9	47.8	19.64	10.33	-	9.72	29.33
Generation (GWh)	148.3	-	-	148.3	456.92	537.53	157.06	1151.51	153.26	80.94	0	234.2	1385.71
Rank in Merit Order	-	-	-	6 to 9	-	-	-	-	-	-	-	-	11 to 16

b) **Guddu 747**

Description	GTs		ST	Total 747 MW	Total Guddu (Old and 747)
	Unit 14	Unit 15	Unit 16		
Installed Capacity (MW)	255.6	255.6	265.5	776.7	1,791.7
Dependable Capacity (MW)	243	243	261	747	1,697
Actual Efficiency (Net) (%)	28.9	31.16	-	G14 OC - 22.76 G15 OC - 27.16	-
Plant Utilization (%)	(0)	86.86	37.42	41.06	-
Net Generation (GWh)	7.3	1839.30	777.94	2624.5	4,158.51
Capacity Payment (Rs. million)	-	-	-	-	16,645.11
Per Unit CPP (Rs./kWh)	-	-	-	-	4.00
Rank in Merit Order	-	-	-	4 to 18	4 to 18
Energy Purchase Price EPP (Rs. million)	-	-	-	-	30,342.98
Average EPP (Rs./kWh)	-	-	-	-	7.30

Source: GENCO/NEPRA

The utilization factor of Guddu 747 is around 41% whereas the utilization factor of Uch in the same vicinity and fuel is around 90% despite being older power plant. In case the Guddu 747 had operated on 90% utilization factor it would have contributed 3,265 GWh additional units in National Grid.

The loss due to non-production of electricity from indigenous cheaper primary fuel due to non-availability of STs is huge. Further, its operation on open cycle mode though ideally undesirable but still the electricity cost on open cycle mode is not only competitive but could support in avoiding foreign exchange expenses on import of fuel.

(iii) Northern Power Generation Company Limited (NPGCL):

TPS Muzaffargarh has installed capacity of 1,350 MW having six units. GTPS Faisalabad has total installed capacity of 144 MW. Nandipur CCPP has installed capacity of 565.65 MW. The unit wise efficiency, availability and utilization is shown below.

a) **Muzaffargarh Old**

Description	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Complex Total
Installed Capacity (MW)	210	210	210	320	200	200	1,350
Dependable Capacity (MW)	190	182.5	183.5	272.2	181.44	170.88	1,180.52
Actual Efficiency (Net) (%)	29.01	Standby mode	33.52	Damage	Standby mode	Standby mode	20.82
Plant Utilization (%)	4.23	0	9.13		0	0	2.37
Net Generation (GWh)	65.26	(4.169)	156.738	(1.25)	(2.02)	(2.02)	212.53

Source: GENCO/NEPRA

b) **GTPS Faisalabad**

Description	GTPS Faisalabad
Installed Capacity (MW)	144
Dependable Capacity (MW)	117
Actual Efficiency (Net) (%)	26.86
Plant Utilization (%)	8.51
Net Generation (GWh)	98.83

Source: GENCO/NEPRA

c) **TPS Nandipur**

Description	GT-1	GT-2	GT-3	ST	Complex Total
Installed Capacity (MW)	122.1	122.1	122.1	199.35	565.65
Dependable Capacity (MW)	-	-	-	-	526.29
Actual Efficiency (Net) (%)	28.23	30.72	29.06	-	-
Plant Utilization (%)	34.51	40.49	34.20	38.73	37.21
Net Generation (GWh)	319.12	398.21	317.07	613.39	1,648.61
Capacity Payment (Rs. million)	-	-	-	-	-
Per Unit CPP (Rs./kWh)	-	-	-	-	-
Energy Purchase Price EPP (Rs. million)	-	-	-	-	-
Average EPP (Rs./kWh)	-	-	-	-	-

Source: GENCO/NEPRA

Nandipur Power Plant lost its designed efficiency considerably before commissioning. Delay in construction not only resulted in cost overruns but also disturbed the planning/cost-effectiveness of the project due to delayed commissioning.

6.2.5 Under-Utilization of Efficient Power Plants/Non-Compliance of Economic Merit Order:

NEPRA has been carrying out the analysis of power plants on the basis of information provided by NPCC in its daily log report as well as information provided by CPPA-G through its monthly Energy Procurement Report. Such analysis reveals underutilization of various power plants on account of non-availability of fuel. The under-utilization of 'Take or Pay' and/or 'Must Run' power plants and operation of power plants ignoring the EMO has great financial implications for the power sector and economy at large and adds the burden on the end-consumer. Therefore, a need was felt to probe into the causes of underutilization of power plants to fix the responsibility and to take corrective measures accordingly.

In addition, regular monitoring of the performance of the System Operator (NPCC) has also been conducted. In this regard, generation data submitted by NPCC is analyzed on basis of hourly data and any deviations that are found with respect to the Grid Code and EMO are highlighted during the Fuel Charge Adjustment mechanism carried out on a monthly basis. Due to effective monitoring, there is a substantial improvement in System Operation and the out of merit generation has reduced.

Another major outcome of identifying the generation taken out of merit by NPCC is highlighting of NTDC's System Constraints. Close monitoring of the constraints in NTDC's Transmission System and the resulting impact that it has on the System Operation in terms of underutilization of efficient plants and operation of expensive/inefficient plants is a continuous process over the year. As a result, NTDC is now submitting the monthly progress report regarding removal of its system constraints that affect the economic dispatch of generating units.

6.2.6 Monitoring of KE's System Operation:

Due to effective monitoring of dispatch given by KE to its power plants, substantial improvements have been observed in the System Operations. One of the major improvements observed were reduction in minimum loading limit of KE's expensive generation units of BQPS-I. NEPRA took up the issue of minimum loading limit of KE's BQPS-I Units which resulted in revision of the minimum loading limit from 110 MW to 90 MW. The minimum loading limit give flexibility to KE's System Operator to give dispatch to efficient power plant.

6.3 LEGAL PROCEEDINGS INITIATED AGAINST GENERATION LICENSEES:

Following legal proceedings have been initiated during FY 2021-22 against the Generation Licensees on violations of the NEPRA Act, Rules, Regulations, Terms & Conditions of their licenses, Performance Standards and other applicable documents.

6.3.1 Legal Proceedings Concluded during FY 2021-22:

Following legal proceedings initiated against generation licensees have been concluded during the reporting period:

(i) Imposed fine of Rs. 25 million on NPGCL on account of failure to post sufficient O&M staff at the time of taking over of Nandipur power plant for job site training and to participate in O&M activities, resulting in the shutdown of plant with effect from 10-08-2015 to 25-10-2015. NPGCL filed review against NEPRA decision which is rejected by the Authority.

(ii) Imposed fine of Rs. 50 million on NTDC on account of total power system collapse occurred on 09-01-2021. NTDC filed an appeal in Islamabad High Court and Appellate Board which is under process.

(iii) Imposed fine of Rs. 50 million on CPGCL on account of total power system collapse occurred on 09-01-2021.

6.3.2 Legal Proceedings under Process:

Following legal proceedings initiated against generation licensees are under process:

(i) Explanation issued to CPGCL on account of raising invoices pertaining to capacity payments in respect of Units 1, 2, 3, 4 and 13 of TPS Guddu despite their closure since long, non-filing of Tariff Petition and non-submission of Rehabilitation Plan in respect of Unit 13 of TPS Guddu.

(ii) Explanation issued to CPGCL on account of Prolonged Forced Outage of Guddu 747.

(iii) Explanation issued to CPPA-G on account of Paying Capacity Charges to CPGCL in respect of Units 1, 2, 3, 4 and 13 of TPS Guddu despite their closure since long.

(iv) Explanation issued to CPPA-G on account of extension in term of the PPA signed with KAPCO by 485 days without the NEPRA's approval.

(v) Explanation issued to CPPA-G on account of Non-Imposition of LDs on WAPDA on account of Availing Higher Outages than allowed in PPA.

(vi) Explanation issued to CPPA-G and PEDO on account of Delay in COD of Daral Khwar HPP.

(vii) Explanation issued to CPPA-G and NTDC on account of Revision in minimum loading position of Lalpir Power and Pakgen Power Plants.

(viii) Explanation issued to CPPA-G on account of Non-compliance with the directions of the Authority and failure to fulfill its obligations under the Commercial Code and other documents.

(ix) Explanation issued to KAPCO on account of extension in term of the PPA signed with CPPA-G by 485 days without the Authority's approval.

(x) Explanation issued to PEDO and PESCO on account of Delay in COD of Machai HPP.

(xi) Explanation issued to KE on account of delay in restoration of power supply after total power system collapse occurred on 09-01-2021.

(xii) Explanation issued to CPHGC on account of prolonged forced outage on China Power Hub Generation Company.

(xiii) Explanation issued to WAPDA on account of availing higher outages than allowed in PPA.

(xiv) Explanation issued to Bhikki, Balloki, Haveli Bahadur Shah, Orient Power, Saif Power, Sapphire Electric, Halmore Power, Port Qasim Electric, Sahiwal Coal, China Power Hub, Engro Powergen Thar, Engro Powergen Qadirpur, KAPCO, Pak Gen Power, Saba Power and Uch-II on account of delay in synchronization with the National Grid despite the restoration of supply at their bus bar by NTDC after total power system collapse occurred on 09-01-2021.

6.4 LEGAL PROCEEDINGS INITIATED AGAINST TRANSMISSION LICENSEES:

Following legal proceedings have been initiated during FY 2021-22 against the Transmission Licensees on violations of the NEPRA Act, Rules, Regulations, Terms & Conditions of their licenses, Performance Standards and other applicable documents:

(i) Explanation issued against NTDC in the matter of Partial Blackout at 500 kV Jamshoro Grid Station.
(ii) Explanation issued against NTDC in the matter of Tower Collapse in Wake of Cyclonic Winds.
(iii) Explanation issued on the issues pertaining to Jhimpir-II Grid Station.

6.5 MONITORING OF DISTRIBUTION SECTOR

Following motoring activities have been carried at in distribution sector:

6.5.1 Annual Performance Reports of DISCOs:

NEPRA framed Performance Standards (Distribution) Rules (PSDR) in the year 2005. According to PSDR-2005, each DISCO is bound to submit an Annual Performance Report (APR) to NEPRA before 31st August of the succeeding year. The APR contains all the relevant information with respect to compliance with these Rules during the year including a comparison with the compliance reporting provided in the previous year to NEPRA.

Accordingly, the APRs submitted by all DISCOs and KE for the FY 2020-21 were reviewed on the basis of parameters namely, Transmission and Distribution Losses, Recovery, System Average Interruption Frequency Index (SAIFI), System Average Interruption Duration Index (SAIDI), Time frame for new connections, Load Shedding, Nominal Voltage, Consumer Complaints, Safety & Fault Rate and a comprehensive PER was prepared and uploaded on NEPRA website after approval of the Authority.

Similarly, the APRs for the FY 2021-22 are to be submitted by DISCOs and KE on or before 31st August 2022 as per the requirement of Rule 7 of the Performance Standards (Distribution) Rules, 2005. Once the reports will be received, the same will be analyzed and finalized accordingly.

6.5.2 Monitoring of Load Shedding in the Country:

The Authority initiated proceedings regarding excessive load shedding being carried out by DISCOs in their service territories. The DISCOs are carrying out load shedding based on Aggregate Technical and Commercial (AT&C) losses on the feeders, however, this policy of load shedding is not in line with NEPRA Performance Standards and has never been recognized by NEPRA. The data regarding load shedding has been collected through all regional offices of NEPRA on weekly basis.

In order to probe the reasons behind the excessive load shedding in the country, an investigation was conducted against DISCOs, GENCOs, IPPs, NTDC/NPCC and CPPA-G for violation(s) of the provisions of the NEPRA Act, rules, and regulations.

6.5.3 Data Exchange Portal (Distribution Module):

The data from all the DISCOs have been collected through the Data Exchange Portal (Distribution Module) to gather and analyze all relevant data/information from DISCOs and use insights to mitigate risk and promote efficiency in the future by shifting its paper-based system to electronic filing, physical space saving and increasing security. The DISCOs are providing information regarding the loading position of the distribution network, tou meters, damaged transformer, pending connections, defective meters, and restoration time of power breakdown. The same is being monitored and analyzed on monthly basis.

6.5.4 Pending Ripe Connections in DISCOs:

NEPRA through its online portal collects the data pertaining to the pendency of ripe connections from all DISCOs, on a monthly basis. Based on the data received, NEPRA initiated legal proceedings against PESCO, IESCO, GEPCO, FESCO, LESCO, MEPCO and KE. Accordingly, the explanations were issued and DISCOs were directed to clear all pendency of connections within one month and submit a compliance report to NEPRA in this regard. Further, a list of number of pending connections along with unsanctioned load (kW) is as follows:

DISCO	Connection Type	No. of Pending Connections	Unsanctioned Load (kW)	DISCO	No. of Pending Connections	Unsanctioned Load (kW)
PESCO	Domestic	1,546	4,279	TESCO	12	428.35
	Commercial	308	2,804		4	66.57
	Industrial	69	121,878		23	298,844
	Agriculture	48	1,366		10	220.51
	Others	17	504		8	281
	Total	**1,988**	**130,831.00**		**57**	**299,840.43**
IESCO	Domestic	9,785	20,856	GEPCO	9,520	19,062
	Commercial	993	2,953		827	6,446
	Industrial	39	2,719		391	35,102
	Agriculture	33	561		376	3,498
	Others	42	481		0	0
	Total	**10,892**	**27,570**		**11,114**	**64,108**
FESCO	Domestic	48,302	144,156	LESCO	11,079	23,745
	Commercial	1,981	9,581		862	2,742
	Industrial	162	9,189		325	47,074
	Agriculture	299	4,312		559	6,865
	Others	88	3,230		2	21
	Total	**50,832**	**170,468**		**12,827**	**80,447**
MEPCO	Domestic	72,455	164,553	HESCO	884	1,840
	Commercial	4,040	17,978		178	955
	Industrial	540	42,938		128	29,915
	Agriculture	2,730	58,636		48	1,130
	Others	266	7,809		59	5,448
	Total	**80,031**	**291,914**		**1,297**	**39,288**
SEPCO	Domestic	624	524	QESCO	372	558
	Commercial	60	137		153	382.5
	Industrial	40	9,792		4	734
	Agricultural	21	253		0	0
	Other	9	131		184	3,942.56
	Total	**754**	**10,837**		**713**	**5,617.06**
KE	Domestic	436	1,301			
	Commercial	1,813	10,153			
	Industrial	21	21,915			
	Agriculture	0	0			
	Others	4,054	60,410			
	Total	**6,324**	**93,779**			

Source: DISCOs

6.6 LEGAL PROCEEDINGS INITIATED AGAINST DISTRIBUTION LICENSEES:

Following legal proceedings have been initiated during FY 2021-22 against the Distribution Licensees on violations of the NEPRA Act, Rules, Regulations, Terms & Conditions of their licenses, Performance Standards and other applicable documents:

Licensee	Issue	Current Status
IESCO	Fatal Accidents (11 Employees+28 Public) for the period from July, 2019 to June, 2021 (25/39)	• Rs. 65 million • Review Petition filed by IESCO which is under process
GEPCO	Fatal Accidents (5 Employees+8 Public) for the period from July, 2019 to May, 2021.	• Rs. 21 million • Challenged in Islamabad High Court
LESCO	Loss of 01 human life due to falling of transformer at Ichra Bazar, Lahore on 30-11-2021.	• Rs. 10 million • Completed • Appeal filed in Tribunal
FESCO	Fatal Accidents (14 Employees+3 Public) for the period from July, 2019 to January, 2021.	• Rs. 26 million • Appeal filed in Tribunal

Licensee	Issue	Current Status
MEPCO	Fatal accident of Employee.	• Rs. 10 million • Fine amount recovery request has been issued to the Collector.
HESCO	Fatal Accidents (7 Employees + 8 Public) for the period from July, 2019 to October, 2020.	• Rs. 31 million • Appeal filed in Tribunal
HESCO	Loss of 10 human lives (1 Employee + 9 Public) due to transformer blast at Latifabad, Hyderabad on 22-07-2021.	• Rs. 26 million • Appeal filed in Tribunal
HESCO	Loss of 03 human lives due to transformer blast at Islamabad Chowk, Hyderabad on 18-06-2021.	• Rs. 10 million • Appeal filed in Tribunal
SEPCO	Fatal Accidents for the period from July, 2019 to November, 2020.	• Rs. 28 million • Appeal filed in Tribunal
QESCO	Fatal Accidents for the period from July, 2019 to June, 2021.	• Rs.10 million • Review Petition rejected by NEPRA
KE	Fatal accidents occurred during the period from July, 06, 2020 and August 12, 2020.	• Rs. 33.5 million • Fine amount has been deposited by the Licensee.

6.7 LEGAL PROCEEDINGS IN LAST FIVE YEARS

The details of proceedings concluded against various licensees during last five (05) years are given as follows:

Licensee	Proceedings	Current Status
MEPCO	Order in the matter of review filed by MEPCO under Rule 5 of the NEPRA (Fines) Rules 2002 against the Decision of the Authority Dated 01-10-2020.	Fine imposed Rs. 10 million
NTDC	Order in the matter of review petition filed by NTDC against order of the Authority.	Fine imposed Rs. 1 million
PESCO	Order in the matter of show cause notice No. 19899 Dated 05-08-20 under section 27B of the NEPRA Act.	Fine imposed Rs. 13 million
GEPCO	Order in the matter of Show Cause notice under section 27B of the NEPRA Act, 1997	Fine imposed Rs. 21 million
FESCO	Order of the Authority in the matter of show cause notice No. 30686 dated 29-06-2021 under section 27B of the NEPRA Act	Fine imposed Rs. 26 million
IESCO	Order of the Authority for Allowing provisional Renewal in the distribution License of IESCO	Fine imposed Rs. 26 million
HESCO	Order in the matter of Show cause Notice No. 33676, Dated 09-08-2021 under section 27B of the NEPRA Act, 1997	Fine imposed Rs. 26 million
HESCO	Order in the matter of Show cause Notice No. 2935, Dated 21-01-2021 under section 27B of the NEPRA Act, 1997	Fine imposed Rs. 31 million
PESCO	Order in the matter of motion for review filed by PESCO under Regulation 3 of the NEPRA (Review Procedure) Regulations, 2009 Against the decision of the Authority Dated 08-01-2021	Fine imposed Rs. 13 million
KE	Order in the matter of show cause notice No. 41672 Dated 18-11-2020 under Section 27B of the NEPRA Act 1997	Fine imposed Rs. 36 million
MEPCO	Order in the matter of review filed by under Rule 5 of the NEPRA (Fines) Rules, 2002 against the Decision of the Authority Dated 05-10-2020	Fine imposed Rs. 6 million
KE	Order in the matter of motion for review filed by under Regulation 3 of the NEPRA (Review Procedure) Regulations, 2009 against the Decision of The Authority Dated 27-08-2020	Fine imposed Rs. 160 million
Sanjwal Solar Power	Order of the Authority under the rule 4(6) of the NEPRA (Fines) Rules, 2002 in the matter of Explanation dated 16-01-2020	Accepted the submission of Sanjwal Solar and close the proceedings against the Licensee under the Fine Rules.

Licensee	Proceedings	Current Status
KE	Order in the matter of request filed by under rule 10 of the NEPRA Performance Standards (Distribution) Rules, 2005 for Force Majeure In Wake of Unprecedented rains from 24th to 28th August, 2002	Declined the request of KE with respect to Force Majeure.
IESCO	Order of the Authority in the matter of extending the Service Territory of IESCO to the area of Bahria Town Islamabad/ Rawalpindi Region	Extended the IESCO's Service Territory to include areas served by Bahria Town.
Japan Power	Order of the Authority in the matter of Show Cause notice dated March 13, 2020 issued to Japan Power Generation Limited under rule 4(8) & (9) of the NEPRA (Fines) Rules, 2002	Accepted the response of Japan Power and concluded the legal proceedings against Japan Power.
MEPCO	Order of the Authority in the matter of show cause notice No. 11071 Dated 25-06-2019 issued under rule 4(8) & (9) of NEPRA (Fines) Rules, 2002	Fine imposed Rs. 1 million
MEPCO	Order in the matter of show cause notice No. 24301 Dated 14-11-2019 under Section 27B of the NEPRA Act 1997, read with other enabling provisions	Fine imposed Rs. 10 million
CPGCL	Order of the Authority in the matter of review petition of CPGCL against the decision of the Authority Dated 10-07-2019	Rejected the Review Petition regarding modification in the Generation Licence of CPGCL.
GHCL	Order of the Authority in the matter of direction issued to GENCO Holding Company for investigation of the matters and issues specified in NEPRA's Letter dated 11-09-2015 and submission of investigation Report	Decided to indicate legal proceedings against NPGCL for non-operation of Nandipur Power Plant due to no-posting of sufficient O&M staff.
HUBCO	Order of the Authority in the matter of Explanation issued to Hub Power Company Limited under the NEPRA (Fines) Rules, 2002	Accepted the explanation submitted by HUBCO and concluded the legal proceedings.
NPGCL	Order in the matter of review petition filed by under regulation 3(2) of the NEPRA (Review Procedure) Regulations, 2009 against order of the Authority Dated 19-11-2019	Fine imposed Rs. 0.5 million
JPCL	Order of the Authority in the matter of review petition of under NEPRA (Review Procedure) of the Authority Dated 13-02-2020	Rejected the Review Petition regarding LPM filed by JPCL.
KE	Order of the Authority in the matter of show cause notice No. 18914 Dated 23-07-2020 under section 27B and 28 of the NEPRA Act, 1997 Read with other enabling Provisions	Fine imposed Rs. 200 million
KE	Order of the Authority in the matter of review filed by KE under rule 5 of the NEPRA (Fines) Rules, 2002 Against the Decision of the Authority Dated 03-10-2019	Fine imposed Rs. 3 million
JPCL	Order in the matter of review petition filed by JPCL, GENCO-I Under NEPRA (Review Procedure) Regulations, 2009 against the decision of the Authority Dated 11-07-2019	Fine imposed Rs. 1 million
CPGCL	Order in the matter of review petition filed by CPGCL, GENCO-II under NEPRA (Review Procedure) Regulations, 2009 against the decision of the Authority Dated 09-05-2019	Fine imposed Rs. 1 million
KE	Order of the Authority in the matter of Motion for review filed by KE under regulation 3 of the NEPRA (Review Procedure) Regulations, 2009 against the decision of the Authority Dated 09-12-2019	Fine imposed Rs. 50 million
CPPA-G	Order in the matter of Show Cause notice No. 7194 Dated 25-04-2019 under rule 4(8) & (9) of the NEPRA (Fine), Rules, 2002.	The Authority decided not to impose penalty on CPPA-G and directed CPPA-G to initiate recovery to the amount of LDs imposed on GENCOs
NTDC	Order of the Authority in the matter of show cause notice Dated 06-04-2020 under rule 4(8) of NEPRA (Fines) Rule, 2002	Fine imposed Rs. 1 million

Licensee	Proceedings	Current Status
NTDC	Order of the Authority in the matter of show cause Notice Dated 02-09-2019 issued to M/S NTDC under rule 4(8) & (9) of NEPRA Fines Rules, 2002	Disposed the legal proceedings against NTDC and decided to issue a warning to NTDC
IESCO	Order of the Authority in the matter of motion for leave for view filed by IESCO against the order of the Authority in the matter of complained filed by Ghreebwal Cement Limited	The Authority rejected the Review Motion filed by IESCO
FESCO	Order in the matter of complaints filed by H.A Haq Spinning Mills and Agra Spinning Mills under Section 39 of the NEPRA Act, 1997 against FESCO regarding Non-Provision of Electricity Connection and Extension of Load FESCO	Extended the load of H.A Haq Spinning Mills & M/s Nagra Spinning Mills. Directed to provide connection to M/s MK Sons Limited
IESCO	Order in the matter of Review filed by IESCO under rule 5 of the NEPRA (Fines) Rules, 2002 against the decision of the Authority Dated 25-01-2019	Fine imposed Rs. 1 million
KE	Order in the matter of show cause notice under section 27B and Section 28 of NEPRA Act Investigation against KE under section 27A Of NEPRA Act	Fine imposed Rs. 50 million
NTDC	Order of the Authority in the matter of Show Cause Notice Dared 01-09-2019 under Rule 4(8) & (9) of NEPRA (Fines) Rules, 2002	Fine imposed Rs. 1 million
NPGCL	Order in the matter of show cause notice under rule 4(8) of NEPRA (Fines) Rules, 2002	Fine imposed Rs. 1 million
BTPL	Order in the matter of review petition filed by BTPL under rules 5 of the NEPRA (Fines) Rules, 2002 against the decision of the Authority dated 28-01-2019	Fine imposed Rs. 1 million
NTDC	Order of the Authority on the matter of Review filed by NTDC under Rule 5 (1) of NEPRA (Fines) Rules, 2002 against Order of the Authority dated 12-02-2019 regarding Imposition of Fine on NTDC for poor Operational Performance and Under-Utilization of Power Plants	Fine imposed Rs. 1 million
Kohala Hydro Power	Order of the Authority in the matter of petition filed by Kohala Hydropower company Regarding amendment in the Commercial Code	Directed Petitioner to approach the Review Panel for proposing amendments in the Commercial Code.
KE	Order in the matter of show cause notice Dated 20-11-2018 issued to KE under Rule 4(8) & (9) of the NEPRA (Fines) Rules, 2002	Fine imposed Rs. 3 million
CPPA-G	Order of the Authority in the matter of review motions by CPPA-G against the determination of the Authority in the matter of Wind & Solar Power Projects	Rejected the Review Motions on the matter of applicable fees for filing of the Review Motions to lack merit and substance.
NPGCL	Order of the Authority in the matter of review filed by NPGCL under NEPRA (Review Procedure) Regulations, 2009 against Order of the Authority dated 03-05-2018 for underutilization of Power Plant	Fine imposed Rs.5 million
JPCL	Order in the matter of Show Cause notice under rule 4(8) & (9) of the NEPRA (Fine) Rules, 2002	Fine imposed Rs. 2 million
NPGCL	Order of the Authority under rule 5 (3) of the NEPRA (Fines) Rules, 2002 in the matter of review application filed by NPGCL against the order in the Authority dated 21-06-2018 with regard to Show Cause Noticed Dated 25-08-2017	Fine imposed Rs. 5 million
CPGCL	Order in the matter of Show cause notice issued to CPGCL under rule 4(8) of the NEPRA (Fines) Rules, 2002	Fine imposed Rs. 2 million
KE	Order of the Authority in the matter of review petition filed by KE under Rule 5 (1) of the NEPRA (Fines) Rules, 2002 against the decision of the Authority Dated 30-10-2018	Fine imposed Rs. 2 million
PESCO	Order of the Authority in the matter of Show Cause notice issued to PESCO under Rule 4 (8) & (9) of the NEPRA (Fines) Rules, 2002	Fine imposed Rs. 6 million

Licensee	Proceedings	Current Status
IESCO	Order in the matter of review petition filed By IESCO under rules 5 (1) of the NEPRA (Fines) Rules, 2002 against the Decision of the Authority Dated 18-10-2018	Fine imposed Rs. 4 million
KE	Order in the matter of review petition field By KE under Rules 5(1) of the NEPRA (Fines) Rules, 2002 against the decision of the Authority Dated 25-09-2018	Fine imposed Rs. 5 million
KE	Order in the matter of Explanation Dated 17-09-2018 Issued to KE under rule 4(1) & (2) of the NEPRA (Fines) Rules, 2002	Disposed the Explanation Proceedings.
NPGCL	Order of the Authority in the matter of review petition of NPGCL against the decision of the Authority Dated 02-05-2018	Decided to reject the review Petition filed by NPGCL in the matter of modification in the Licence
CPGCL	Order of the Authority in the matter of Review filed by CPGCL under NEPRA (Review Procedure) Regulations, 2009 against Order of the Authority dated 03-05-2018 for under-utilization of power plants	Fine imposed Rs. 5 million
JPCL	Order of the Authority in the matter of review filed by JPCL under NEPRA (Review Procedure) Regulations, 2009 against order of the Authority dated 03-05-2018 for under-utilization of power Plants	Fine imposed Rs. 5 million
NTDC	Order of the Authority in the matter of Show Cause Notice under rule 4(8) & 9 of NEPRA (Fines) Rules, 2002	Fine imposed Rs. 1 million
KE	order of the Authority in the matter of review filed by KE under rule 5(1) of NEPRA (Fines) Rules, 2002 against the Order of the Authority dated 28-09-2018 in the matter of fine imposed on KE for violation of the Authority Direction regarding provision of TOU Metering and Billing to its Consumers	Dismissed the Review Petition filed by KE and maintained its earlier Order dated 28-09-2018
NJHPC	Order of the Authority in the matter of Motion for Leave for review of determining Sale Rate of Import of Power From NJHPC Project	Review Motion not filed by CPPA-G (the Buyer), therefore the same is not maintainable.

07 MAJOR REGULATORY ACTIVITIES

7.1 COMPETITIVE TRADING BILATERAL CONTRACT MARKET

The development of competitive wholesale electricity as envisaged through 1992 Strategic Plan of Government of Pakistan to move from monopoly structure to competition through unbundling, corporatization and privatization of generation, distribution and retail/supply of the electric power took a firm shape market as per Authority approved CTBCM and formally launched on 31-05-2022 with the award of Market Operator Licence to CPPA-G, approval of the Market Commercial Code and the test-run plan. The Market Operator has now been tasked to conduct a test-run of the wholesale electricity market, without any financial implications and obligations. To commercially implement the CTBCM regime following actions are being undertaken:

(i) Lifting of Moratorium on specific Sections of NEPRA Act i.e. Sections 23A, 23B, 23G and 23H are to come into force after five years of coming into effect of the Amended NEPRA Act, i.e. April, 2023
(ii) Approval of Eligibility Criteria Rules being processed by the Federal Government
(iii) Approval of Remaining Regulations by NEPRA
(iv) Approval of the new Grid Code to be submitted by the System Operator
(v) Approval of the Agency Code to be submitted by CPPA-G as SPA.
(vi) Revision and approval of the Distribution Code to align the functions of DISCOs and the Suppliers
(vii) Approval of the Connection Agreements to be prepared by the DISCOs
(viii) Approval of the Security Package Documents to be prepared by PPIB as Independent Auction Administrator
(ix) Institutional Restructuring of the entities including NTDC, NPCC, CPPA-G, PPIB and AEDB
(x) Capacity Building of Power Sector Entities

7.2 INDICATIVE GENERATION CAPACITY EXPANSION PLAN

Pursuant to the provisions of the NEPRA Grid Code PC 4 and PC 4.1, NTDC prepared the IGCEP for 2021-30, based on the assumption set approved by the Council of Common Interest (CCI) in its meeting held on September 06, 2021, and submitted it for the review and approval of the Authority on September 08, 2021. The IGCEP was approved by the Authority vide its Determination dated September 24, 2021.

7.3 LICENSING

In accordance with provisions of NEPRA Act, during the period FY 2021-22, NEPRA have issued different licenses. During FY 2021-22, 12 Generation Licenses were issued for a cumulative 201.42 MW

capacity, 7,032 Licenses of cumulative 243.43 MW were issued for net metering-based systems to the consumers in different DISCOs, 10 applications for modification of licenses, 7 applications for cancellation of licence and 10 review petitions were processed. The details of each of these are given in below tables.

Detail of Generation Licence Issued

S. No.	Name of Licensee	Installed Cap. (MW)	Fuel	Licence No.	Date of Issuance
1	Ittehad (Pvt.) Limited	4.56	Natural Gas/ RLNG	SGC/158/2021	13-07-2021
2	YDE SA (SMC-Pvt.) Limited	0.37	Solar	SGC/157/2021	13-07-2021
3	Sapphire Hydro Limited (Sharmai Hydropower Project)	152.12	Hydel	IGSPL/108/2021	25-08-2021
4	Shams Power (Pvt.) Limited (Shifa International Hospital Islamabad)	1.67	Solar	SGC/159/2022	06-01-2022
5	Burj DG (Pvt.) Limited	0.52	Solar	SGC/161/2022	11-04-2022
6	Grid Edge (Pvt.) Limited	3.45	Solar	SGC/162/2022	11-04-2022
7	AGJV (Pvt.) Limited	10	Coal	SGC/160/2022	11-04-2022
8	Zero Carbon Power (Pvt.) Limited	1.82	Solar	SGC/163/2022	11-04-2022
9	YDE SA (SMC-Pvt.) Limited	0.93	Solar	SGC/164/2022	20-04-2022
10	GSolar Power (Pvt.) Limited	1.05	Solar	SGC/166/2022	21-04-2022
11	Atlas Energy Limited	4.93	Solar	SGC/165/2022	21-04-2022
12	AB Solar Park (Pvt.) Limited	20	Solar	SGC/167/2022	25-05-2022
Total Installed Capacity		**201.42**			

Details of Net Metering Licenses Issued

S. No.	Distribution Company	No. of Net Metering Licenses Issued	Installed Capacity (MW)	S. No.	Distribution Company	No. of Net Metering Licenses Issued	Installed Capacity (MW)
1	PESCO	392	12.51	7	MEPCO	1,018	46.98
2	TESCO	1	0.15	8	HESCO	64	4.13
3	IESCO	1,507	22.86	9	SEPCO	13	2.29
4	GEPCO	513	23.29	10	QESCO	9	0.22
5	LESCO	1,790	62.39	11	KE	1,078	41.45
6	FESCO	558	26.62	12	DHA (EME)	89	0.54
Total						**7,032**	**243.43**

Modification Cases Completed

S. No.	Name of Licensee	Licence No.	Modification/ Decision Issued
1	K-Electric Limited	GL/04/2002	15-09-2021
2	Nishat Mills Limited	SGC/40/2009	30-03-2022
3	Lucky Electric (Pvt.) Limited	IGSPL/66/2017	29-03-2022
4	Zorlu Solar Pakistan (Pvt.) Limited	SPGL/23/2018	07-01-2022
5	Foundation Power Company Deharki Limited	IGSPL/06/2007	08-10-2021
6	Zorlu Solar Pakistan (Pvt.) Limited	SPGL/23/2017	07-01-2022
7	Etihad Power Generation Limited	IGSPL/56/20115	22-11-2021
8	Mughal Energy Limited	SGC/152/2021	25-05-2022
9	Access Solar (Pvt.) Limited	SPGL/03/2013	06-06-2022
10	Access Electric (Pvt.) Limited	SPGL/05/2014	06-06-2022

Cancelled Licenses

S. No.	Name of Licensee	Licence No.	Cancellation Letter Date
1	Mekotex (Pvt.) Limited	SGC/47/2009	31-08-2021
2	Lalpir Solar Power (Pvt.) Limited	SPGL/26/2018	31-08-2021
3	Hamza Sugar Mills Limited	SGC/67/2010	03-09-2021
4	Kolachi Portgen (Pvt.) Limited	IGSPL/82/2017	15-09-2021
5	Prosperity Weaving Mills Limited	SGC/35/2008	13-10-2021
6	Ibrahim Fibers Limited	SGC/33/2007	17-06-2022
7	Ibrahim Fibers Limited	17/DL/2008	17-06-2022

Review Petitions

S. No.	Name of Company/Licensee	Status of Review Petition
1	HESCO filed Review against LPM of Fimcotex Industries (Pvt.) Limited	In process
2	KEL filed Review against grant of licence to Solis Alpha Energy (Pvt.) Limited	In process
3	KE filed Review against LPM of Engro Polymer & Chemicals Limited (Formerly Engro Asahi Polymer & Chemicals Limited)	In process
4	GEPCO filed a review against grant of distribution licence to Aujla and Associates Town Developers Gujranwala	In process
5	NTDC filed a review against grant of licence to STDC as PGC	In process
6	NTDC filed a review against grant of licence to KPK as PGC	In process
7	PESCO filed a review against LPM of PEDO for its Pehur Hydropower Plant	In process
8	KE filed a review against determination of the Authority in the matter of APM in the distribution licence of KE for excluding the exclusivity	In process
9	National Grid Company and DISCOs filed a review against LPM of Fatima Energy Limited	In process
10	KE filed a review against the Determination of the Authority regarding Modification-XI in the Generation Licence of KE	Concluded

7.4 TARIFF

Pursuant to Section 7(3) of NEPRA Act, NEPRA has been expressly conferred the power to determine tariff, rates, charges and other terms and conditions for the supply of electric power services by generation, transmission distribution and suppliers and to recommend these to the Federal Government for notification. During the FY 2021-22, following decisions have been issued:

S. No.	Description	Date of Decision
1	Port Qasim Electric Power Company (Pvt.) Limited (Review Decision)	01-07-2021
2	Karachi Nuclear Power Plant Unit-2 (Immediate Tariff Decision)	01-07-2021
3	CPGCL (Open Cycle Operations and Reduction in ROE of Guddu 747 MW Power Plant Decision)	28-07-2021
4	Northern Power Generation Company Limited (Review Decision)	23-08-2021
5	Jamshoro Power Company Limited (Determination)	27-08-2021
6	Lucky Cement Limited (Review Decision)	15-10-2021
7	Jamshoro Power Company Limited (Review Decision)	23-12-2021
8	Karachi Nuclear Power Plant Unit-2 (Determination)	14-01-2022
9	Lucky Electric Power Company Limited (Imported Coal Decision)	07-02-2022
10	FFBL Power Company Limited (Suo Moto Proceedings Decision)	10-02-2022
11	Northern Power Generation Company Limited (Nandipur Modification Decision)	11-04-2022
12	Karachi Nuclear Power Plant Unit-3 (K-3) (Pre-COD Fuel Decision)	28-04-2022
13	Karachi Nuclear Power Plant Unit-3 (K-3) (Interim Decision)	19-05-2022
14	FFBL Power Company Limited (Modification Petition Decision)	20-05-2022
15	Tapal Energy Power Limited (Decision)	17-06-2022

S. No.	Description	Date of Decision
Wind Power Projects		
1	Master Green Energy Limited	07-05-2022
2	Tricom Wind Power (Pvt.) Limited	
3	Gul Ahmed Electric Limited	
4	Din Energy Limited	
5	Act 2 Wind (Pvt.) Limited	
6	Artistic Wind Power (Pvt.) Limited	
7	Metro Wind Power Limited	
8	NASDA Green Energy (Pvt.) Limited	
9	Liberty Wind Power 1 (Pvt.) Limited	
10	Liberty Wind Power 2 (Pvt.) Limited	
11	Lakeside Energy (Pvt.) Limited	
12	Indus Wind Energy Limited	
Solar PV Power Projects		
1	Access Electric (Pvt.) Limited (10 MW)	29-07-2021
2	Access Solar (Pvt.) Limited (11.52 MW)	29-07-2021
3	After adjustment of PPPC the levelized tariff of US Cents 4.2820/kWh and US Cents 4.3148/kWh respectively were approved for IPPs	
4	A 100 MW solar power project - Zhenfa Pakistan New Energy Company (Pvt.) Limited achieved COD on 14-04-2022 and started delivery of electricity to the National Grid. The determined tariff of ZPNECPL is US Cent 3.7390/kWh.	
Bagasse Cogeneration Projects		
1	Shahtaj Sugar Mills Limited (SSML)	24-01-2022
COD Adjustments during FY 2020-21		
1	FFBL Power Company Limited	09-02-2022
2	Engro Power Gen Company Limited	16-06-2022
3	China Hub Power Generation Company	30-06-2022
	Transmission Tariff	
1	PMLT Review Decision	27-05-2022
2	PMLC Interim Relief Decisions	24-12-2021

7.4.1 Indexations/Fuel Price Adjustments:

In accordance with the generation tariff prescribed mechanism total 560 decisions were issued on account of fuel price variation, Quarterly indexations on account of US$/PKR variation, US CPI, Local CPI (General) KIBOR/LIBOR variation. In addition monthly fuel price adjustments in DISCOs and KE was also allowed. Further on account of aforesaid factors, quarterly adjustments in DISCOs and KE was also allowed.

7.5 CONSUMER AFFAIRS

NEPRA receives and processes complaints of electricity consumers against Licensees. The complaints generally pertain to excessive/detection billing, delay in provision of new connection, replacement of defective meters, low voltage problem, delay in augmentation of transformers, replacement of damaged transformers, non-receipt of electricity bills, excessive/unscheduled load-shedding, etc. The status of complaints are as under:

Status of Consumer Complaints (Head Office & Regional Offices) (July 2021 - June 2022)

DISCOs	Total Complaints Received/Processed	Total Complaints Disposed of	Under Process
PESCO	626	562	64
TESCO	2	2	0
IESCO	288	281	7
GEPCO	380	359	21
LESCO	1489	1312	177
FESCO	653	592	61

DISCOs	Total Complaints Received/Processed	Total Complaints Disposed of	Under Process
MEPCO	775	742	33
HESCO	1415	1338	77
SEPCO	952	904	48
QESCO	135	130	5
KE	5716	5581	135
BTPL	3	3	0
NTDC	1	1	0
CPPA-G	1	0	1
PCP*	342	336	6
Total	**12778**	**12143**	**635**

** Pakistan Citizen Portal*

7.5.1 Other Highlights/Developments:

(i) For strict compliance of NEPRA (Alternative & Renewable Energy) Distributed Generation and Net-Metering Regulations, 2015 & installation of Bi-Directional meter at the time of new connection & extension of load/shifting of distribution generation facility; DISCOs have been directed as following:

(a) To process the net-metering generation license applications strictly in accordance with relevant provisions of NEPRA (Alternative & Renewable Energy) Distributed Generation and Net-Metering Regulations, 2015.

(b) To provide an option to the new/prospective 3-phase consumers for the installation of bi-directional meters without the installation of a distributed generation facility.

(c) To allow shifting of the distributed generation facility as per the codal formalities.

(ii) A new chapter on regulatory framework for electric vehicle charging stations has been incorporated in Consumer Service Manual.

(iii) Instructions have been issued to all DISCOs to complete the process for change of name, extension/reduction of load and other particulars for electricity connection and net-metering facility within thirty (30) days.

(iv) Action was taken against abnormal billing beyond one month done by DISCOs and accordingly all DISCOs were directed to provide relief in the form of slab benefit and fuel price adjustment wherever applicable to all the consumers who have been affected by the abnormal billing beyond one month.

(v) A web-portal has been developed to facilitate distributed generation installers regarding delay in installation of net meters up to 25 kW.

(vi) IESCO has been directed vide letter dated March 04, 2022 for provision of electricity connections in the jurisdiction of Islamabad Capital Territory (ICT), without linking it with the building by-laws and regulations of the civic agency i.e. CDA.

(vii) A notice was taken by the Authority regarding un-scheduled load shedding. In this regard, all regional offices of NEPRA are facilitating the Complainants in order to resolve their issues on priority.

(viii) DISCOs have been directed to check and perform all required tests including grounding/earthing of all those transformers which have been in operation for more than 20 years to ensure that those transformers can further be utilized without any risk or hazard.

(ix) In order to avoid any accident; the DISCOs have been directed to immediately replace the transformers which are found faulty during routine tests/maintenance checks. The DISCOs have replaced a large number of such distribution transformers.

(x) All DISCOs are directed to expedite installation of pending new connections & replacement of defective meters.

(xi) All DISCOs have been directed to conduct survey on priority and indicate such places in residential

areas which are critical from safety point of view or may cause fatal/non-fatal accidents and take necessary action for adequate clearance of high-tension lines to avoid accident. In this regard; DISCOs have removed a large number of hazardous points. Approximately 3,538 cases have been resolved after conducting hearing(s) during the year.

(xii) All DISCOs have been directed to ensure timely issuance of first bill to the new consumers and in case of any delay, DISCOs have been directed to ensure provision of slab benefit to the consumers along with the option to pay the bill in installments without any late payment surcharge.

7.6 NEPRA APPELLATE BOARD

An Appellate Board has been established by the Authority to hear the Appeals received in NEPRA against the decision of the Provincial Offices of Inspection under Section 38 of NEPRA Act, 1997. The following table shows the status of the Appeals decided by the Appellate Board during FY 2021-22:

DISCOs	Pending as on 01-07-2021	Filed from 01-07-2020 to 30-06-2021	Total	Decided	Balance as on 30-06-2022
PESCO	2	1	3	1	2
IESCO	25	14	39	27	12
GEPCO	16	14	30	4	26
LESCO	106	75	181	74	107
FESCO	43	31	74	23	51
MEPCO	29	11	40	24	16
HESCO	3	7	10	5	5
KE	25	4	29	23	6
TOTAL	**249**	**157**	**406**	**181**	**225**
Review Motions					
IESCO	3	7	10	6	4
GEPCO	1	0	1	1	0
LESCO	2	5	7	2	5
FESCO	1	0	1	0	1
KE	5	9	14	7	7
TOTAL	**12**	**21**	**33**	**16**	**17**

7.7 CORPORATE SOCIAL RESPONSIBILITY (CSR)

NEPRA implemented Corporate Social Responsibility (CSR) with a vision of 'Power with Prosperity' (PwP) to envisage model of inclusive development and impact investments in power sector. During the FY 2021-22, 232 Licensees were brought on board and serving as catalyst for transformation of inclusive development model into reality and impacting approximately 19 million people (as reported by our Licensees). To spread awareness among the licensees about the PwP Drive, CSR arranged numerous Visits, Webinars/Seminars and signed MOUs with different organizations during the year. To accomplish this noble cause following steps were taken during the year:

NEPRA's Anti COVID-19 Drive was very successful and all licensees reported 100% vaccination of their employees, dependents and local communities in their operating areas.

Chairman NEPRA visited the following CSR Projects on the invitation of NEPRA Licensees:

(i) Graduation Ceremony of Roshni Baji, Women Ambassador Program by KE
(ii) Visit of Master Wind Energy (Pvt.) Limited, Metro Power Company (Pvt.) Limited, Gul Ahmed Wind Power Company (Pvt.) Limited and Inauguration of Vocational Training Center at Jhimpir
(iii) Visit to Akhuwat University Lahore (Quarterly Review Briefing by Akhuwat on PwP Fund)
(iv) Inauguration of Community Hospital by Tricon Boston (Wind Power Plant) in Jhimpir
(v) Solar Powered Water Pumps for Local Community by Gul Ahmed Energy in Jhimpir

(vi) Solar Kits and Sewing Machines distribution by Metro Power in Jhimpir, Thatta
(vii) Free Covid Mobile Vaccinations Units and for Karachi and Balochistan by KE
(viii) Chairman NEPRA inaugurated Breast cancer awareness campaign launched by PAEC
(ix) Chairman NEPRA with CSR head attended Karachi Award Ceremony as Chief Guest
(x) Chairman NEPRA with CSR team attended a licensee engagement session at LUMS Lahore

Akhuwat established a PwP Fund wherein, 04-NEPRA Licensees i.e. KE, Engro Energy, KAPCO and Port Qasim Electric participated under PwP Fund for provision of Interest Free Solar Loans to the local communities on easy installments for solarization of communities. As per latest progress review report by the Akhuwat, Solar Loans have been provided to 174 applicants (163-Male Applicants and 11-Female Applicants) through its 44 operating branches in the country. Moreover, Akhuwat has 100% recovery rate of these loans. In addition NEPRA also signed MOU with AJK government for CSR framework. Further on October 1, 2021, NEPRA's CSR Data Portal was launched i.e. a dedicated online portal to collect, analyze and report the data provided by NEPRA Licensees regarding CSR activities done by them during the fiscal year. NEPRA also issued Social Investment Guidelines for licensees. According to Guidelines, every licensee is bound to report their CSR Activities to NEPRA on regular basis along with their 5-Years Social Investment Plan. NEPRA also awarded the following on commendable services on CSR front:

(i) Gold Award Winner: KE
(ii) Silver Award Winners: WAPDA & PAEC (due to tie between them)
(iii) Bronze Award Winner: Engro Energy

CSR also conducted Webinars during the year which are as under:

(i) Webinar on Akhuwat's Quarterly progress review (held after every 3 months)
(ii) Webinar on Environmental Benefits proposed by 'Agrihood'
(iii) Webinar on High Impacts CSR projects on 'Quality Education'
(iv) Webinar for KHI Award Winner
(v) Webinar on Engagement of Social Welfare Organizations in CSR Drive

7.8 HEALTH, SAFETY AND ENVIRONMENT (HSE)

NEPRA established Occupational Health, Safety & Environment (HSE) Department in 2020 with the vision of 'Power with Safety' to ensure compliance with NEPRA Power Safety Code and applicable legal requirements by licensees with its commitment to achieve zero incident goal in the power sector by adopting the most effective and proactive practices as to ensure safe, reliable, and sustainable power services for Pakistan.

The HSE Department achieved many milestones during the FY 2021-2022, including released of the HSE Performance Evaluation Report, conducted Site HSE Performance Evaluations, arranged awareness sessions/webinars for licensees, meeting with licensees about the Power Safety Code requirements, reviewed licensee safety manuals, provided safety targets to DISCOs, develop HSE Page at NEPRA Webpage, develop NEPRA HSE Data Exchange Portal, published incidents alerts, conducted safety campaign, developed safety handbook for line staff and organized a fire drill at the NEPRA Tower. In addition, with respect to HSE, following events were conducted:

(i) Licensees Safety Manuals were reviewed and LESCO Safety Manual was approved.
(ii) Arranged meeting with CEO's/MD for Safety performance improvement.
(iii) Arranged meeting with NEPRA Licensees requiring HSE Guidance.
(iv) Conducted several webinars on 'PPE & T&P', 'Electrical Circuits and Apparatus', 'Working at Heights', 'Environmental Management System', 'Emergency Management System', 'HSE Legal Compliance Register', 'Workplace Stress Management', and 'Temporary Protective Grounding'.

(v) Licensees HSE Performance Evaluation Report was released.
(vi) Awarded following Top HSE Performers:

(a) Gold Award Winner: Foundation Power Company (Daharki) Limited
(b) Silver Award Winners: Pakistan Atomic Energy Commission
(c) Bronze Award Winner: Uch Power (Pvt.) Limited

(vii) Released NEPRA Incident Alert: Distribution Transformer Explosion.
(viii) Conducted Fire Safety Awareness Session and Fire Drill.
(ix) Conducted awareness session for Regulatory Framework and Oversight for Physical Protection of Nuclear and other Radioactive Material.
(x) Conduct Safety Handbook Roll out Ceremony.
(xi) Conduct Team Building Workshop.
(xii) Conducted Site HSE Performance Evaluations of following plants:

(a) FFBL Power Company Limited
(b) K-Electric Limited (Transmission)
(c) Chashma Nuclear Power Generating Station
(d) WAPDA Jinnah Hydel Power Station
(e) Quaid-e-Azam Thermal Power (Pvt.) Limited
(f) Northern Power Generation Company Limited
(g) Sapphire Electric Company Limited
(h) Nishat Power Limited
(i) Halmore Power Generation Company Limited
(j) Saba Power Company (Pvt.) Limited
(k) Neelum Jhelum Hydro Electric Project
(l) WAPDA Mangla Hydel Power Station
(m) Laraib Energy Limited

7.9 LEGAL

Pursuant to the Section 47 of the NEPRA Amended Act, 2018, NEPRA is responsible for formulating Regulations (not inconsistent with the provisions of Act and Rules) for governing the licensees or registered persons manners, procedure, duties and responsibilities along with the terms and conditions. During the year following Regulations have been notified:

(i) NEPRA Licensing (Electric Power Supplier) Regulations 2022;
(ii) NEPRA Consumer Eligibility Criteria (Electric Power Suppliers) Regulations 2022;
(iii) NEPRA Consumer Eligibility Criteria (Distribution Licensees) Regulations 2022;
(iv) NEPRA (Registration) Regulations 2022;
(v) NEPRA (Electric Power Trader) Regulations, 2022;
(vi) NEPRA Performance Standards (Electric Power Suppliers) Regulations, 2022;
(vii) NEPRA Licensing (Market Operator) Regulations, 2022;
(viii) NEPRA Licensing (Distribution) Regulations 2022;
(ix) NEPRA (Uniform System of Accounts) Regulations, 2022;
(x) NEPRA (Fine) Regulations, 2021;
(xi) Amendments in NEPRA Licensing (Application, Modification, Extension and Cancellation) Procedure Regulations, 2021;
(xii) Amendments in NEPRA (Fees) Regulations, 2021.

7.9.1 Progress regarding Framing of New Regulations/Rules under NEPRA Amendment Act:

The following regulations are under progress and are expected to soon be notified:

(i) NEPRA (Electric Power Procurement) Regulations;

(ii) NEPRA Open Access (Interconnection and Wheeling of Electric Power) Regulations;
(iii) NEPRA Licensing (System Operator) Regulations.

Similarly, the eligibility criteria rules to be prescribed by the Federal Government under the NEPRA Act, have undergone public consultation; the Authority has provided its input/comments in this regard and the said rules are currently being finalized by the Federal Government.

7.9.2 Status of Pending Legal Cases:

A summary of cases pending before the Honorable Courts of Pakistan as on 30-06-2022 is as under. These are the cases, wherein either the decision of the Authority is being challenged or NEPRA is party to the case:

Court	Pending on 30-06-2021	Filed in 2021-22	Total No. of Cases	Decided/ Disposed of FY 2021-22	Pending on 30-06-2022
Supreme Court of Pakistan	269	2	271	116	155
Islamabad High Court	122	14	136	2	134
Lahore High Court	514	65	579	51	528
Peshawar High Court	99	195	294	53	241
Sindh High Court	256	13	269	5	264
Balochistan High Court	3	1	4	0	4
Civil Court	30	3	33	2	31
Total	**1,293**	**293**	**1,586**	**229**	**1,357**

08 INITIATIVES BY STAKEHOLDERS

8.1 GENERAL

The PPIB/AEDB works at Federal level as one window facilitators for investment in power sector under the relevant power policies of the Government. Besides the federal agencies, PPDB, PEDO, Energy Department (Government of Sindh) and Energy Department (Government of Balochistan) are working as Provincial Government agencies to facilitate investment in power sector. PPIB, AEDB, PPDB, PEDO, Energy Department (Government of Sindh), Energy Department (Government of Balochistan) and National Energy Efficiency & Conservation Authority (NEECA) have provided briefs on their respective roles, activities during FY 2021-22, initiative and planned activities etc. which are as follows:

8.2 PRIVATE POWER AND INFRASTRUCTURE BOARD

During the FY 2021-22, PPIB was actively involved in development of policies, supplemental policies, guidelines and documents for development of (i) hydel resources, (ii) coal resources, (iii) co-gen bagasse-based power by sugar industry, and (iv) fast track scheme for processing of power projects, (v) projects under short term capacity addition initiative and (vi) determination of tariff for IPPs. PPIB has been facilitating various private sector projects, salient details of these projects is given below:

Projects Completed during FY 2021-22

S. No.	Project Name	Location	Fuel	Capacity (MW)	Completion Date
Transmission Line Project					
1	Matiari-Lahore HVDC	Matiari (Sindh) - Lahore (Punjab)	Transmission Line	4,000 MW	01-09-2021
Power Generation Projects					
2	Karot Hydropower	River Jehlum, AJ&K/ Punjab	Hydel	720	29-06-2022
3	Lucky Electric	Port Qasim near Karachi	Thar Coal	660	21-03-2022
			Total (MW)	**1,380**	

Summarized form of PPIB's portfolio of upcoming IPPs till 30th June, 2022 is given as follows:

Year	Hydro		Thar Coal		RLNG/Imp. Coal		Total (MW)	No. of Projects
	MW	No.	MW	No.	MW	No.		
2022	720	01	2,640	03	1263*	01	**5,522**	**05**
2023	7.08	01	-	-	-	-	**7.08**	**01**
2024	892	02	-	-	-	-	**892**	**02**
2025	-	-	-	-	300**	01	**300**	**01**
2028	700.7	01	-	-	-	-	**700.7**	**01**
2029	1,124	01	-	-	-	-	**1124**	**01**
Miscellaneous	2732	08	1650	02	-	-	**4382**	**10**
Grand Total	**5455**	**14**	**4,290**	**05**	**1563**	**02**	**11,308**	**21**

Mega Matiari-Lahore 660 kV HVDC Transmission Line Project which was processed by PPIB achieved COD with effect from 01-09-2021.

* *RLNG based project* ** *Imported Coal based projectProjects in miscellaneous category include 1 Thar coal based project of 330 MW which is under litigation, 4 hydro projects of 1472 as candidate projects in the IGCEP portfolio and 4 hydro projects of 1260 MW which will be processed as per the requirements of new capacity in the IGCEP.*

Detail of PPIB's Future Projects is as under:

(i) PPIB is working in augmenting the power sector infrastructure based on affordable and environment friendly power.
(ii) It is going to be the Independent Auction Administrator (IAA) under CTBCM after the approval of the Regulator
(iii) It is planning to process 2-3 new hydro based IPPs under International Competitive Bidding (ICB).
(iv) Carrying out assessment to identify prolific Pumped Storage Hydropower Sites to cater for intermittency issues associated with wind and solar power generation options as well as to supplement the peak demand.
(v) After receipt of list of candidate transmission line projects from NTDC and finalization of framework/RFP/Security Package for transmission line projects, PPIB would initiate the process of ICB in consultation with all key stakeholders.
(vi) PPIB is in the process of initiating a bankable feasibility study for converting existing three imported coal based power plants on Thar coal.

8.3 ALTERNATIVE ENERGY DEVELOPMENT BOARD

AEDB has been promoting and facilitating the development and deployment of alternative and renewable energy technologies in the country, particularly in the private sector. The status of RE power projects as of 30th June, 2022 is given below:

(i) Thirty-six (36) wind power projects of 1,835 MW cumulative capacity were operational and providing electricity to the National Grid.
(ii) Seven (07) solar projects of 530 MW cumulative capacity were operational.
(iii) Eight (08) sugar mill-based bagasse co-generation projects of 259.1 MW capacity were operational.

Four solar PV power projects of cumulative capacity of 41.52 MW listed as Category-I projects one solar PV power project of 100 MW capacity in Category-II are being facilitated for execution. AEDB is in process of finalizing the RFP document for Category-III renewable power projects and soon going to undertake the competitive bidding. AEDB is also working on developing renewable power projects under the ARE Policy, 2019.

8.4 NATIONAL ENERGY EFFICIENCY AND CONSERVATION AUTHORITY

NEECA is working on conservation and efficient use of energy as it carries tremendous potential in the country. NEECA has developed strategic plan to save 3 Million Tons of Oil Equivalent (MTOE) and reduce emissions by GHGs to the tune of 6.4 million tons of CO_2 equivalent at an accelerated energy efficiency of 3.5% by 2023 through various Energy Efficiency and Conservation (EE&C) initiatives across five key sectors of the economy i.e. Building, Industry, Transport, Power and Agriculture. The activities undertaken related to institutionalization of NEECA are as under:

(i) Formulation of NEECA Policy (Draft),
(ii) NEECA's organizational development initiatives,
(iii) Establishment of Provincial Designated Energy Efficiency and Conservation Agencies,
(iv) Development of 5-Year Provincial Action Plans for Energy Efficiency and Conservation,
(v) Development of frameworks for establishment of Energy Conservation Tribunals,
(vi) Preparation and approval of EE&C Programs/PC is under PSDP, and
(vii) Development of Minimum Energy Performance Standards and Regulations for Electric & Gas Appliances

NEECA achieved following key milestones:

(i) Launch of Energy Audits of Captive Power Plants,
(ii) Implementation of Resource and Energy Efficient Technologies in the Sugar Sector,
(iii) Deployment of Energy Management Systems at Public Buildings of Islamabad and Punjab,
(iv) Electric Vehicle Charging Infrastructure and Renewable Hydrogen Studies,
(v) Approval of two EE&C projects in Building and Transport Sectors respectively under PSDP 2021-22), with estimated savings of 25 GWh of electricity, worth PKR 54.2 billion fuel savings by 2040 on annual basis in road transport sector, and creation of more than 20,000 jobs,
(vi) Revision of mitigation part of Pakistan's Nationally Determined Contributions (NDCs), 2021,
(vii) Launch of Energy Efficiency Program for Decarbonization of Textile Manufacture Sector,
(viii) Deployment of EE&C Communication Strategy and Action Plans for enhanced awareness and behavior change of masses on energy conservation through sustained digital foot print on social media and public outreach, and
(ix) Developed NEECA Mobile Application for Web Registry.

Future Milestones and Planned Actions:

(i) Approval of National Energy Efficiency and Conservation Policy,
(ii) Finalization and Enforcement of Energy Conservation Building Codes (ECBC) ,
(iii) Development of National Fuel Economy Standards and Launch of Vehicle Tune-up Centre Program,
(iv) Natural Gas Saving Plan for the Winter,
(v) Energy Efficient Industrial Boilers Replacement Program,
(vi) Energy Efficient Tube-well Replacement Program,
(vii) Observing the National Energy Conservation Day,
(viii) Activation of Green Banking Guidelines of State Bank of Pakistan for Energy Efficiency, and
(ix) Communication and Advocacy Initiatives including Social Media Campaigns, Webinars and School Awareness Campaign for inculcating the culture of conservation in the nation.

8.5 PUNJAB POWER DEVELOPMENT BOARD

PPDB has been established to perform its functions as a one window facilitator for development of IPP based power projects in the province of Punjab. So far, PPDB has contributed in the capacity addition of 1,820 MW into the National Grid including 500 MW solar PV and 1,320 MW coal power project. 1x 100 MW solar PV power project is under development. PPDB has contributed in the development of detail design of CTBCM and participated in the formulating and approval process of National Electricity Policy 2021. PPDB also coordinated in formulation of frameworks including Zero Time to Start-Up Policy and Mechanism for Granting Concessionary Tariff for Zero rated Export Oriented Industrial Consumers.

Future projects of PPDB include 3 coal power projects of 2,640 MW, 20 small hydropower projects 128.91 MW, 6 solar PV power projects of 975 MW and 1 wind power project of 250 MW. In addition, PPDB is going to expand the portfolio of renewable power projects including solar PV, wind, waste to energy, small hydropower, biomass, solar CSP in through competitive bidding. The canal top solar power project is also a future project of PPDB for which detailed feasibility studies are carried out at canal top and urban nullahs in the region of Gujranwala Division and Rakh Branch Canal, Faisalabad.

The Government of Punjab (GoPb) is pursuing the establishment of PGC. After receiving necessary approvals from GoPb, legal consultant will start the process of registration of PGC in SECP and license acquiring from NEPRA.

8.6 PAKHTUNKHWA ENERGY DEVELOPMENT ORGANIZATION

The Pakhtunkhwa Energy Development Organization (PEDO) (then as SHYDO) was established in 1986

to identify and explore the immense hydel potential located in Khyber Pakhtunkhwa. While most of the hydropower projects under development are in public sector, the provincial government has embarked on a multi-pronged strategy for encouraging investment through private and Public Private Partnership (PPP) modes. PEDO is working to explore all possible energy avenues including renewables like hydro, solar and wind energy.

Seven (7) hydropower projects with a total capacity of 161.2 MW are operational, and eight (08) hydropower plants of total capacity 476.36 MW are under construction. The 18 MW Pehur Hydel Station is supplying power to five (05) industries of Khyber Pakhtunkhwa through wheeling arrangement. The 300 MW Balakot HPP District Mansehra is also under development. PEDO has started executing 188 MW Naran Dam Hydropower Project District Mansehra and 96 MW Batakundi Hydropower Project, District Mansehra with private investors under PPP mode of financing. In addition, Directorate of Renewable Energy, Private Power is processing around 2,225 MW capacity of Hydel and Solar Projects under different modes of implementation. PEDO has undertaken solarization of villages, mosques/ worship places, construction of mini-grids, solarization of public sector buildings, setting up micro hydropower plants at the canals. Government of Khyber Pakhtunkhwa also has obtained licence for Provincial Grid Company.

8.7 ENERGY DEPARTMENT, GOVERNMENT OF SINDH

Energy Department, Government of Sindh (EDS) is providing one window facility for investors in energy sector on provincial level to exploit and promote the RE potential in the province. It has actively participated in approval of ARE Policy 2019.

EDS is pursuing development of wind, solar PV and small hydropower projects within the province through private sector investment. 12 wind power projects of the total portfolio of LOIs issued by EDS obtained tariff from NEPRA in the range of US Cents 4.7154/kWh to 4.7824/kWh achieved financial closed and targeted to achieve COD by end of 2022. Similarly, 3 solar power projects obtained tariff from NEPRA at the rate of US Cents 3.6683 /kWh achieved financial closed and targeted to achieve COD by end of 2022. EDS is developing 1x 15MW small hydropower project as well. EDS is also working to undertake the competitive bidding for solar PV power. The initial work for 400 MW capacity has been completed. In addition, EDS is working on solarization of public sector buildings and village electrification through standalone solar PV systems.

The Government of Sindh already has obtained the licence for PGC - Sindh Transmission & Dispatch Company (Pvt.) Limited (STDC). SPTL has successfully constructed and completed the first ever Provincial Transmission Line of 132 kV Double Circuit, of 95.47 km length, from Sindh Nooriabad Power Company Limited to KE KDA-33 Grid Station, Karachi. STDC has planned to build following projects:

(i) **KWSB Greater Water Bulk Supply K-IV Project:** 132 kV STDC grid station near K-IV pumping station and 20 km 132 kV Double Circuit Transmission Line on loop-in & loop-out arrangement between HESCO Jhimpir and Thatta grid to supply 50 MW power to K-IV pumping station at Kinjhar Lake.
(ii) **Amreli Steels Limited Project:** Double Circuit Transmission facility to supply 50 MW Hybrid RE energy from Jhimpir to Amreli Steels Limited for its own use at Dhabeji, Sindh.
(iii) **Engro Energy Limited Project:** Transmission Line for Engro Energy Limited to supply 400 MW Hybrid RE.

The performance parameters of existing transmission system of STDC during FY 2021-22 are as under:

(i) Number of tripping is only 29.
(ii) Number of outages hours 16 hours 28 minutes whereas NEPRA has allowed the annual outages allowance of 131.4 Hours.

(iii) Transmission Line losses are approximately 1.70% which is also within the permissible limit.

8.8 ENERGY DEPARTMENT, GOVERNMENT OF BALOCHISTAN

Energy Department, Government of Balochistan (EDB) is mandated to electrify villages through QESCO. In addition, EDB executes solar energy projects in various areas of the province to utilize available sources of renewable energy. Balochistan Energy Company has also been established to promote investment through private sector for generation of electricity from indigenous resources.

As per the details, EDB has issued LOIs to 16 companies for developing 750 MW solar PV and 10 LOIs for developing 500 MW wind power projects in different parts of Balochistan Province. In addition, EDB has carried out village electrification programs in different villages of the Balochistan Province.

STATISTICAL DATA ABOUT ENERGY AND ELECTRICITY SECTOR

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

TABLE 1

Primary Energy Supplies by Source (TOE)

Source	Unit	2016-17	2017-18	2018-19	2019-20	2020-21
Oil[1]	TOE	27,366,526	26,903,431	21,568,315	18,188,487	22,577,047
	% share	34.39	31.17	25.73	22.56	27.33
Gas	TOE	30,163,334	29,849,030	29,318,489	26,658,176	25,500,568
	% share	37.90	34.59	34.98	33.07	30.87
LPG[2]	TOE	1,008,673	1,054,006	953,834	1,026,048	1,116,597
	% share	1.27	1.22	1.14	1.27	1.35
Coal	TOE	6,482,401	10,925,200	12,933,087	14,711,973	16,530,528
	% share	8.15	12.66	15.43	18.25	20.01
Hydro Electricity[3]	TOE	7,681,699	6,665,328	6,525,607	8,016,386	8,007,673
	% share	9.65	7.72	7.79	9.94	9.69
Nuclear Electricity[3]	TOE	1,670,560	2,358,200	2,365,268	2,581,494	2,230,835
	% share	2.10	2.73	2.82	3.20	2.70
Renewable Electricity	TOE	636,825	920,580	1,117,482	991,041	1,031,857
	% share	0.80	1.07	1.33	1.23	1.25
LNG Import	TOE	4,455,734	7,492,597	8,913,006	8,320,497	5,498,263
	% share	5.60	8.68	10.63	10.32	6.66
Imported Electricity	TOE	118,480	132,659	116,196	122,625	118,957
	% share	0.15	0.15	0.14	0.15	0.14
Total	**TOE**	**79,584,232**	**86,301,031**	**83,811,284**	**80,616,727**	**82,612,325**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**7.59**	**8.44**	**(2.88)**	**(3.81)**	**2.48**

[1] Excluding petroleum products exports and bunkering.
[2] Include imports and production from field plants.
[3] Converted @ 10,000 Btu/kWh to represent primary energy equivalent of hydro and nuclear electricity as if this was generated by using fossil fuels.
Source: Provisional Data by HDIP, Islamabad

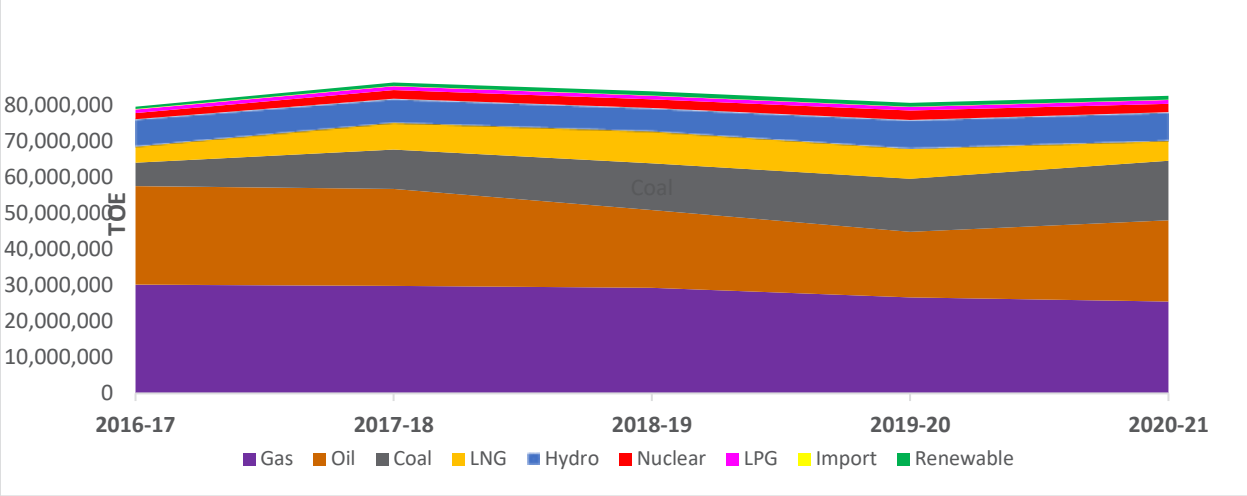


TABLE 2

Final Energy Consumption by Source (TOE)

Source	Unit	2016-17	2017-18	2018-19	2019-20	2020-21
Oil[1]	TOE	17,904,977	19,264,954	17,364,897	16,364,304	18,569,102
	% share	35.72	35.03	31.58	31.37	30.84
Gas[2]	TOE	17,031,100	16,693,880	17,275,180	15,944,781	18,346,902
	% share	33.98	30.36	31.41	30.56	30.47
LPG	TOE	1,308,471	1,385,427	1,148,380	1,196,005	1,371,416
	% share	2.61	2.52	2.09	2.29	2.28
Coal[2]	TOE	6,097,816	8,940,477	10,292,739	9,836,671	12,407,520
	% share	12.17	16.26	18.72	18.86	20.61
Electricity[3]	TOE	7,779,939	8,708,151	8,914,489	8,825,770	9,513,502
	% share	15.52	15.84	16.21	16.92	15.80
Total	**TOE**	**50,122,303**	**54,992,889**	**54,995,685**	**52,167,531**	**60,208,443**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**10.44**	**9.72**	**0.01**	**(5.14)**	**15.41**

[1] Excluding consumption for power generation.

[2] Excluding consumption for power generation and feedstock.

[3] @ 3412 Btu/kWh being the actual energy content of electricity.

Source: Provisional Data by HDIP, Islamabad

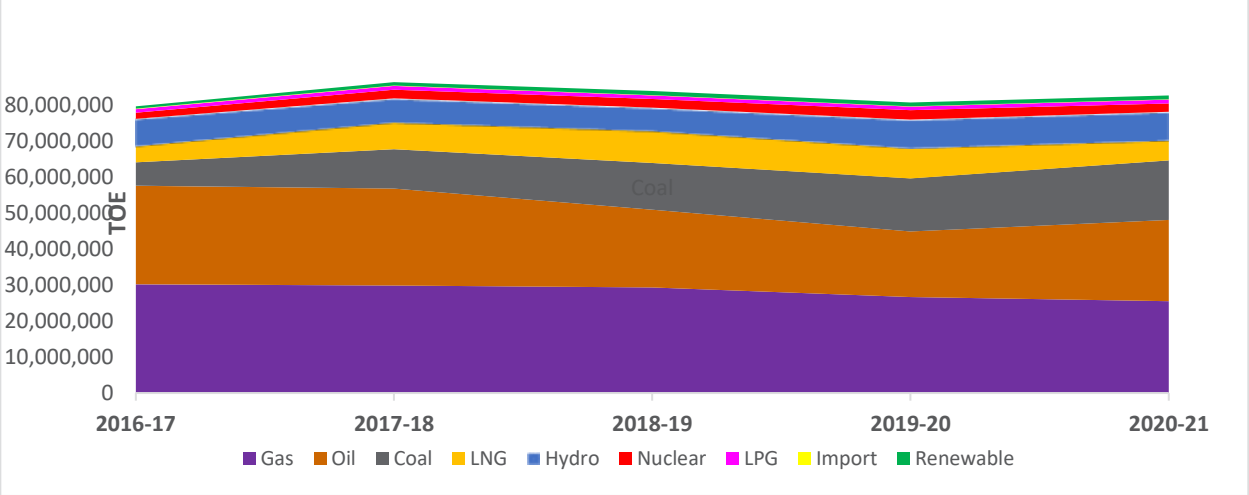


TABLE 3

Fuel Consumption for Thermal Power Generation (TOE)

Source	Unit	2016-17	2017-18	2018-19	2019-20	2020-21
Gas	TOE	8,643,403	10,831,662	10,050,101	8,426,767	8,648,124
	% share	49.80	56.89	65.35	56.98	57.34
Furnace Oil	TOE	8,037,139	6,029,947	2,661,528	1,474,895	2,310,032
	% share	46.30	31.67	17.31	9.97	15.32
Diesel Oil	TOE	291,841	194,033	27,383	12,683	n.p
	% share	1.68	1.02	0.18	0.09	-
Coal	TOE	384,585	1,984,722	2,640,347	4,875,302	4,123,008
	% share	2.22	10.42	17.17	32.96	27.34
Total	**TOE**	**17,356,968**	**19,040,364**	**15,379,359**	**14,789,647**	**15,081,164**
	% share	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Annual Growth Rate (%)		**6.80**	**9.70**	**(19.23)**	**(3.83)**	**1.97**

Source: Provisional Data by HDIP, Islamabad

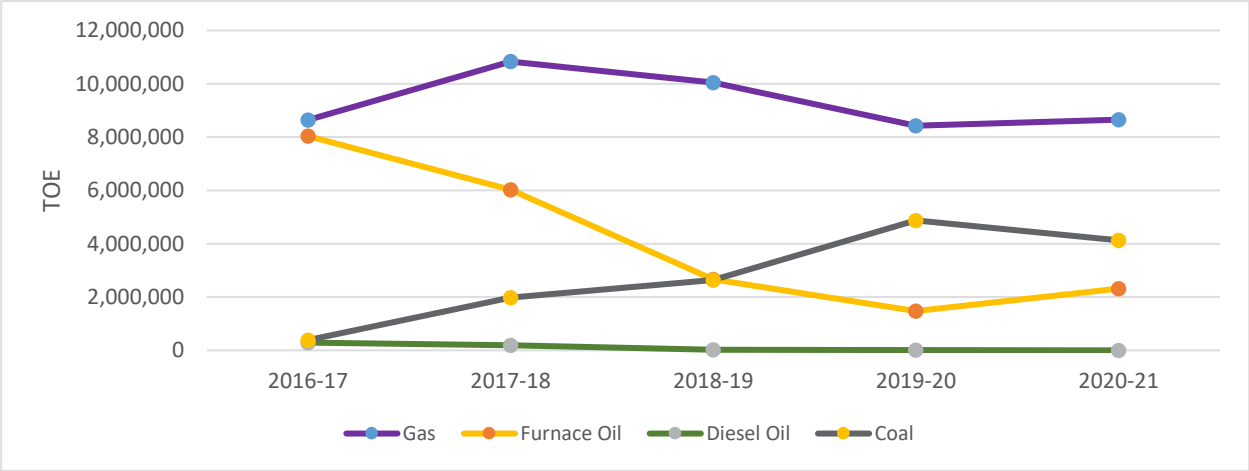
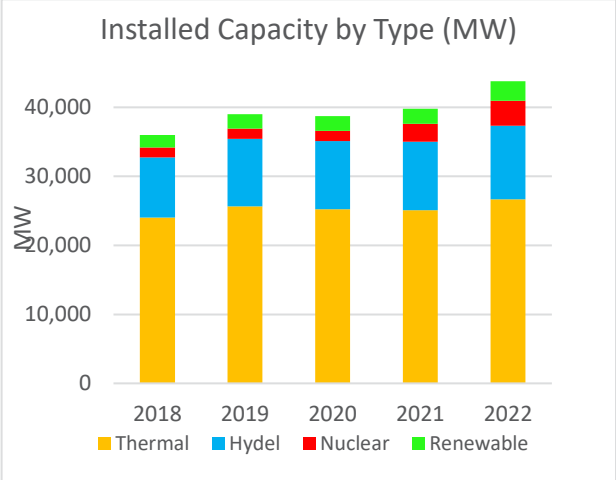


TABLE 4
Installed Capacity by Type (MW)

As on 30th June	2018	2019	2020	2021	2022
HYDEL					
WAPDA Hydel	8,341	9,389	9,389	9,443	9,443
IPPs Hydel	372	372	472	472	1,192
Sub-Total	**8,713**	**9,761**	**9,861**	**9,915**	**10,635**
% Share (Hydel Installed Capacity)	24.22	25.03	25.47	24.93	24.29
THERMAL					
GENCOs: CPPA-G System	5,637	5,637	4,881	4,881	4,731
KE Own	2,294	2,294	2,294	2,084	2,345
IPPs: CPPA-G System	15,297	16,946	17,276	17,276	18,750
IPPs: KE System	366	366	366	366	366
SPPs/CPPs/N-CPPs: CPPA-G System	340	340	340	340	340
SPPs/CPPs/N-CPPs connected with KE	87	87	87	151.1	151.1
Sub-Total	**24,020**	**25,670**	**25,244**	**25,098**	**26,683**
% Share (Thermal Installed Capacity)	66.76	65.83	65.20	63.10	60.95
NUCLEAR					
CHASNUPP (I, II, III and IV)	1,330	1,330	1,330	1,330	1,330
KANUPP (I, II & III)	137	137	137	1282	2,290
Sub-Total	**1,467**	**1,467**	**1,467**	**2,612**	**3,620**
% Share (Nuclear Installed Capacity)	4.08	3.76	3.79	6.57	8.27
RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)					
Wind Power Plants	1,048	1,248	1,248	1248	1838
Solar Power Plants	430	430	430	430	530
Bagasse based Power Plants	301	369	369	369	369
RE Power Plants: CPPA-G System	**1,779**	**2,047**	**2,047**	**2,047**	**2,737**
Solar Power Plants: KE System	0	50	100	100	100
RE Power Plants: KE System	**0**	**50**	**100**	**100**	**100**
Sub-Total	**1,779**	**2,097**	**2,147**	**2,147**	**2,837**
% Share (RE Installed Capacity)	4.94	5.38	5.55	5.40	6.48
Total Installed Capacity of the Country	**35,979**	**38,995**	**38,719**	**39,772**	**43,775**

Source: WAPDA/GENCOs/IPPs/CPPA-G/KE



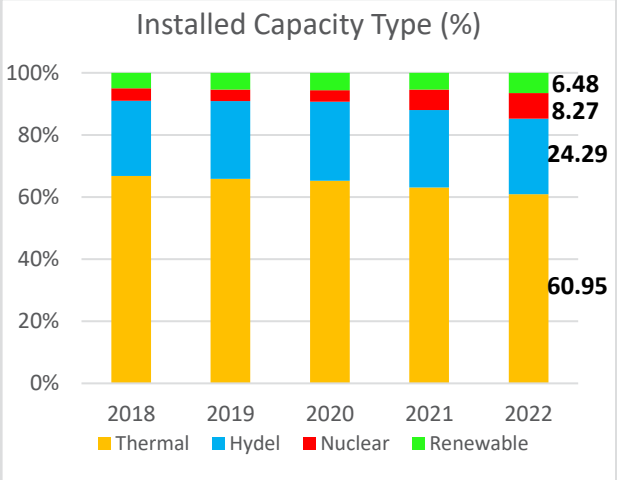


TABLE 5
Plant-wise Installed Capacity/Dependable Capacity (MW) as on 30th June

Power Station	Plant Location	Type of Power Station	2018*	2019*	2020*	2021*	2022*	Dependable Capacity as of June 2022
A1: Hydel (WAPDA)								
Major Hydropower Units								
Tarbela	Tarbela, KPK	Reservoir	3,948	3,478	3,478	3,478	3,478	3,478
Tarbela 4th Ext.	Tarbela, KPK	Reservoir	-	1,410	1,410	1,410	1,410	1,410
Ghazi Barotha	Ghazi Barotha, Punjab	Run of River	1,450	1,450	1,450	1,450	1,450	1,450
Mangla	Mangla, AJ&K	Reservoir	1,000	1,000	1,000	1,000	1,000	1,000
Warsak	Warsak, KPK	Run of River	243	243	243	243	243	243
Chashma	Chashma, Punjab	Run of River	184	184	184	184	184	184
Khan Khwar	Shangla, KPK	Reservoir	72	72	72	72	72	72
Allai Khwar	Battagram, KPK	Reservoir	121	121	121	121	121	121
Jinnah Hydel	Mianwali, Punjab	Run of River	96	96	96	96	96	96
Duber Khwar	Kohistan, KPK	Reservoir	130	130	130	130	130	130
Neelum Jhelum	Muzaffarabad, AJ&K	Run of River	969	969	969	969	969	969
Golen Gol	Chitral, KPK	Run of River	-	108	108	108	108	108
Small Hydropower Units								
Dargai	Dargai, KPK	Run of Canal	20	20	20	20	20	20
Rasul	Rasul, Punjab	Run of Canal	22	22	22	22	22	22
Shadiwal	Shadiwal, Punjab	Run of Canal	14	14	14	14	14	14
Chichoki Mallian	Chichoki Mallian, Punjab	Run of Canal	13	13	13	13	13	13
Nandipur	Nandipur, Punjab	Run of Canal	14	14	14	14	14	14
Kurram Garhi	Kurram Garhi, KPK	Run of Canal	4	4	4	4	4	4
Renala	Renala, Punjab	Run of Canal	1	1	1	1	1	1
Chitral	Chitral, KPK	Run of Canal	1	1	1	1	1	1
Gomal Zam	South Waziristan Agency, KPK	Reservoir	17	17	17	17	17	17
Malakand/Jabban	Malakand, KPK	Run of River	22	22	22	22	22	22
Daral Khwar	Swat, KPK	Run of River	-	-	-	37	37	37
Ranolia	Kohistan, KPK	High Head	-	-	-	17	17	17
Total Hydel (WAPDA)			**8,341**	**9,389**	**9,389**	**9,443**	**9,443**	**9,443**
A2: Hydel (IPPs)								
Jagran (AJ&K)	Jagran, AJ&K	Hydro	30	30	30	30	30	30
Malakand-III (PEDO)	Malakand, KPK	Run of River/ Canal	84	84	84	84	84	81
Pehur (PEDO)	Swabi, KPK	Canal Fall/Run of River	18	18	18	18	18	18
Laraib Energy (AJ&K)	Jhelum River, AJ&K	Hydro	84	84	84	84	84	84
Garam Chashma	Chitral, KPK	Hydro	1	1	1	1	1	1
Marala Hydro (PPDCL)	Sialkot, Punjab	Canal Fall/Run of River	8	8	8	8	8	8
Patrind Hydro (AJ&K)	Muzaffarabad, AJ&K	Run of River	147	147	147	147	147	147
Gulpur Hydropower Project	Gulpur, Kotli, AJK	Run of River	-	-	100	100	100	100
Karot Power Company Pvt. Ltd	Karot, Dist Rawalpindi	Run of River	-	-	-	-	720	540
Total Hydel (IPPs)			**372**	**372**	**472**	**472**	**1,192**	**1,009**
Total Hydel (A1+A2)			**8,713**	**9,761**	**9,861**	**9,915**	**10,635**	**10,452**
B1: Thermal (GENCOs: CPPA-G System)								
TPS Jamshoro	Jamshoro, Sindh	STs	880	880	880	880	880	649
GTPS Kotri	Kotri, Sindh	GTs+CCPP	144	144	0	0	0	0
TPS Guddu (Units 1-4)	Guddu, Sindh	STs	640	640	0	0	0	0
TPS Guddu (Units 5-10)	Guddu, Sindh	GTs+CCPPs	600	600	600	600	600	530
TPS Guddu (Units 11-13)	Guddu, Sindh	GTs+OCPPs	415	415	415	415	415	390
TPS Guddu (Units 14-16)	Guddu, Sindh	GTs+ST+CCPPs	747	747	747	747	747	721
TPS Quetta	Quetta, Balochistan	GT	0	0	28	28	28	0
TPS Muzaffargarh	Muzaffargarh, Punjab	STs	1,350	1,350	1,350	1,350	1,350	1,085
SPS Faisalabad	Faisalabad, Punjab	STs	0**	0	0	0	0	0
GTPS Faisalabad	Faisalabad, Punjab	GTs+CCPPs	144**	144**	144**	144**	144**	114
TPS Nandipur	Gujranwala, Punjab	GTs+CCPPs	567	567	567	567	567	411
FBC Lakhra	Lakhra, Sindh	STs	150	150	150	150	0	0
Total Thermal (GENCOs: CPPA-G System)			**5,637**	**5,637**	**4,881**	**4,881**	**4,731**	**3,900**
B2: Thermal (IPPs: CPPA-G System)								
Lal Pir Power	Mehmood Kot, Punjab	ST	362	362	362	362	362	350
Pak Gen. Power	Mehmood Kot, Punjab	ST	365	365	365	365	365	350
Altern Energy	Fateh Jang, Punjab	GEs	31	31	31	31	0	0
Fauji Kabirwala	Kabirwala, Punjab	GTs+CCPP	170	170	170	170	170	151
Habibullah Coastal	Quetta, Balochistan	GTs+CCPP	155	155	155	155	155	0
Hub Power	Hub, Balochistan	STs	1,292	1,292	1,292	1,292	1,292	1,208
Japan Power	Raiwind, Punjab	DE	120	120	120	120	0	0
KAPCO	Kot Addu, Punjab	GTs+CCPPs	1,600	1,600	1,600	1,600	1,600	1,345
Kohinoor Energy	Raiwind, Punjab	DEs+ST	131	131	131	131	131	124
Rousch Power	Sidhnai, Punjab	GTs+ST	450	450	450	450	450	395

Power Station	Plant Location	Type of Power Station	2018*	2019*	2020*	2021*	2022*	Dependable Capacity as of June 2022
Saba Power	Farooqabad, Punjab	ST	136	136	136	136	136	123
Southern Electric	Raiwind, Punjab	DEs	117	117	117	117	0	0
TNB Liberty Power	Daharki, Sindh	GTs+CCPP	235	235	235	235	235	212
Uch Power	Murad Jamali, Balochistan	GTs+ST	586	586	586	586	586	549
Attock Gen.	Attock Morgah, Punjab	DGs+ST	165	165	165	165	165	156
Atlas Power	Sheikhupura, Punjab	REs+ST	224	224	224	224	224	214
Engro Power Gen. Qadirpur	Qadirpur, Sindh	GT+ST	227	227	227	227	227	212
Saif Power	Sahiwal, Punjab	GTs+ST	225	225	225	225	225	204
Orient Power	Balloki, Punjab	GTs+ST	225	225	225	225	225	203
Nishat Power	Qasur, Punjab	REs+ST	202	202	202	202	202	195
Nishat Chunian	Qasur, Punjab	DEs+ST	202	202	202	202	202	196
Sapphire Electric	Muridke, Punjab	GTs+ST	235	235	235	235	235	202
Halmore Power	Bhikki, Punjab	GTs+ST	225	225	225	225	225	197
Narowal Energy	Narowal, Punjab	DEs+ST	214	214	214	214	214	214
Liberty Power Tech.	Faisalabad, Punjab	DEs+ST	202	202	202	202	202	196
Foundation Power	Daharki, Sindh	GT+ST	179	179	179	179	179	167
Davis Energen.	Jhang, Punjab	GEs	12	12	12	12	12	0
Uch-II Power	Murad Jamali, Balochistan	GTs+ST	404	404	404	404	404	372
Huaneng Shandong Ruyi (Sahiwal Imported Coal)	Sahiwal, Punjab	STs	1,320	1,320	1,320	1,320	1,320	1,243
QATPL (Bhikki)	Bhikki, Punjab	GTs+HRSGs+ST	1,231	1,231	1,231	1,231	1,231	1,163
NPPMCL (Haveli Bahadur Shah)	HBS, Punjab	GTs+HRSGs+ST	1,277	1,277	1,277	1,277	1,277	1,181
NPPMCL (Balloki)	Balloki, Punjab	GTs+HRSGs+ST	1,276	1,276	1,276	1,276	1,276	1,172
Port Qasim Electric Power	Port Qasim, Sindh	ST+CB	1,320	1,320	1,320	1,320	1,320	1,243
Reshma Power	Raiwind, Punjab	Reciprocating Engine	97	97	97	97	0	0
Gulf Powergen	Gujranwala, Punjab	Reciprocating Engine	84	84	84	84	0	0
China Power Hub	Lasbella, Balochistan	ST+CB	-	1,320	1,320	1,320	1,320	1,249
Engro Powergen Thar	Tharparkar, Sindh	ST+CB	-	330	660	660	660	603
Lucky Electric Power Co. Ltd.	Bin Qasim Town, Karachi	ST+CB	-	-	-	-	660	606
Punjab Thermal Power Pvt Ltd	Trimmu, Punjab	GTs+HRSGs+ST	-	-	-	-	1,263	1,263
Total Thermal (IPPs:CPPA-G System)			**15,297**	**16,946**	**17,276**	**17,276**	**18,750**	**17,258**
Total Thermal in CPPA-G system (B1+B2)			**20,934**	**22,583**	**22,157**	**22,157**	**23,481**	**21,158**
C: Nuclear								
CHASNUPP-I	Chashma, Punjab	STs	325	325	325	325	325	301
CHASNUPP-II	Chashma, Punjab	STs	325	325	325	325	325	315
CHASNUPP-III	Chashma, Punjab	STs	340	340	340	340	340	315
CHASNUPP-IV	Chashma, Punjab	STs	340	340	340	340	340	315
KANUPP	Karachi, Sindh	STs	137	137	137	137	0	0
KANUPP-II	Karachi, Sindh	STs	-	-	-	1,145	1,145	1,059
KANUPP-III	Karachi, Sindh	STs	-	-	-	-	1,145	1,040
Total Nuclear (C)			**1,467**	**1,467**	**1,467**	**2,612**	**3,620**	**3,345**
D: Renewable Energy (CPPA-G System)								
D1: Wind Power Projects								
Zorlu Enerji Pakistan	Thatta, Sindh	WTs	56	56	56	56	56	56
FFC Energy	Thatta, Sindh	WTs	50	50	50	50	50	50
Three Gorges First Wind Farm	Thatta, Sindh	WTs	60	60	60	60	50	50
Foundation Wind Energy-I	Thatta, Sindh	WTs	50	50	50	50	50	50
Foundation Wind Energy-II	Thatta, Sindh	WTs	50	50	50	50	50	50
Sapphire Wind	Thatta, Sindh	WTs	53	53	53	53	53	53
Yunus Energy	Thatta, Sindh	WTs	50	50	50	50	50	50
Metro Power Company	Thatta, Sindh	WTs	50	50	50	50	50	50
Gul Ahmad Wind	Thatta, Sindh	WTs	50	50	50	50	50	50
Master Wind Energy	Thatta, Sindh	WTs	50	50	50	50	50	50
Tenaga Generasi	Thatta, Sindh	WTs	50	50	50	50	50	50
HydroChina Dawood Power	Thatta, Sindh	WTs	50	50	50	50	50	50
Sachal Energy Development	Thatta, Sindh	WTs	50	50	50	50	50	50
UEP Wind Power	Thatta, Sindh	WTs	99	99	99	99	99	99
Artistic Wind Power	Thatta, Sindh	WTs	50	50	50	50	50	50
Act Wind (formerly Tapal Wind)	Thatta, Sindh	WTs	30	30	30	30	30	30
Hawa Energy	Thatta, Sindh	WTs	50	50	50	50	50	50
Jhimpir Power	Thatta, Sindh	WTs	50	50	50	50	50	50
Three Gorges Second Wind Farm	Thatta, Sindh	WTs	50	50	50	50	50	50
Three Gorges Third Wind Farm	Thatta, Sindh	WTs	50	50	50	50	50	50
Tricon Boston Consulting-A	Thatta, Sindh	WTs	-	50	50	50	50	50
Tricon Boston Consulting-B	Thatta, Sindh	WTs	-	50	50	50	50	50
Tricon Boston Consulting-C	Thatta, Sindh	WTs	-	50	50	50	50	50
Zephyr Power	Thatta, Sindh	WTs	-	50	50	50	50	50

Power Station	Plant Location	Type of Power Station	2018*	2019*	2020*	2021*	2022*	Dependable Capacity as of June 2022
Lucky Renewables PVt. Ltd (TRICOM)	Thatta, Sindh	WTs	-	-	-	-	50	50
Master Green Energy Ltd	Thatta, Sindh	WTs	-	-	-	-	50	50
Act 2 Din Wind Pvt Ltd	Thatta, Sindh	WTs	-	-	-	-	50	50
Artisitic Wind Power Pvt. Ltd	Thatta, Sindh	WTs	-	-	-	-	50	50
Indus Wind Energy Limited	Thatta, Sindh	WTs	-	-	-	-	50	50
Lakeside Energy	Thatta, Sindh	WTs	-	-	-	-	50	50
Liberty Wind Power-1	Thatta, Sindh	WTs	-	-	-	-	50	50
Din Energy Ltd	Thatta, Sindh	WTs	-	-	-	-	50	50
Gul Ahmed Electric Limited	Thatta, Sindh	WTs	-	-	-	-	50	50
Liberty Wind Power-II (Pvt.) Ltd.	Thatta, Sindh	WTs	-	-	-	-	50	50
NASDA Green Energy (Pvt) Limited	Thatta, Sindh	WTs	-	-	-	-	50	50
Metro 2 Wind Power Limited	Thatta, Sindh	WTs	-	-	-	-	50	50
Total Wind Power Projects			**1,048**	**1,248**	**1,248**	**1,248**	**1,838**	**1,838**
D2: Solar Power Projects								
Quaid-e-Azam Solar Park	Bahawalpur, Punjab	Solar	100	100	100	100	100	100
Appolo Solar Development	Bahawalpur, Punjab	Solar	100	100	100	100	100	100
Best Green Energy	Bahawalpur, Punjab	Solar	100	100	100	100	100	100
Crest Energy	Bahawalpur, Punjab	Solar	100	100	100	100	100	100
AJ Power	Khushab, Punjab	Solar	12	12	12	12	12	12
Harappa Solar	Sahiwal, Punjab	Solar	18	18	18	18	18	18
Zhenfa Pakistan New Energy Company Limited	Layyah, Punjab	Solar	-	-	-	-	100	100
Total Solar Power Projects			**430**	**430**	**430**	**430**	**530**	**530**
D3: Bagasse/Biomass Power Projects								
Jamal Din Wali-II	Rahim Yar Khan, Punjab	Bagasse+Biomass	26	26	26	26	26	24
Jamal Din Wali-III	Rahim Yar Khan, Punjab	Bagasse+Biomass	27	27	27	27	27	24
RYK Mills	Rahim Yar Khan, Punjab	Bagasse	30	40	40	40	40	24
Chiniot Power	Chiniot, Punjab	Bagasse	63	63	63	63	63	63
Fatima Energy	Muzaffargarh, Punjab	Biomass/Coal	120	120	120	120	120	45
Hamza Sugar Mills	Rahim Yar Khan, Punjab	Bagasse+Biomass	15	15	15	15	15	15
The Thal Industries Corporation	Layyah, Punjab	Bagasse	20	20	20	20	20	25
Almoiz Industries	Mianwali, Punjab	Bagasse	-	36	36	36	36	36
Chanar Energy	Faisalabad, Punjab	Bagasse+Biomass	-	22	22	22	22	22
Total Bagasse/Biomass Power Projects			**301**	**369**	**369**	**369**	**369**	**278**
Total Renewable Energy (D1+D2+D3) (CPPA-G system) (D)			**1,779**	**2,047**	**2,047**	**2,047**	**2,737**	**2,646**
E1: Thermal (KE Own)								
Bin Qasim TPS-I	Karachi, Sindh	STs	1,260	1,260	1,260	1,050‡	840	730
Bin Qasim TPS-II	Karachi, Sindh	GTs	572	572	572	572	572	526
Bin Qasim TPS-III (Unit-I)	Karachi, Sindh	GTs	-	-	-	-	471	459
Korangi Town GTPS-II	Karachi, Sindh	GTs	107	107	107	107	107	96
Site GTPS-II	Karachi, Sindh	GTs	107	107	107	107	107	97
Korangi CCPP	Karachi, Sindh	GTs	248	248	248	248	248	227
Total Thermal (KE Own)			**2,294**	**2,294**	**2,294**	**2,084**	**2,345**	**2,135**
E2: Thermal (IPPs connected with KE System)								
Gul Ahmed	Karachi, Sindh	DE+ST	136	136	136	136	136	128
Tapal Energy	Karachi, Sindh	DE+ST	126	126	126	126	126	124
SNPCL-I (IPP-2002)	Jamshoro, Sindh	GEs+STs	52	52	52	52	52	51
SNPCL-II (IPP-2002)	Jamshoro, Sindh	GEs+STs	52	52	52	52	52	51
Total Thermal (IPPs connected with KE System)			**366**	**366**	**366**	**366**	**366**	**354**
E3: Thermal (Others connected with KE System)								
Anoud Power (IGC)	Karachi, Sindh	DGs	12	12	12	12	12	12
Intl. Steel Limited (CPP)	Karachi, Sindh	GEs+DGs	19	19	19	19	19	19
Intl. Ind. Limited (CPP)	Karachi, Sindh	GEs+ST	4	4	4	4	4	4
FFBL Power (Distributed Gen.)	Karachi, Sindh	CFB+STs	52	52	52	52	52	52
Lotte Chemicals	Karachi, Sindh	RLNG	-	-	-	48	48	14
Lucky Cement	Lakki Marwat, KPK	Waste Heat Recovery	-	-	-	16	16	5
Total Thermal (Others connected with KE System)			**87**	**87**	**87**	**151**	**151**	**106**
Total Thermal KE (E1+E2+E3)			**2,747**	**2,747**	**2,747**	**2,601**	**2,862**	**2,595**
E4: Renewable Energy (KE System)								
Oursun Pakistan	Sindh Coastal Highway near Gharo, Thatta	Solar	-	50	50	50	50	39
Gharo Solar	Thatta, Sindh	Solar	-	-	50	50	50	40
Total RE (KE System)			**0**	**50**	**100**	**100**	**100**	**79**
Total KE (KE own and others connected with KE System)			**2,747**	**2,797**	**2,847**	**2,701**	**2,962**	**2,674**
F: SPPs/CPPs/N-CPPs: CPPA-G System [Contract Capacity (MW)]								
Total SPPs/CPPs/N-CPPs: CPPA-G System (F)			**339.7**	**339.7**	**339.7**	**339.7**	**339.7**	**257**
Grand Total (A+B+C+D+E+F)			**35,979**	**38,995**	**38,719**	**39,772**	**43,775**	**40,532**

** Installed Capacity as per valid Generation Licence. ** Licence not available, partial energy procured during July-2017 to Feb.-2018.*

Source: WAPDA/GENCOs/IPPs/KE/CPPA-G

TABLE 6

Installed Capacity by Systems and by Sectors (MW)

As on 30th June	2018	2019	2020	2021	2022
BY SYSTEM					
Total Installed Capacity: CPPA-G System	**33,095**	**36,061**	**35,735**	**36,933**	**40,813**
% Share (Installed Capacity: CPPA-G System)	91.98	92.48	92.29	92.86	93.23
Total Installed Capacity: KE System	**2,884**	**2,934**	**2,984**	**2,838**	**2,962**
% Share (Installed Capacity: KE System)	8.02	7.52	7.71	7.14	6.77
BY SECTOR					
Total Installed Capacity in Public Sector	**19,329**	**20,377**	**19,621**	**20,924**	**23,045**
% Share (Installed Capacity in Public Sector)	53.72	52.26	50.68	52.61	52.64
Total Installed Capacity in Private Sector	**16,650**	**18,618**	**19,098**	**18,848**	**20,730**
% Share (Installed Capacity in Private Sector)	46.28	47.74	49.32	47.39	47.36
Total Installed Capacity in the Country	**35,979**	**38,995**	**38,719**	**39,772**	**43,775**

Note: Refer tables 4 and 5 for breakup details.
Source: WAPDA/GENCOs/IPPs/KE/CPPA-G

TABLE 7

Electricity Generation by Type (GWh)

As on 30th June	2018	2019	2020	2021	2022
HYDEL					
WAPDA Hydel	26,951.19	31,167.85	37,136.04	36,982.54	32,694.31
IPPs Hydel	1,118.24	1,928.04	1,562.55	1,818.01	2,851.97
Sub-Total	**28,069.43**	**33,095.89**	**38,698.59**	**38,800.55**	**35,546.28**
% Share (Hydel Electricity Generation)	21.01	24.16	28.83	27.02	23.10
THERMAL					
GENCOs: CPPA-G System	16,199.10	13,016.99	7,907.85	6,802.93	6,349.56
KE Own	10,337.75	10,727.68	9,629.00	10,186.00	7,890.50
IPPs: CPPA-G System	62,433.73	62,597.73	60,720.31	68,708.63	76,118.75
IPPs Connected with KE	1,819.04	2,118.31	1,863.60	2,184.57	2,110.16
SPPs/CPPs/N-CPPs: CPPA-G System	665.53	405.13	170.99	216.80	136.31
SPPs/CPPs/N-CPPs connected with KE	550.49	523.74	534.30	579.02	482.50
Sub-Total	**92,005.63**	**89,389.58**	**80,826.05**	**88,677.95**	**93,087.79**
% Share (Thermal Electricity Generation)	68.87	65.25	60.21	61.76	60.50
NUCLEAR					
CHASNUPP (I, II, III and IV)	8,719.87	9,005.68	9,704.89	9,172.09	9,450.29
KANUPP (I, II & III)	330.86	129.99	193.13	1,917.96	8,843.25
Sub-Total	**9,050.73**	**9,135.67**	**9,898.02**	**11,090.05**	**18,293.54**
% Share (Nuclear Electricity Generation)	6.78	6.67	7.37	7.72	11.89
IMPORT					
Import from Iran	554.74	486.80	513.74	498.37	514.36
Sub-Total	**554.74**	**486.80**	**513.74**	**498.37**	**514.36**
% Share (Imported Electricity Generation)	0.42	0.36	0.38	0.35	0.33
RENEWABLE ENERGY (WIND, SOLAR AND BAGASSE)					
RE Power Plants: CPPA-G System	3,907.12	4,840.59	4,151.91	4,322.13	6,195.66
RE Power Plants connected with KE	0.00	56.92	153.28	199.56	236.58
Sub-Total	**3,907.12**	**4,897.51**	**4,305.19**	**4,521.69**	**6,432.24**
% Share (RE Electricity Generation)	2.92	3.57	3.21	3.15	4.18
Total Electricity Generation of the Country	**133,587.65**	**137,005.45**	**134,241.59**	**143,588.61**	**153,874.20**

Source: WAPDA/GENCOs/IPPs/KE/CPPA-G

TABLE 8

Plant-wise Net Electricity Generation (GWh)

Power Station	Primary Fuel	Alternate Fuel	2017-18	2018-19	2019-20	2020-21	2021-22
A1: Hydel (WAPDA)							
Major Hydropower Units							
Tarbela	Hydel	Hydel	13,356.86	10,619.28	11,857.69	12,565.74	10,955.73
Tarbela 4th Ext.	Hydel	Hydel	-	2,318.06	5,485.66	3,418.78	3,276.12
Ghazi Barotha	Hydel	Hydel	6,020.89	6,552.14	6,482.21	6,810.91	6,761.55
Mangla	Hydel	Hydel	4,141.86	3,860.85	4,589.33	5,313.83	4,200.26
Warsak	Hydel	Hydel	916.53	1,002.27	1,095.46	1,064.99	933.85
Chashma	Hydel	Hydel	756.00	767.16	747.16	772.32	795.68
Khan Khwar	Hydel	Hydel	170.90	237.74	273.88	231.19	162.44
Allai Khwar	Hydel	Hydel	275.89	462.09	469.47	438.78	373.03
Jinnah Hydel	Hydel	Hydel	230.25	225.63	176.58	235.02	256.06
Duber Khwar	Hydel	Hydel	514.83	594.42	609.40	640.78	616.96
Neelum Jhelum	Hydel	Hydel	174.08	3,964.68	4,842.30	4,784.16	3,620.23
Golen Gol	Hydel	Hydel	-	99.31	86.13	82.40	138.14
Small Hydropower Units							
Dargai	Hydel	Hydel	95.72	109.35	98.42	108.72	87.40
Rasul	Hydel	Hydel	65.54	71.86	34.04	76.63	58.90
Shadiwal	Hydel	Hydel	25.93	28.39	13.68	31.90	28.06
Chichoki Mallian	Hydel	Hydel	31.43	29.05	29.54	27.38	22.46
Nandipur	Hydel	Hydel	45.73	36.97	33.82	32.48	29.21
Kurram Garhi	Hydel	Hydel	17.24	14.23	15.11	19.71	10.95
Renala	Hydel	Hydel	2.31	2.19	1.03	1.96	1.81
Chitral	Hydel	Hydel	3.45	3.51	3.04	2.65	2.15
Gomal Zam	Hydel	Hydel	0.36	32.68	54.42	62.09	57.15
Malakand/Jabban	Hydel	Hydel	105.39	135.99	137.67	134.46	134.74
Daral Khwar	Hydel	Hydel	-	-	-	91.84	117.37
Ranolia	Hydel	Hydel	-	-	-	33.82	54.06
Total Hydel (WAPDA)			**26,951.19**	**31,167.85**	**37,136.04**	**36,982.54**	**32,694.31**
A2: Hydel (IPPs)							
Jagran (AJ&K)	Hydel	Hydel	86.92	83.65	86.25	113.23	121.27
Malakand-III (PEDO)	Hydel	Hydel	362.11	399.25	408.53	321.57	353.87
Pehur (PEDO)	Hydel	Hydel	32.61	35.86	50.59	0.00	0.00
Laraib Energy (AJ&K)	Hydel	Hydel	389.66	354.38	384.43	465.29	412.66
Garam Chashma	Hydel	Hydel	0.00	0.00	0.00	0.00	0.00
Marala Hydro (PPDCL)	Hydel	Hydel	0.74	527.45	32.16	36.59	26.61
Patrind Hydro (AJ&K)	Hydel	Hydel	246.20	527.45	566.25	624.45	1160.15
Gulpur Hydropower Project	Hydel	Hydel	-	-	34.33	256.88	230.99
Karot Power Company	Hydel	Hydel	-	-	-	-	546.42
Total Hydel (IPPs)			**1,118.24**	**1,928.04**	**1,562.55**	**1,818.01**	**2,851.97**
Total Hydel (A1+A2)			**28,069.43**	**33,095.89**	**38,698.59**	**38,800.55**	**35,546.28**
B1: Thermal (GENCOs: CPPA-G System)							
TPS Jamshoro	RFO+Gas	RFO	1,792.06	880.09	209.90	199.55	245.53
GTPS Kotri	Gas	HSD	94.92	37.19	0.00	0.00	0.00
TPS Guddu (Units 1-4)	Gas	RFO	258.11	10.02	0.00	138.94	0.00
TPS Guddu (Units 5-10)	Gas	-	3,617.95	3,467.30	1,294.84	1,338.17	1,385.84
TPS Guddu (Units 11-13)	Gas	-	1,043.97	837.20	311.56	223.96	148.16
TPS Guddu (Units 14-16)	Gas	HSD	3,855.08	5,069.78	4,315.35	3,123.82	2,609.95
TPS Quetta	Gas	-	0.00	0.00	0.00	0.00	0.00
TPS Muzaffargarh	Gas	RFO	3,040.37	836.73	299.86	282.26	220.43
SPS Faisalabad	Gas	RFO	6.26	0.00	0.00	0.00	0.00
GTPS Faisalabad	Gas	HSD	105.29	149.53	0.00	14.26	98.83
TPS Nandipur	Gas	HSD	2,381.70	1,729.09	1,476.33	1,481.98	1,640.82
FBC Lakhra	Coal	Coal	3.39	0.06	0.00	0.00	0.00
Total Thermal (GENCOs: CPPA-G System)			**16,199.10**	**13,016.99**	**7,907.85**	**6,802.93**	**6,349.56**
B2: Thermal (IPPs: CPPA-G System)							
Lal Pir Power	RFO	-	1,089.06	613.80	186.32	620.78	1,022.68
Pak Gen. Power	RFO	-	1,237.28	495.56	149.76	445.54	1,304.35
Altern Energy	Gas	-	145.12	22.03	3.73	12.40	0.00
Fauji Kabirwala	Gas	HSD	1,017.26	563.13	346.32	389.96	357.21
Habibullah Coastal	Gas	HSD	880.33	716.78	108.37	0.00	0.00
Hub Power	RFO	-	5,196.60	814.43	32.38	112.91	1,219.58
KAPCO	Gas	RFO+HSD	7,436.76	4,959.40	3,476.67	3,562.24	4,979.79
Kohinoor Energy	RFO	-	645.40	387.44	363.86	337.07	515.84
Rousch Power	Gas	HSD	2,591.64	1,035.85	217.53	284.36	495.78
Saba Power	RFO	-	465.88	225.41	50.83	121.65	329.95
TNB Liberty Power	Gas	HSD	1,041.56	1,307.61	896.74	983.33	1,054.06
Uch Power	Gas	HSD	4,442.99	3,895.85	4,087.33	4,088.44	4,300.52
Attock Gen.	RFO	-	912.45	532.18	320.96	384.03	721.93

Power Station	Primary Fuel	Alternate Fuel	2017-18	2018-19	2019-20	2020-21	2021-22
Atlas Power	RFO	-	1,246.45	691.30	259.33	517.08	1,007.25
Engro Powergen. Qadirpur	Gas	HSD	1,668.42	1,385.13	700.74	648.50	791.03
Saif Power	Gas	HSD	841.56	828.20	476.28	639.40	734.99
Orient Power	Gas	HSD	841.39	877.80	338.00	597.92	836.38
Nishat Power	RFO	-	1,171.19	675.10	277.46	523.40	794.25
Nishat Chunian	RFO	-	1,099.67	599.74	351.23	537.57	882.46
Sapphire Electric	Gas	HSD	814.96	808.51	296.76	568.04	780.50
Halmore Power	Gas	HSD	871.01	612.91	347.69	509.79	675.93
Narowal Energy	RFO	-	1,199.68	636.13	338.08	496.06	867.49
Liberty Power Tech.	RFO	-	1,175.61	776.26	458.54	606.66	925.44
Foundation Power	Gas	-	1,392.39	1,330.60	777.30	1,000.37	1,272.89
Davis Energen.	Gas	-	8.82	0.00	0.00	0.00	0.00
Uch-II Power	Low BTU Gas	-	2,593.04	3,018.37	2,148.02	2,339.37	2,828.67
Huaneng Shandong Ruyi (Sahiwal Imported Coal)	Bituminous Coal		8,461.59	8,220.07	6,167.19	7,342.70	6,881.38
QATPL (Bhikki)	RLNG	HSD	3,655.62	6,149.75	5,192.50	7,118.80	6,090.92
NPPMCL (Haveli Bahadur Shah)	RLNG	HSD	2,856.73	7,027.24	7,050.34	7,682.35	7,488.57
NPPMCL (Balloki)	RLNG	HSD	2,050.62	5,284.19	5,911.84	6,032.81	7,186.75
Port Qasim Electric Power	Bituminous Coal	HSD	3,319.02	7,553.64	8,969.74	8,372.38	7,478.64
Reshma Power	RFO/HSFO	-	60.86	15.11	2.07	0.00	0.00
Gulf Powergen	RFO/HSFO	-	2.78	0.00	0.00	0.00	0.00
China Power Hub	Imported Coal		-	260.82	6,136.20	7,923.41	6,764.89
Engro Powergen Thar	Thar Coal		-	277.42	4,280.22	3,909.30	3,676.95
Lucky Electric	Imported Coal		-	-	-	-	1,774.10
Punjab Thermal Power	RLNG	HSD	-	-	-	-	77.56
Total Thermal (IPPs/SPPs/CPPs: CPPA-G System)			**62,433.73**	**62,597.73**	**60,720.31**	**68,708.63**	**76,118.75**
Total Thermal: CPPA-G System (B1+B2)			**78,632.82**	**75,614.72**	**68,628.16**	**75,511.56**	**82,468.31**
C: Nuclear							
CHASNUPP-I	NUC	NUC	2,433.42	2,141.02	2,044.64	2,244.33	2,512.58
CHASNUPP-II	NUC	NUC	2,301.74	2,262.73	2,636.12	2,067.98	2,437.86
CHASNUPP-III	NUC	NUC	2,246.55	2,484.34	2,322.85	2,403.62	2,320.38
CHASNUPP-IV	NUC	NUC	1,738.16	2,117.59	2,701.28	2,456.15	2,179.48
KANUPP	NUC	NUC	330.86	129.99	193.13	219.04	45.77
KANUPP-II	NUC	NUC	-	-	-	1,698.92	6,830.42
KANUPP-III	NUC	NUC	-	-	-	-	1,967.06
Total Nuclear (C)			**9,050.73**	**9,135.67**	**9,898.02**	**11,090.05**	**18,293.54**
D: Import							
Import from Iran (Tavanir)			554.74	486.80	513.74	498.37	514.36
Total Import: CPPA-G System (D)			**554.74**	**486.80**	**513.74**	**498.37**	**514.36**
E: Renewable Energy (CPPA-G System)							
E1: Wind Power Projects							
Zorlu Enerji Pakistan	Wind	Wind	142.08	143.96	143.55	109.66	128.63
FFC Energy	Wind	Wind	120.08	115.74	118.40	90.90	114.54
Three Gorges First Wind Farm	Wind	Wind	126.06	129.21	135.62	99.14	123.79
Foundation Wind Energy-I	Wind	Wind	96.35	229.31	239.29	123.24	127.14
Foundation Wind Energy-II	Wind	Wind	112.30			73.18	141.83
Sapphire Wind	Wind	Wind	125.94	135.00	89.70	104.01	129.94
Yunus Energy	Wind	Wind	127.40	128.69	89.86	108.84	135.73
Metro Power Company	Wind	Wind	136.31	138.46	153.06	120.11	147.63
Gul Ahmad Wind	Wind	Wind	121.80	127.74	91.15	110.38	137.87
Master Wind Energy	Wind	Wind	127.01	135.82	96.90	110.13	137.64
Tenaga Generasi	Wind	Wind	90.18	111.31	125.77	104.07	133.08
HydroChina Dawood Power	Wind	Wind	102.78	115.98	121.06	101.60	132.45
Sachal Energy Development	Wind	Wind	127.55	124.49	142.36	107.79	130.88
UEP Wind Power	Wind	Wind	227.83	243.99	179.13	203.64	254.06
Artistic Wind Power	Wind	Wind	90.30	192.37	132.16	166.05	192.09
Act Wind	Wind	Wind	86.38	89.60	64.76	74.68	88.39
Hawa Energy	Wind	Wind	68.31	167.41	115.45	140.96	169.85
Jhimpir Power	Wind	Wind	72.50	167.06	119.18	143.91	166.01
Three Gorges Second Wind Farm	Wind	Wind	16.48	131.12	92.77	108.43	138.80
Three Gorges Third Wind Farm	Wind	Wind	27.43	134.15	95.18	112.54	142.76
Tricon Boston Consulting-A	Wind	Wind	-	147.35	124.95	149.90	181.46
Tricon Boston Consulting-B	Wind	Wind	-	127.24	117.64	144.15	177.71
Tricon Boston Consulting-C	Wind	Wind	-	131.19	117.47	143.56	178.69
Zephyr Power	Wind	Wind	-	64.44	177.05	149.07	189.43
Master Green	Wind	Wind	-	-	-	-	127.50
Lucky Renewables (TRICOM)	Wind	Wind	-	-	-	-	145.41
ACT 2 Din Wind	Wind	Wind	-	-	-	-	86.89
Artistic [2] Wind Power	Wind	Wind	-	-	-	-	83.61

Power Station	Primary Fuel	Alternate Fuel	2017-18	2018-19	2019-20	2020-21	2021-22
Indus Wind Energy Limited	Wind	Wind	-	-	-	-	86.32
Lakeside Energy	Wind	Wind	-	-	-	-	73.55
Liberty Wind Power-I	Wind	Wind	-	-	-	-	69.85
Din Energy	Wind	Wind	-	-	-	-	72.89
Gul Ahmad Electric	Wind	Wind	-	-	-	-	84.43
Liberty Wind Power-II	Wind	Wind	-	-	-	-	42.92
NASDA Green Energy	Wind	Wind	-	-	-	-	62.56
Metro 2 Wind Power	Wind	Wind	-	-	-	-	47.84
Total Wind Power Projects			**2,145.07**	**3,231.64**	**2,882.48**	**2,899.94**	**4,584.19**
E2: Solar Power Projects							
Quaid-e-Azam Solar Park	Solar	Solar	163.08	164.34	164.99	165.56	164.69
Appolo Solar Development	Solar	Solar	167.93	166.64	163.02	164.90	168.68
Best Green Energy	Solar	Solar	168.40	165.69	162.92	164.25	167.34
Crest Energy	Solar	Solar	169.80	167.56	165.31	166.97	169.18
AJ Power	Solar	Solar	11.52	18.66	18.03	18.50	18.78
Harappa Solar	Solar	Solar	21.43	31.63	30.69	31.45	31.37
Zhenafa Pakistan New Energy	Solar	Solar	-	-	-	-	65.37
Total Solar Power Projects			**702.17**	**714.52**	**704.97**	**711.63**	**785.42**
E3: Bagasse/Biomass Power Projects							
Jamal Din Wali-II	Bagasse + Biomass		180.96	187.80	161.88	177.17	169.48
Jamal Din Wali-III	Bagasse + Biomass		196.59	181.18	129.21	144.44	136.74
RYK Mills	Bagasse	Bagasse	155.61	141.31	73.67	73.94	97.27
Chiniot Power	Bagasse	Bagasse	346.02	194.67	80.45	160.56	222.54
Fatima Energy	Coal	Bagasse	20.87	0.00	0.00	0.00	0.00
Hamza Sugar Mills	Bagasse + Biomass		72.75	61.20	45.03	39.99	61.06
The Thal Industries Corporation	Bagasse	FO	87.08	65.75	36.79	46.37	73.67
Almoiz Industries	Bagasse	Bagasse	-	48.92	15.10	29.83	17.38
Chanar Energy	Bagasse	Bagasse	-	13.61	22.34	38.26	47.92
Total Bagasse/Biomass Power Projects			**1,059.88**	**894.43**	**564.46**	**710.56**	**826.05**
Total Renewable Energy (E1+E2+E3) (CPPA-G System) (E)			**3,907.12**	**4,840.59**	**4,151.91**	**4,322.13**	**6,195.66**
F1: Thermal (KE Own)							
Bin Qasim TPS-I	Dual	RLNG	4,764.70	4,646.94	3,825.00	4,730.00	3,289.00
Bin Qasim TPS-II	Dual	RLNG	3,750.79	4,065.71	4,030.00	3,926.00	3,588.00
Bin Qasim TPS-III (unit -I)	Dual	RLNG	-	-	-	-	243.50
Korangi Town GTPS-II	Gas	RLNG	323.11	390.33	300.00	365.00	115.00
Site GTPS-II	Gas	RLNG	498.14	368.02	397.00	216.00	103.00
Korangi CCPP	Gas	RLNG	1,001.01	1,256.68	1,077.00	949.00	552.00
Total Thermal (KE Own)			**10,337.75**	**10,727.68**	**9,629.00**	**10,186.00**	**7,890.50**
F2: Thermal (IPPs connected with KE System)							
Gul Ahmed	RFO	-	712.71	675.54	496.14	673.00	705.43
Tapal Energy	RFO	-	752.38	645.02	627.77	737.00	715.86
SNPCL-I (IPP-2002)	Gas	-	176.71	403.06	371.86	394.35	688.87
SNPCL-II (IPP-2002)	Gas	-	177.24	394.69	367.83	380.22	
Total Thermal (IPPs connected with KE System)			**1,819.04**	**2,118.31**	**1,863.60**	**2,184.57**	**2,110.16**
F3: Thermal (Others connected with KE System)							
Anoud Power (IGC)	RFO/Gas	DO	44.00	51.58	59.52	12.00	0.00
Intl. Steel Limited (CPP)	Gas	-	56.00	46.00	51.21	43.00	28.54
Intl. Ind. Limited (CPP)	Gas	-	12.00	12.65	10.66	10.00	9.29
FFBL Power (Distributed Gen.)	Imported/Local Coal		438.49	413.51	412.91	453.00	406.69
Lotte Chemicals	Gas	Gas	-	-	-	61.00	35.00
Lucky Cement	Gas	Gas	-	-	-	0.02	2.98
Total Thermal (Others connected with KE System)			**550.49**	**523.74**	**534.30**	**579.02**	**482.50**
Total Thermal KE (F1+F2+F3)			**12,707.28**	**13,369.73**	**12,026.90**	**12,949.59**	**10,483.16**
F4: Renewable Energy (connected with KE System)							
Oursun Pakistan	Solar	Solar	-	56.92	88.28	90.87	89.58
Gharo Solar	Solar	Solar	-	-	65.00	108.69	103
Net Metering	solar	solar	-	-	-	-	44.00
Total RE (connected with KE System)			**0.00**	**56.92**	**153.28**	**199.56**	**236.58**
Total KE (KE own and others connected with KE System)*			**12,707.28**	**13,426.65**	**12,180.18**	**13,149.15**	**10,765.51**
G: SPPs/CPPs/N-CPPs: CPPA-G System							
Total SPPs/CPPs/N-CPPs: CPPA-G System (G)			**665.53**	**405.13**	**170.99**	**216.80**	**136.31**
Grand Total (A+B+C+D+E+F+G)			**133,587.65**	**137,005.45**	**134,241.59**	**143,588.61**	**153,874.20**

** Including KANUPP Generation*

Source: WAPDA/GENCOs/IPPs/KE/CPPA-G

TABLE 9
Electricity Generation by Systems and by Sectors (GWh)

As on 30th June	2018	2019	2020	2021	2022
BY SYSTEM					
Total Electricity Generation: CPPA-G System	**120,549.51**	**123,448.81**	**121,868.28**	**130,220.42**	**143,108.69**
% Share (Generation: CPPA-G System)	90.24	90.11	90.78	90.69	93.00
Total Electricity Generation: KE System	**13,038.14**	**13,556.64**	**12,373.31**	**13,368.19**	**10,765.51**
% Share (Generation: KE System)	9.76	9.89	9.22	9.31	7.00
BY SECTOR					
Total Electricity Generation in Public Sector	**60,927.08**	**71,946.02**	**73,261.58**	**75,875.04**	**79,034.77**
% Share (Generation in Public Sector)	45.61	52.51	54.57	52.84	51.36
Total Electricity Generation in Private Sector	**72,660.57**	**65,059.43**	**60,980.01**	**67,713.57**	**74,839.44**
% Share (Generation in Private Sector)	54.39	47.49	45.43	47.16	48.64
Total Electricity Generation of the Country	**133,587.65**	**137,005.45**	**134,241.59**	**143,588.61**	**153,874.20**

Note: Referf tables 7 and 8 for details and explanations.
Source: WAPDA/GENCOs/KE/IPPs/CPPA-G

TABLE 10
Month-wise CPPA-G Electricity Generation Data (GWh) (2021-22)

Power Producer	July	August	September	October	November	December	January	February	March	April	May	June
WAPDA Hydel	3,201.28	3,889.78	3,677.92	1,921.01	2,213.58	1,550.34	418.17	1,348.38	1,186.37	1,583.86	2,412.77	2,223.07
Jagran	18.84	19.11	14.09	6.19	3.27	2.21	1.74	1.07	7.20	15.87	17.79	13.89
Malakand-III	38.94	46.44	39.48	23.89	11.57	10.19	14.96	11.55	26.67	40.65	42.41	47.12
Pehur	-	-	-	-	-	-	-	-	-	-	-	-
Laraib	24.83	32.93	42.58	26.27	51.92	29.44	-	28.98	44.02	47.29	49.31	35.09
Tarbela Ext. 4	521.62	969.21	903.76	386.99	405.17	89.38	-	-	-	-	-	-
Neelum Jhelum	707.38	529.90	326.16	204.87	102.64	66.74	38.49	51.88	359.26	611.14	688.41	619.12
Star Hydro	108.83	55.62	43.71	30.21	17.87	16.56	15.95	13.32	31.43	60.11	90.30	78.14
Mira Power	43.99	35.10	25.26	18.68	3.79	0.18	21.64	16.17	32.20	14.78	12.96	19.20
Daral Khwar	17.36	8.53	6.00	4.40	3.00	1.87	1.97	1.94	14.02	24.32	25.66	21.00
Ranolia	8.76	4.69	3.96	2.23	1.30	0.27	-	0.38	1.54	-	4.32	5.27
HPS Karot 720MW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.89	244.24	298.28
Head Maralla	3.92	3.00	2.56	2.51	2.40	1.66	-	0.11	1.20	2.45	2.65	2.47
GENCO-I-Jamshoro	74.65	3.11	38.29	15.43	-	-	-	-	5.01	62.90	0.00	46.14
GENCO-II-Central	333.09	322.00	245.75	263.74	213.74	347.83	360.34	187.13	395.91	444.28	484.80	545.34
GENCO-III-Northern	412.61	338.67	264.27	238.44	20.50	-	-	-	18.36	70.25	244.01	352.94
GENCO-IV- Lakhra	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kot Addu Power-I	770.53	512.41	453.70	552.40	73.31	119.99	433.04	131.29	280.35	420.24	645.77	586.76
Hub Power	201.26	194.29	128.29	224.23	0.51	13.08	58.56	1.38	34.22	123.27	111.42	129.07
Kohinoor Energy	62.87	55.33	41.38	50.79	12.09	6.68	54.58	34.38	49.96	51.82	51.01	44.95
AES Lalpir	137.01	165.22	74.74	100.02	-	-	48.05	2.38	74.01	151.87	124.22	145.16
AES Pak Gen	149.48	177.72	72.05	33.70	-	50.19	140.69	94.98	119.33	144.01	165.15	157.05
Fauji Kabirwala	82.85	94.50	72.84	8.92	-	-	-	-	-	-	77.03	21.08
Rousch	146.66	72.07	-	45.84	-	-	-	-	-	4.72	110.13	116.36
Saba Power	31.24	18.33	28.39	42.86	-	8.62	29.52	26.31	45.14	37.58	33.68	28.28
Japan Power	-	-	-	-	-	-	-	-	-	-	0.00	-
Uch	370.59	368.97	358.44	233.95	377.02	349.53	410.84	342.89	392.38	377.37	372.83	345.71
Altern	-	-	-	-	-	-	-	-	-	-	0.00	-
TNB Liberty	139.55	103.14	134.89	148.07	123.37	74.45	-	-	-	56.49	142.19	131.91
Chashma Nuclear	204.38	220.28	211.36	222.07	200.87	205.25	185.29	199.39	212.48	214.98	221.91	214.31
Chashma Nuclear-II	227.85	228.47	221.25	231.28	225.62	224.36	0.88	190.37	229.25	221.89	227.25	209.38
Chashma Nuclear-III	229.63	194.27	216.64	229.65	153.80	176.87	234.90	198.58	46.77	186.35	231.53	221.39
Chashma Nuclear-IV	230.42	213.75	41.11	0.05	161.60	177.56	235.81	207.90	231.52	225.73	231.37	222.67
Karachi Nuclear Unit-2	767.58	773.43	591.45	709.87	743.29	765.03	607.69	217.01	698.64	742.79	213.64	0.00
Karachi Nuclear Unit-3	-	-	-	-	-	-	-	-	145.01	659.46	764.68	397.92
Tavanir Iran	40.09	45.24	48.27	41.41	36.69	36.47	31.65	33.82	42.75	51.95	54.52	51.49
Davis Energen	-	-	-	-	-	-	-	-	-	-	0.00	-
Attock-Gen	78.22	77.14	62.80	69.82	4.07	27.92	78.59	31.16	61.00	87.20	69.90	74.11
Atlas Power	110.42	98.59	70.33	106.95	12.05	32.62	100.75	52.89	104.85	124.01	98.41	95.38
Nishat Power	75.70	97.33	78.22	100.44	8.36	31.10	44.49	19.96	62.18	91.55	94.22	90.70
Foundation Power	116.07	112.28	111.58	120.76	84.31	108.73	130.26	110.04	119.77	113.91	36.78	108.40
Orient	101.18	127.18	75.28	100.10	0.00	41.30	0.00	6.38	51.43	92.99	125.06	115.48
Nishat Chunian	64.95	95.73	92.32	111.86	16.38	21.32	82.12	35.68	91.52	78.03	98.39	94.16

Power Producer	July	August	September	October	November	December	January	February	March	April	May	June
Saif Power	115.84	123.88	70.45	80.42	14.00	0.00	0.00	0.00	25.27	84.64	105.91	114.58
Engro Powergen Qadirpur	78.23	56.34	87.32	73.87	72.78	90.90	89.48	34.59	0.00	36.28	91.73	79.51
Sapphire Power	117.76	129.64	52.71	93.47	15.74	27.54	0.00	0.00	36.89	84.98	105.76	116.01
Halmore	39.10	107.46	73.59	99.65	14.13	0.00	0.00	0.00	24.15	92.45	117.08	108.33
Narowal Energy	89.69	101.84	75.86	103.43	13.74	35.24	92.02	44.08	77.80	85.41	68.17	80.21
Liberty Power	79.72	106.73	79.97	107.64	7.94	18.49	87.18	52.23	100.83	89.52	95.11	100.08
Uch-II	252.52	255.98	237.75	243.44	221.95	256.47	277.32	243.73	84.66	248.24	259.24	247.37
JDW-II	17.91	17.83	16.48	5.21	10.11	13.73	14.80	13.10	14.79	16.87	11.38	17.27
JDW-III	17.76	6.23	-	-	8.04	15.18	15.55	13.07	14.85	17.16	11.75	17.15
RYK	3.16	-	-	-	10.97	11.72	14.36	12.79	14.37	11.06	9.34	9.50
Chiniot Power	6.18	-	-	1.93	16.65	27.57	27.38	26.75	27.83	35.59	24.45	28.21
Fatima Energy	-	-	-	-	-	-	-	-	-	-	-	-
Hamza Sugar Mills	-	-	-	-	5.59	9.35	10.05	9.00	9.69	8.58	8.69	0.12
Almoiz Industries Limited	-	-	0.00	0.00	0.61	3.37	0.53	-	0.00	0.00	2.10	10.77
Chanaar Energy Limited	-	-	-	-	-	9.58	10.49	10.71	12.01	5.13	0.00	0.00
China Hub Power (Pvt.) Ltd	430.23	381.95	408.47	368.70	377.50	394.57	820.70	758.97	776.09	867.36	645.94	534.41
Engro PowerGen Thar TPS	380.19	433.90	386.97	267.89	328.19	375.58	298.09	300.83	11.19	121.29	342.39	430.44
Layyah Sugar Mills	-	-	-	-	2.35	7.97	13.97	13.25	13.47	12.10	10.56	0.00
QATPL	659.83	631.95	673.17	765.66	449.50	180.81	302.46	39.33	429.87	655.25	636.26	666.83
Lucky Electric	0.00	0.00	0.00	0.00	3.67	165.65	158.69	147.56	388.23	375.65	278.81	255.84
Huaneng Shandong Ruyi	746.94	609.85	749.33	519.79	338.96	572.27	862.83	654.38	657.60	448.76	383.97	336.70
Balloki	701.61	625.80	742.59	811.64	129.28	454.99	278.89	589.67	610.13	758.60	773.16	710.40
Haveli Bahadur Shah	642.41	682.91	403.03	134.35	587.51	713.37	621.34	590.63	769.59	748.18	792.18	803.07
Reshman Power	-	-	-	-	-	-	-	-	-	-	0.00	0.00
Gulf Power Gen	-	-	-	-	-	-	-	-	-	-	0.00	0.00
Port Qasim	825.96	868.13	847.75	729.40	330.80	595.58	776.38	702.14	753.51	355.87	367.39	325.74
Punjab Thermal Power Plant	-	-	-	-	-	-	-	-	-	-	9.04	68.51
TPS-Quetta	-	-	-	-	-	-	-	-	-	-	-	-
Zorlu Enerji	19.76	19.65	5.81	5.71	5.89	5.21	4.88	4.78	7.25	11.21	18.56	19.93
FFCEL	19.53	18.16	4.91	4.68	5.90	5.18	4.53	3.99	5.32	8.54	16.34	17.46
TGF	19.86	19.39	6.05	5.57	6.08	5.82	5.30	4.82	6.28	9.66	17.10	17.86
Foundation	20.83	16.49	9.36	5.99	3.87	5.06	6.35	4.49	6.51	10.85	19.60	17.74
Saphire Wind Power	21.24	20.13	6.53	5.41	5.29	6.94	6.03	4.67	6.18	9.51	17.95	20.06
Younus Energy Ltd.,	20.47	19.64	7.43	5.94	6.37	8.11	6.95	5.30	7.47	10.43	17.79	19.83
Metro Power Company	20.93	19.93	8.26	6.36	9.82	10.09	8.18	6.67	8.25	10.72	18.29	20.14
Gul Ahmad Wind	20.40	19.64	7.74	6.06	6.73	8.58	7.19	5.57	7.68	10.54	17.79	19.95
Master Wind Power	22.62	21.74	6.80	6.06	6.15	7.68	6.27	4.66	6.56	10.29	18.59	20.22
Tenaga Generasi	21.68	17.67	10.35	6.56	4.54	6.17	6.92	4.34	6.74	10.97	19.32	17.81
ACT Wind	14.84	14.38	5.09	4.82	3.37	3.96	3.90	2.61	4.22	7.13	12.01	12.06
HDPPL Wind	22.17	19.25	9.17	6.34	4.19	5.68	6.56	4.45	6.12	10.81	19.62	18.10
Sachal Wind	19.76	18.36	7.21	5.70	7.99	7.80	7.18	5.89	7.08	9.51	16.53	17.87
UEPL Wind	40.49	37.78	15.14	11.71	9.69	11.12	11.68	9.93	13.94	21.31	34.56	36.71
Harappa	3.04	3.20	2.70	2.60	1.72	1.54	1.42	2.13	2.97	3.26	3.40	3.40
AJ Solar	1.64	1.74	1.64	1.65	1.26	1.27	1.07	1.35	1.77	1.80	1.81	1.78
Jhimpir Wind	25.23	25.82	8.91	6.93	6.61	9.66	7.55	6.54	9.05	13.23	22.37	24.11
HAWA Energy	23.91	24.46	9.58	7.89	9.33	11.98	9.00	7.15	8.85	12.58	21.38	23.74
AEP Wind	26.94	26.81	11.15	9.99	8.97	11.46	10.15	7.14	11.13	17.89	26.18	24.29

Power Producer	July	August	September	October	November	December	January	February	March	April	May	June
TGT	21.41	20.50	8.07	6.46	6.60	8.29	7.48	6.28	7.93	10.93	18.62	20.18
TGS	21.38	20.39	7.65	6.12	6.13	7.71	7.05	5.94	7.40	10.60	18.39	20.04
Tricon Boston-A	26.24	26.93	10.39	9.66	6.29	7.82	7.54	7.68	11.83	17.22	24.74	25.11
Tricon Boston-B	25.56	26.66	10.02	8.72	6.73	8.49	7.92	7.34	10.95	16.21	24.12	24.99
Tricon Boston-C	25.42	25.95	10.28	8.74	7.55	9.63	8.54	7.39	10.81	15.84	23.73	24.81
Quid-e-Azam Solar	13.92	15.30	13.80	14.80	11.72	10.20	10.64	13.51	15.75	15.37	15.26	14.42
Appollo Solar Park	14.34	15.52	14.10	14.73	11.95	10.62	11.05	13.65	16.19	15.78	15.88	14.87
ZEPHYR Wind	27.14	26.11	13.63	9.80	7.75	10.12	11.46	7.69	10.40	16.71	26.83	21.79
Foundation Wind-II	22.55	18.32	10.11	6.33	6.12	8.01	8.15	4.86	6.62	11.46	20.50	18.81
Master Green	-	7.85	10.82	8.87	8.32	9.38	8.44	7.09	9.01	11.77	22.01	23.94
Lucky Renewables	-	17.95	9.93	8.39	8.91	10.15	8.64	7.94	10.14	14.63	23.70	25.03
ACT2	0.00	0.00	0.00	0.00	-	-	0.63	5.50	12.03	17.22	25.93	25.58
Artistic Wind	0.00	0.00	0.00	0.00	-	-	0.42	4.35	11.61	17.07	25.28	24.88
Indus Wind Energy	0.00	0.00	0.00	0.00	-	-	-	-	13.04	19.76	26.90	26.62
Lakeside Energy	0.00	0.00	0.00	0.00	-	-	-	-	2.50	18.68	27.07	25.30
Liberty Wind-1	0.00	0.00	0.00	0.00	-	-	-	-	3.08	18.12	25.05	23.60
Din Energy	0.00	0.00	0.00	0.00	-	-	-	-	2.19	21.93	24.62	24.15
Gul Ahmad 2	0.00	0.00	0.00	0.00	-	-	-	-	9.76	21.63	27.07	25.97
Zhenfa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.91	22.28	22.18
Liberty Wind-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	19.17	23.65
NASDA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	27.74	25.50
Metro Wind Power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.38	13.68	33.78
Best Green Energy	14.33	15.55	14.22	14.60	11.92	10.69	11.18	13.70	15.94	15.00	15.52	14.69
Crest Energy	14.55	15.70	14.29	14.77	12.04	10.85	11.21	13.78	16.11	15.20	15.74	14.94
Mixed-Captives	9.88	16.98	16.18	11.87	11.84	7.88	2.30	10.15	13.22	9.38	16.77	9.87

Source: CPPA-G/WAPDA Hydel

TABLE 11

Monthly Source-wise CPPA-G System Actual and Projected Generation (GWh)

Months	Jul-21		Aug-21		Sep-21		Oct-21		Nov-21		Dec-21	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	4629.48	4,695.76	5667.51	5594.30	5052.84	5085.48	2438.80	2627.25	2900.01	2816.49	1723.29	1768.84
Coal	2038.94	2383.33	1873.91	2293.86	2232.44	2392.52	2356.91	1885.78	2030.23	1379.12	2171.05	2103.65
HSD	-	123.49	-	19.84	-	2.34	-	57.10	-	24.99	-	250.56
RFO	802.63	1612.26	547.17	1627.56	831.87	997.44	19.26	1228.66	-	145.40	368.28	353.26
Gas	1661.38	1362.20	1627.27	1313.21	1600.09	1248.28	1164.97	1092.75	694.71	1095.16	730.66	1215.57
RLNG	3516.71	3137.69	3216.04	2895.92	2868.46	2651.95	2432.73	2703.38	684.06	1208.70	1550.37	1191.79
Nuclear	826.64	1659.86	654.99	1630.19	749.28	1281.80	883.23	1392.92	858.43	1485.19	699.72	1549.06
Import Iran	53.47	40.09	52.45	45.24	49.97	48.27	43.05	41.41	35.57	36.69	32.55	36.47
Mixed	10.18	9.88	10.18	16.98	10.01	16.18	13.07	11.87	14.16	11.84	2.81	7.88
Wind	596.17	550.37	322.43	549.95	149.69	230.40	153.05	184.82	151.82	175.19	145.60	210.08
Bagasse	35.51	45.02	17.98	24.06	15.11	16.48	5.43	7.14	17.43	54.33	90.91	98.47
Solar	60.15	61.82	61.81	67.01	61.61	60.75	61.58	63.17	49.18	50.62	43.36	45.18
Total	14231.29	15681.77	14051.75	16078.12	13621.37	14031.89	9572.08	11.296.23	7435.60	8483.71	7558.60	8830.80
Sale to IPPS	(20.24)	(14.82)	(19.98)	(10.58)	(19.37)	(25.43)	(13.61)	(47.17)	(10.57)	(28.35)	(10.75)	(30.58)
Transmission Losses	(372.53)	(411.16)	397.75	(471.11)	(367.43)	(353.73)	(252.34)	(263.59)	(208.13)	(209.04)	(229.50)	(266.78)
Net Delivered	13838.52	15255.80	13634.01	15596.43	13234.57	13652.73	9306.13	10985.47	7216.89	8246.31	7318.34	8533.43

Months	Jan-22		February-22		March-22		April-22		May-22		June-22	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	867.74	512.93	2257.72	1473.76	1105.33	1703.91	1748.99	2404.35	3,306.17	3,590.82	3,565.01	3,361
Coal	2500.78	2916.70	2087.44	2563.87	1723.73	2586.62	1687.58	2168.93	2,332.07	2,018.49	2,488.57	1,883
HSD	-	592.08	-	-	-	-	-	58.49	-	28.48	-	-
FO	801.02	1238.00	78.27	526.73	67.98	1106.19	519.77	1564.11	508.66	1,290.33	784.60	1,454
Gas	1654.61	1264.36	919.13	918.40	1816.03	992.72	1750.81	1276.57	1,945.83	1,464.59	1,791.01	1,479
RLNG	958.48	626.08	593.33	1226.01	1772.94	1965.68	2995.81	2516.85	3,624.86	3,355.23	3,613.71	3,391
Nuclear	680.95	1264.57	757.955	1013.26	877.65	1563.66	745.20	2251.19	543.61	1,890.38	635.97	1,266
Import Iran	28.73	31.65	32.39	33.82	34.21	42.75	42.43	51.95	52.43	54.52	48.79	51
Mixed	15.61	2.30	10.33	10.15	33.66	13.22	28.57	9.38	15.27	16.77	11.53	10
Wind	157.55	194.88	105.03	165.07	186.82	267.92	267.44	464.78	413.31	779.13	393.14	812
Bagasse	84.45	107.13	99.62	98.67	95.28	107.01	66.43	106.49	54.47	78.26	34.55	83
Solar	44.84	46.58	60.64	58.12	66.90	68.73	66.50	87.31	69.08	89.89	63.92	86
Total	7794.77	8797.26	7001.85	8087.85	7780.52	10,418.24	9919.54	12960.41	12,865.77	14,656.89	13,430.82	13,876
Sale to IPPS	(11.08)	(45.79)	(9.96)	(49.21)	(11.06)	(33.78)	(14.11)	(21.74)	(18.30)	(21.26)	(19.10)	(34)
Transmission Losses	(250.06)	(327.04)	(209.81)	(264.04)	(209.38)	(295.51)	(184.09)	(378.93)	(278.91)	(365.71)	(322.04)	(367)
Net Delivered	7533.63	8424.44	6782.08	7774.60	7560.08	10,088.95	9721.34	12559.75	12,568.56	14,269.92	13,089.68	13,474.42

Source: NEPRA Monthly FPA of DISCOs

TABLE 12

Monthly Source-wise CPPA-G System Actual and Projected Energy Purchase (Rs. in Millions)

Months	Jul-21		Aug-21		Sep-21		Oct-21		Nov-21		Dec-21	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	-	-	-	-	-	-	-	-	-	-	-	-
Coal	15,957.13	19,992.38	14,502.99	20,682.81	15,855.52	24,080.63	16,643.80	21,434.92	14,874.18	18,127.45	16,259.11	28,004.21
HSD	-	2,388.53	-	448.95	-	50.94	-	1,440.25	-	679.79	-	3,529.38
FO	10,504.29	27,316.29	7,153.18	28,306.32	11,201.55	18,393.60	222.90	26,017.75	-	2,941.03	4,1959.47	7,853.32
Gas	13,715.28	11,123.13	13,020.55	10,910.42	12,890.78	10,401.77	9,299.30	8,719.57	5,182.40	8,596.99	5,243.89	9,384.68
RLNG	3,1542.13	37,131.07	28,892.64	38,562.54	25,470.54	38,841.55	20,737.06	45,276.62	5,651.77	20,893.69	13,346.55	210,019.47
Nuclear	844.70	1,659.81	580.87	1,627.93	707.49	1,257.88	895.09	1,417.46	867.39	1,520.69	718.50	1,641.65
Import Iran	618.74	467.71	606.88	559.01	578.24	633.03	498.12	593.87	411.60	483.43	376.66	483.91
Mixed	67.07	44.32	65.99	79.30	65.91	75.05	86.08	53.35	93.27	52.80	18.48	35.36
Wind	-	-	-	-	-	-	-	-	-	-	-	-
Bagasse	220.50	269.30	111.66	143.93	93.81	98.58	33.71	42.70	108.03	324.80	561.17	589.08
Solar	-	-	-	-	-	-	-	-	-	-	-	-
Total	73,469.83	100,392.57	64,934.77	101,321.21	66,863.83	93,833.03	48,416.06	104,996.47	27,188.64	53,620.67	40,791.82	72,571.06
Supplemental Charges	-	1587.12	-	3,255.76	-	9971.84	-	5,171.00	-	13,367.50	-	2,052.12
Sale to IPPS	(404.76)	(422.57)	(399.65)	(279.45)	(387.42)	(724.57)	(272.25)	(1,214.23)	(211.48)	(687.02)	(214.98)	(967.20)
Grand Total	73,065.07	101,557.11	64,535.12	104,297.52	66,476.41	103,080.30	48,143.82	108,953.24	26,977.15	66,301.16	40,504.84	73,655.98
Transmission Losses (Rs./KWh)	-	-	-		-	-	-	-	-	-	-	-
Net Total	73,065.07	101,557.11	64,535.12	104,297.52	66,476.41	103,080.30	48,143.82	108,953.24	26,977.15	66,301.16	40,504.84	73,655.98

Months	Jan-22		Feb-22		Mar-22		Apr-22		May-22		Jun-22	
	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual	Ref.	Actual
Hydel	-	-	-	-	-	-	-	-	-	-	-	-
Coal	18,391.48	411,39.87	15,279.88	33,572.49	14,601.72	32,104.21	14,156.03	31,094.24	17,500.30	36,372.00	18,075.10	39,183.46
HSD	-	15,382.25	-	-	-	-	-	1,622.28	0	857.05	-	-
FO	9,241.01	28,235.19	905.06	11,301.74	936.08	24,913.08	6,748.23	44,093.62	7,434.13	43,451.97	11,219.86	52,637.95
Gas	12,021.31	9,795.16	6,067.41	7,514.88	14,154.69	7,710.68	14,467.82	10,707.03	15,868.61	14,823.02	14,874.95	13,205.10
RLNG	7,972.22	9,184.46	4,951.89	17,307.35	15,539.38	28,235.70	27,314.59	41,352.15	32,492.08	93,697.51	32,368.58	96,234.53
Nuclear	701.28	1,360.18	774.84	1,147.04	882.54	1,616.12	754.90	2,282.12	586.79	2,002.53	667.21	1,423.11
Import Iran	332.47	474.97	374.83	530.63	395.90	741.95	490.96	916.04	606.69	1,033.64	564.60	1,007.73
Mixed	102.83	14.44	68.03	51.96	221.73	63.88	188.22	41.62	100.61	78.59	75.96	46.41
Wind	-	-	-	-	-	-	-	-			--	--
Bagasse	521.15	640.90	611.88	590.23	585.01	640.13	406.55	637.05	336.09	468.17	214.53	496.59
Solar	-	-	-	-	-	-	-	-			-	--
Total	49,283.76	106,227.41	29,033.81	72,016.32	47,317.06	96,025.75	64,527.31	132,746.14	74,925.29	192,784.47	78,060.79	204,234.88
Supplemental Charges	-		-	(18.91)	-	(3,048.04)	-	1,956.78		6,507.93	-	10,476.84
Sale to IPPS	(221.70)	(1,247.04)-	(199.14)	(1,212.70)	(221.29)	(1,193.09)	(282.13)	(892.19)	(365.92)	(1,054.13)	(382.00)	(1,279.78)
Grand Total	49,062.06	104,980.38	28,834.67	707,84.71	47,095.77	91784.61	64,245.18	133,810.74	74,559.36	198,238.27	77,678.80	213,431.94
EMO and FADL -deductions	-	-	-	-	-	-	-	(665.70)	-	(796.0)	-	(111.2)
Transmission Losses (Rs./KWh)	-	-	-	-	-	-	-	-	-	-	-	-
Net Total	49,062.06	104,980.38	28,834.67	70,784.71	47,095.77	91,784.61	64,245.18	133,145.04	74,559	197,442	77,679	213,321

Source: NEPRA Monthly FPA of DISCOs

TABLE 13
Month-wise KE Electricity Generation Data (GWh) (2021-22)

	July	August	September	October	November	December	January	February	March	April	May	June
BQPS-I (RFO) Unit-1	57.932	49.191	91.214	49.509	-	-	8.742	24.085	27.613	111.320	101.758	62.904
BQPS-I (RFO) Unit-2	49.031	63.014	91.258	54.426	5.675	9.936	38.423	40.234	46.635	103.052	104.901	101.595
BQPS-I (RFO) Unit-3	44.129	11.865	-	-	-	-	-	-	-	-	-	-
BQPS-I (RFO) Unit-4	-	-	-	-	-	-	-	-	-	-	-	-
BQPS-I (RFO) Unit-5	41.001	44.263	90.608	63.123	13.334	-	-	12.873	84.629	108.238	87.369	116.199
BQPS-I (RFO) Unit-6	11.507	2.295	15.297	10.440	7.550	-	42.189	28.450	98.142	112.994	111.481	89.936
BQPS-I (Gas) Unit-1	1.816	0.399	0.059	0.059	-	-	-	-	-	-	0.350	-
BQPS-I (Gas) Unit-2	9.696	1.611	0.477	0.541	0.072	-	-	-	-	0.000	0.901	-
BQPS-I (Gas) Unit-3	0.316	0.210	-	-	-	-	-	-	-	-	-	-
BQPS-I (Gas) Unit-4	-	-	-	-	-	-	-	-	-	-	-	-
BQPS-I (Gas) Unit-5	15.315	10.353	3.418	3.791	0.201	-	-	-	-	0.076	6.244	-
BQPS-I (Gas) Unit-6	29.017	29.653	22.557	17.249	2.753	-	-	-	-	0.021	0.062	-
BQPS-I (LNG) Unit-1	3.965	1.014	0.195	0.257	-	-	1.455	1.398	0.177	-	1.872	0.150
BQPS-I (LNG) Unit-2	21.177	4.095	1.580	2.348	1.089	4.861	3.180	6.638	0.344	0.039	4.818	0.014
BQPS-I (LNG) Unit-3	0.690	0.535	-	-	-	-	-	-	-	-	-	-
BQPS-I (LNG) Unit-4	-	-	-	-	-	-	-	-	-	-	-	-
BQPS-I (LNG) Unit-5	33.448	26.310	11.321	16.465	3.028	-	-	21.618	0.215	13.910	33.393	-
BQPS-I (LNG) Unit-6	63.371	75.352	74.706	74.919	41.502	-	3.376	48.871	2.530	3.933	0.330	0.028
BQPS-II (Gas)	102.989	99.834	76.853	66.096	13.092	-	-	-	-	0.379	16.397	-
BQPS-II (LNG)	248.203	258.014	261.780	287.615	340.933	283.273	142.153	62.473	318.941	346.026	333.698	328.369
BQPS-III (RLNG)	-	-	-	-	-	-	-	-	3.523	-	49.082	198.244
KGTPS-II (Gas)	6.326	6.743	6.313	4.556	0.168	-	-	-	-	0.016	1.410	-
KGTPS-II (LNG)	15.920	17.654	21.567	18.458	1.930	0.062	-	0.751	0.019	7.161	8.903	1.000
SGTPS-II (Gas)	6.588	5.140	4.798	3.725	0.321	-	-	-	-	0.012	1.294	-
SGTPS-II (LNG)	15.911	13.349	16.343	16.131	3.871	0.174	0.032	2.278	0.132	4.816	10.596	2.143
Korangi CCPP (Gas)	21.805	19.408	15.682	8.687	1.324	-	-	-	-	-	0.450	-
Korangi CCPP (LNG)	52.061	50.076	52.870	34.282	16.978	0.440	-	0.244	-	3.030	4.977	2.178
Korangi CCPP (HSD)	1.623	0.056	44.498	25.459	9.635	1.998	1.469	1.470	7.741	76.134	82.432	17.897
KANUPP (Nuclear)	42.578	(3.143)	-	-	-	-	-	-	-	-	-	-
Tapal Energy (RFO)	59.624	46.064	73.103	59.175	46.032	34.577	49.811	55.222	72.003	71.171	72.431	76.642
Gul Ahmed (RFO)	52.949	35.287	80.407	62.015	46.828	22.644	46.652	51.735	65.868	89.584	77.360	74.100
CPPA-G (Mix)	761.717	743.386	747.786	773.176	735.165	709.747	693.899	689.565	776.560	745.668	758.153	762.717
Anoud Power (Mix-RFO/Gas)	-	-	-	-	-	-	-	-	-	-	-	-
ISL (Gas)	3.212	4.448	3.986	4.461	2.633	0.732	0.914	0.569	2.484	6.344	4.433	3.618
IIL (Gas)												
FFBL (Coal)	39.604	40.308	26.641	37.676	39.045	34.168	3.219	34.198	33.723	38.983	40.026	39.099
SNPCL (I & II) (Gas)	65.086	66.461	63.920	63.198	55.409	53.264	42.239	43.660	63.258	56.201	58.058	58.120
Oursun Pakistan (Solar)	6.006	6.550	6.626	7.504	6.983	6.482	7.023	7.648	8.959	8.997	8.671	7.789
CPPA-G 150 MW (Wind)	70.960	63.025	4.818	-	-	-	-	-	-	-	-	-
Gharo Solar	7.054	7.607	7.611	8.691	7.419	6.565	7.197	8.315	10.605	11.259	10.708	9.613
Lotte Chemicals (RLNG)	3.923	0.892	3.469	2.722	2.875	2.146	1.805	1.713	4.439	5.186	4.984	1.290
Lucky Cement	0.148	0.198	0.242	0.222	0.196	0.211	0.218	0.213	0.308	0.358	0.308	0.362

Source: KE

TABLE 14

Monthly Variation in Maximum Hydel Generating Capability (MW)

Month	Year	Tarbela	Ghazi Barotha	Mangla	Warsak	Chashma	Khan Khwar	Allai Khwar	Jinnah Hydel	Duber Khwar	Neelum Jhelum	Golen Gol	Jagran	Malakand-III	New Bong	Patrind	Darral Khawar	Gulpur	Karot	Small Hydel	Total
July	2020	3,844	988	602	194	99	32	74	23	129	963	4	25	61	43	121	34	38	-	71	7,344
	2021	2,977	1,013	424	196	91	33	75	25	130	951	24	26	52	33	146	23	59	-	58	6,337
Aug.	2020	4,217	999	416	209	86	30	65	21	130	887	4	26	64	25	109	22	45	-	45	7,421
	2021	4,340	1,038	597	189	86	28	87	22	113	712	19	26	62	44	75	11	47	-	62	7,561
Sept.	2020	3,555	1,008	905	148	96	32	72	15	56	602	4	17	32	66	77	20	51	-	65	6,819
	2021	4,102	1,036	755	148	101	5	51	36	82	453	32	20	55	59	61	8	35	-	67	7,107
Oct.	2020	1,799	895	842	78	107	11	29	41	46	222	15	10	21	63	40	6	10	-	10	4,296
	2021	1,408	816	505	82	109	11	36	37	42	275	18	8	32	35	41	6	25	-	61	3,547
Nov.	2020	1,772	958	797	73	122	14	24	50	33	153	15	4	16	62	29	5	0	-	55	4,181
	2021	1,550	980	821	51	122	8	20	43	24	143	10	5	16	72	25	4	5	-	45	3,945
Dec.	2020	729	523	590	74	66	17	27	38	30	163	11	4	14	48	26	4	5	-	5	2,422
	2021	899	678	423	21	88	5	16	31	17	90	8	4	14	40	22	3	0	-	32	2,390
Jan.	2021	534	393	95	73	59	8	7	11	21	135	8	4	14	7	21	3	23	-	23	1,441
	2022	203	153	22	73	51	10	2	6	15	52	8	3	20	0	21	3	29	-	24	697
Feb.	2021	1,056	833	683	57	89	15	0	16	30	109	8	5	12	67	24	6	15	-	25	3,047
	2022	782	673	350	51	83	14	18	16	16	77	7	3	17	43	20	3	24	-	19	2,215
March	2021	397	343	592	87	47	41	56	18	57	460	6	4	25	63	40	13	39	-	39	2,352
	2022	401	365	473	60	58	45	68	25	55	484	6	10	36	59	42	19	43	-	58	2,307
April	2021	657	572	643	106	77	51	96	31	87	923	7	15	46	67	76	20	41	-	73	3,588
	2022	620	574	541	96	82	29	58	40	103	849	7	23	56	66	83	34	21	5	67	3,354
May	2021	1,073	947	654	180	112	44	92	37	128	950	18	25	65	73	140	16	40	-	40	4,668
	2022	1,114	1,004	546	158	119	23	48	41	126	925	20	24	57	66	121	34	17	327	66	4,840
June	2021	2,294	1,000	609	191	104	29	70	30	130	967	17	24	68	57	147	34	45	-	68	5,883
	2022	1,095	1,038	415	160	107	15	38	37	121	860	32	20	65	49	109	29	27	414	48	4,679

Source: National Power Control Centre, Islamabad

TABLE 15
Auxiliary Consumption and other Factors (Hydel Power Stations)

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Tarbela	2017-18	17.33	0.13	3,453	43.47	99.28	43.16	90.19
	2018-19	16.32	0.15	3,461	35.03	99.51	34.86	75.95
	2019-20	15.60	0.13	3,506	38.72	100.81	39.03	88.45
	2020-21	15.13	0.12	3,506	41.06	41.39	41.39	82.54
	2021-22	14.01	0.13	3536	35.46	36.05	36.05	89.22
Tarbela 4th Ext.	2018-19	2,318	0.28	1,276	20.73	90.49	18.76	64.01
	2019-20	12.36	0.22	1,410	44.51	44.51	44.51	76.03
	2020-21	10.35	0.30	1,410	27.75	27.75	27.75	37.51
	2021-22	8.66	0.26	1410	26.58	26.58	26.58	87.50
Ghazi Barotha	2017-18	10.28	0.16	1,450	47.27	100.00	47.27	91.56
	2018-19	9.49	0.14	1,450	51.58	100.00	51.58	89.55
	2019-20	6.63	0.10	1,450	51.44	100.00	51.44	90.70
	2020-21	7.30	0.11	1,450	54.25	54.25	54.25	91.12
	2021-22	7.29	0.11	1450	53.83	53.83	53.83	91.53
Mangla	2017-18	11.40	0.28	1,115	42.29	128.75	47.15	92.19
	2018-19	58.07	1.50	920	47.91	115.00	55.09	93.86
	2019-20	97.04	2.07	915	58.31	114.38	66.69	88.92
	2020-21	91.41	1.69	915	67.44	77.13	77.13	96.19
	2021-22	82.88	1.93	920	53.15	56.2	56.2	92.42
Warsak	2017-18	3.03	0.33	221	47.21	90.96	43.06	79.85
	2018-19	1.01	0.10	216	52.97	88.90	47.09	80.47
	2019-20	1.17	0.11	220	57.17	90.17	51.77	81.19
	2020-21	10.47	0.97	233	52.69	50.53	50.53	68.30
	2021-22	9.46	1	229	47.02	44.32	44.32	75.05
Chashma	2017-18	4.76	0.63	129	66.90	70.11	46.77	68.87
	2018-19	5.29	0.69	122	71.78	66.30	69.05	70.40
	2019-20	4.42	0.59	122	70.13	66.30	72.03	67.34
	2020-21	4.21	0.54	125	70.92	72.92	72.92	68.11
	2021-22	4.6	0.58	138	73.08	75	75	67.78
Khan Khwar	2017-18	3.40	1.99	72	27.02	27.02	27.02	85.99
	2018-19	4.52	1.90	72	37.69	37.69	37.69	76.87
	2019-20	4.76	1.70	72	44.25	44.25	44.25	85.50
	2020-21	2.09	0.89	72	37.43	35.97	35.97	92.34
	2021-22	1.82	1.09	72	26.73	26.73	26.73	92.61
Allai Khwar	2017-18	0.71	0.26	121	25.96	26.03	25.96	79.96
	2018-19	0.87	0.19	121	43.59	43.59	43.59	90.13
	2019-20	0.96	0.20	121	44.70	44.70	44.70	89.63
	2020-21	1.19	0.26	121	42.27	42.27	42.27	81.74
	2021-22	1.2	0.32	121	35.71	35.71	35.71	91.34
Jinnah	2017-18	2.99	1.30	52	50.41	54.17	27.30	50.15
	2018-19	3.37	1.49	64	40.43	26.83	69.00	59.17
	2019-20	3.08	1.69	69	30.24	21.67	65.58	47.42
	2020-21	3.32	1.40	64	43.41	65.96	65.96	59.07
	2021-22	3.38	1.28	54.8	54.79	57.08	57.08	58.32
Duber Khwar	2017-18	3.90	0.76	130	45.08	45.20	45.08	87.86
	2018-19	2.41	0.68	130	57.20	51.95	57.20	95.78
	2019-20	2.17	0.35	130	53.55	53.55	53.55	91.84
	2020-21	2.45	0.38	130	56.49	56.49	56.49	95.10
	2021-22	2.07	0.33	130	48.91	48.91	48.91	93.50
Golen Gol	2018-19	1.68	1.67	108	110.59	31.75	31.75	97.91
	2019-20	2.42	2.72	72	14.08	9.39	9.39	86.91
	2020-21	2.48	2.92	71	13.70	8.97	8.97	73.64
	2021-22	3.14	2.22	52	31.01	14.93	14.93	93.70
Dargai	2017-18	0.27	0.28	18	61.22	89.00	54.48	89.92
	2018-19	0.30	0.28	18	69.62	89.00	61.96	92.04
	2019-20	0.28	0.33	18	90.05	89.00	80.14	88.03
	2020-21	0.30	0.28	18	69.18	62.27	62.27	88.27
	2021-22	0.28	0.32	18.3	58.91	53.9	53.9	79.82
Rasul	2017-18	1.58	2.41	15	49.74	68.18	33.92	81.97
	2018-19	0.68	0.94	15	56.57	65.91	37.28	73.73
	2019-20	0.52	1.41	13	32.02	59.09	18.92	73.30
	2020-21	0.73	0.92	15	60.48	41.24	41.24	86.75
	2021-22	0.87	1.41	13	60.3	59.09	59.09	67.80
Shadiwal	2017-18	0.46	1.77	6	53.67	31.84	21.09	92.93
	2018-19	0.42	1.47	5	69.41	31.97	24.83	94.57
	2019-20	0.32	2.25	5	34.52	34.81	12.01	94.82
	2020-21	0.49	1.52	6	62.00	27.56	27.56	94.22
	2021-22	0.45	1.56	5.5	59.56	59.56	59.56	94.40

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
Chichoki Malian	2017-18	0.32	0.82	7	51.11	53.03	27.52	73.87
	2018-19	0.35	1.01	7	51.03	49.24	25.13	89.00
	2019-20	0.34	0.98	7	49.51	53.03	26.25	90.50
	2020-21	0.53	1.89	8	42.48	24.14	24.14	89.21
	2021-22	0.29	0.9	6	43.56	19.79	19.79	72.90
Nandipur	2017-18	0.55	1.29	9	56.58	66.67	37.18	94.00
	2018-19	0.50	1.36	9	45.87	66.67	30.58	90.00
	2019-20	0.51	1.51	6	56.02	46.07	29.09	93.00
	2020-21	0.53	1.58	9	42.48	27.71	27.71	94.00
	2021-22	0.47	1.55	8.3	48.62	25.04	25.04	94.50
Kurram Garhi	2017-18	0.15	0.92	4	51.66	95.00	49.08	74.34
	2018-19	0.15	1.02	4	40.62	100.00	40.62	77.68
	2019-20	0.15	0.99	4	47.01	79.07	43.18	75.05
	2020-21	0.16	0.78	4	61.42	58.35	58.35	79.72
	2021-22	0.16	1.21	3.8	39.29	37.32	37.32	85.39
Renala	2017-18	0.05	1.99	1	43.78	37.50	26.27	94.42
	2018-19	0.05	2.14	1	60.78	33.86	22.65	79.81
	2019-20	0.05	2.28	1	43.08	50.00	21.54	76.17
	2020-21	0.05	2.50	1	42.44	20.83	20.83	79.01
	2021-22	0.05	2.76	0.5	42.54	19.34	19.34	79.00
Chitral	2017-18	0.01	0.24	1	49.13	39.42	39.30	95.37
	2018-19	0.01	0.17	1	50.70	40.05	40.05	94.86
	2019-20	0.01	0.21	1	48.16	34.82	84.93	93.89
	2020-21	0.01	0.23	1	48.46	85.37	85.37	97.02
	2021-22	0.01	0.26	0.64	39.18	90.22	90.22	98.96
Gomal Zam	2017-18	0.00	0.07	8	0.52	0.53	0.24	3.63
	2018-19	0.08	0.26	8	43.89	49.30	21.64	58.91
	2019-20	0.09	0.16	9	74.00	49.88	36.91	80.16
	2020-21	0.11	0.17	9	83.87	42.01	42.01	86.90
	2021-22	0.22	0.34	8.5	87.41	43.7	43.7	88.30
Malakand/ Jabban	2017-18	1.18	1.12	22	54.68	54.68	54.68	92.08
	2018-19	1.32	0.97	22	70.56	70.56	70.56	93.78
	2019-20	1.35	1.14	22	76.20	71.20	71.20	78.16
	2020-21	1.60	1.22	22	77.33	69.82	69.82	72.20
	2021-22	1.22	0.89	22	70.63	70.63	70.63	93.70

Source: WAPDA

TABLE 16
Month-Wise WAPDA Hydroelectric Invoice for Capacity Charges and Cost Data (2021-22)

Name of Power House	Month	Export (GWh)	Import (GWh)	NEO (GWh)	Variable Energy Charges (Mln. Rs.)	Capacity Charges (Mln. Rs.)	Water Use/ NHP Charges (Mln. Rs.)	IRSA Charge Amount (Mln. Rs.)	GST @ 17% (NEOx-RatexGST Rate) (Mln. Rs.)
1000 MW Mangla	July	530.633	219.754	310.879	20.829	756.701	46.632	1.554	3.541
	August	699.318	265.120	434.198	29.091	756.701	65.130	2.171	4.946
	September	697.998	162.453	535.545	35.882	756.701	80.332	2.678	6.100
	October	418.559	46.114	372.445	24.954	756.701	55.867	1.862	4.242
	November	620.589	40.960	579.629	38.835	756.701	86.944	2.898	6.602
	December	369.468	58.244	311.224	20.852	756.701	46.684	1.556	3.545
	January	172.563	157.032	15.531	1.041	756.701	2.330	0.078	0.177
	February	286.946	59.573	227.373	15.234	756.701	34.106	1.137	2.590
	March	379.501	35.557	343.944	23.044	756.701	51.592	1.720	3.918
	April	401.761	20.067	381.694	25.573	756.701	57.254	1.908	4.347
	May	434.783	38.483	396.300	26.552	737.909	59.445	1.982	4.514
	June	343.493	51.992	291.501	19.531	715.090	43.725	1.458	3.320
17.40 MW Gomal Zam	July	5.376	0.007	5.369	3.404	45.616	13.816	0.027	0.579
	August	5.926	0.003	5.922	3.755	45.616	14.425	0.030	0.638
	September	5.738	0.160	5.577	3.536	45.616	14.046	0.028	0.601
	October	6.365	0.839	5.526	3.503	45.616	13.989	0.028	0.596
	November	6.950	1.293	5.657	3.587	45.616	14.134	0.028	0.610
	December	6.643	1.332	5.311	3.367	45.616	13.753	0.027	0.572
	January	4.072	2.185	1.887	1.196	45.616	9.986	0.009	0.203
	February	4.445	2.584	1.861	1.180	45.616	9.958	0.009	0.201
	March	6.817	1.461	5.355	3.395	45.616	13.802	0.027	0.577
	April	6.459	1.454	5.005	3.173	45.616	13.416	0.025	0.539
	May	5.794	0.728	5.066	3.212	49.315	9.911	0.025	0.546
	June	5.658	1.049	4.610	2.922	53.806	5.071	0.023	0.497

Name of Power House	Month	Export (GWh)	Import (GWh)	NEO (GWh)	Variable Energy Charges (Mln. Rs.)	Capacity Charges (Mln. Rs.)	Water Use/ NHP Charges (Mln. Rs.)	IRSA Charge Amount (Mln. Rs.)	GST @ 17% (NEOx-RatexGST Rate) (Mln. Rs.)
3478 MW Tarbela Units 1 - 14	July	1745.888	65.516	1680.372	72.256	208.193	1848.409	8.402	12.284
	August	2241.872	-1.621	2243.493	96.470	208.193	2467.843	11.217	16.400
	September	2031.095	-1.079	2032.175	87.384	208.193	2235.392	10.161	14.855
	October	739.290	81.487	657.804	28.286	208.193	723.584	3.289	4.809
	November	731.217	25.964	705.253	30.326	208.193	775.778	3.526	5.155
	December	781.835	202.734	579.101	24.901	208.193	637.011	2.896	4.233
	January	626.712	472.815	153.897	6.618	208.193	169.286	0.769	1.125
	February	692.646	166.201	526.445	22.637	208.193	579.090	2.632	3.848
	March	617.974	317.704	300.270	12.912	208.193	330.297	1.501	2.195
	April	755.318	305.009	450.309	19.363	208.193	495.340	2.252	3.292
	May	991.584	158.583	833.001	35.819	776.916	916.301	4.165	6.089
	June	1023.788	230.178	793.610	34.125	1467.507	872.971	3.968	5.801
1410 MW Tarbela 4th Ext.	July	522.848	1.231	521.617	69.897	1937.255	573.779	2.608	11.882
	August	970.837	1.627	969.210	129.874	1937.255	1066.131	4.846	22.079
	September	905.315	1.557	903.758	121.104	1937.255	994.133	4.519	20.588
	October	387.929	0.940	386.989	51.856	1937.255	425.688	1.935	8.816
	November	406.064	0.893	405.171	54.293	2339.167	445.688	2.026	9.230
	December	89.898	0.518	89.380	11.977	2339.167	98.318	0.447	2.036
	January	0.000	0.000	0.000	0.000	2339.167	0.000	0.000	0.000
	February	0.000	0.000	0.000	0.000	2339.167	0.000	0.000	0.000
	March	0.000	0.000	0.000	0.000	2339.167	0.000	0.000	0.000
	April	0.000	0.000	0.000	0.000	2339.167	0.000	0.000	0.000
	May	0.000	0.000	0.000	0.000	1780.722	0.000	0.000	0.000
	June	0.000	0.000	0.000	0.000	1102.609	0.000	0.000	0.000
242.96 MW Warsak	July	144.815	0.294	144.521	15.464	212.922	158.973	0.723	2.629
	August	139.860	0.283	139.577	14.935	212.922	153.535	0.698	2.539
	September	105.999	0.418	105.581	11.297	212.922	116.139	0.528	1.921
	October	61.745	1.399	60.346	6.457	212.922	66.381	0.302	1.098
	November	40.206	3.890	36.316	3.886	212.922	39.948	0.182	0.661
	December	26.689	11.271	15.418	1.650	212.922	16.960	0.077	0.280
	January	55.923	2.220	53.703	5.746	212.922	59.073	0.269	0.977
	February	36.310	2.148	34.162	3.655	212.922	37.578	0.171	0.621
	March	46.474	1.399	45.075	4.823	212.922	49.583	0.225	0.820
	April	69.475	0.951	68.524	7.332	212.922	75.376	0.343	1.246
	May	116.495	0.061	116.434	12.458	198.859	128.077	0.582	2.118
	June	114.296	0.101	114.195	12.219	181.782	125.615	0.571	2.077
130 MW Duber Khwar	July	96.358	0.013	96.345	20.714	286.189	105.980	0.482	3.521
	August	84.051	0.029	84.022	18.065	286.189	92.424	0.420	3.071
	September	58.875	0.000	58.875	12.658	286.189	64.763	0.294	2.152
	October	31.091	0.008	31.083	6.683	286.189	34.191	0.155	1.136
	November	17.213	0.095	17.118	3.680	286.189	18.830	0.086	0.626
	December	12.584	0.115	12.469	2.681	286.189	13.716	0.062	0.456
	January	11.640	0.163	11.477	2.468	286.189	12.625	0.057	0.419
	February	10.768	0.371	10.397	2.235	286.189	11.437	0.052	0.380
	March	40.912	0.448	40.463	8.700	286.189	44.510	0.202	1.479
	April	74.283	0.021	74.262	15.966	286.189	81.688	0.371	2.714
	May	93.619	0.005	93.615	20.127	260.757	102.976	0.468	3.422
	June	86.832	0.000	86.832	18.669	229.877	95.515	0.434	3.174
121 MW Allai Khwar	July	175.721	121.055	54.666	11.753	253.676	60.132	0.273	1.998
	August	165.571	102.125	63.446	13.641	253.676	69.790	0.317	2.319
	September	95.161	59.513	35.649	7.665	253.676	39.214	0.178	1.303
	October	62.224	36.265	25.959	5.581	253.676	28.555	0.130	0.949
	November	33.496	19.589	13.908	2.990	253.676	15.298	0.070	0.508
	December	24.095	12.641	11.454	2.463	253.676	12.600	0.057	0.419
	January	15.923	14.373	1.550	0.333	253.676	1.705	0.008	0.057
	February	27.463	15.792	11.671	2.509	253.676	12.838	0.058	0.427
	March	118.856	68.530	50.326	10.820	253.676	55.359	0.252	1.839
	April	128.431	86.856	41.575	8.939	253.676	45.733	0.208	1.520
	May	142.076	106.594	35.482	7.629	221.565	39.031	0.177	1.297
	June	121.720	94.374	27.346	5.879	182.573	30.080	0.137	0.999

Name of Power House	Month	Export (GWh)	Import (GWh)	NEO (GWh)	Variable Energy Charges (Mln. Rs.)	Capacity Charges (Mln. Rs.)	Water Use/ NHP Charges (Mln. Rs.)	IRSA Charge Amount (Mln. Rs.)	GST @ 17% (NEOx-RatexGST Rate) (Mln. Rs.)
72 MW Khan Khwar	July	71.386	47.273	24.113	5.088	134.597	26.524	0.121	0.865
	August	60.243	39.537	20.706	4.369	134.597	22.777	0.104	0.743
	September	34.201	30.765	3.437	0.725	134.597	3.780	0.017	0.123
	October	22.833	15.191	7.642	1.612	134.597	8.406	0.038	0.274
	November	14.040	8.574	5.466	1.153	134.597	6.012	0.027	0.196
	December	10.085	6.204	3.882	0.819	134.597	4.270	0.019	0.139
	January	12.341	5.227	7.114	1.501	134.597	7.826	0.036	0.255
	February	13.713	4.559	9.154	1.932	134.597	10.069	0.046	0.328
	March	48.382	15.236	33.146	6.994	134.597	36.460	0.166	1.189
	April	52.429	32.114	20.315	4.286	134.597	22.346	0.102	0.729
	May	61.524	44.511	17.013	3.590	125.587	18.714	0.085	0.610
	June	53.326	42.870	10.456	2.206	114.646	11.502	0.052	0.375
108 MW Golen Gol	July	17.857	0.000	17.857	6.143	471.996	19.643	0.089	1.044
	August	14.142	0.003	14.139	4.864	471.996	15.553	0.071	0.827
	September	23.082	0.033	23.049	7.929	471.996	25.354	0.115	1.348
	October	13.460	0.000	13.460	4.630	471.996	14.805	0.067	0.787
	November	7.138	0.108	7.030	2.418	612.576	7.733	0.035	0.411
	December	6.932	1.198	5.734	1.973	612.576	6.308	0.029	0.335
	January	5.928	0.043	5.885	2.024	612.576	6.473	0.029	0.344
	February	4.414	0.070	4.344	1.494	612.576	4.778	0.022	0.254
	March	4.405	0.049	4.356	1.499	612.576	4.792	0.022	0.255
	April	5.178	0.006	5.173	1.779	612.576	5.690	0.026	0.303
	May	14.471	0.005	14.466	4.976	455.257	15.913	0.072	0.846
	June	22.663	0.017	22.646	7.790	264.226	24.911	0.113	1.324
22 MW Jabban	July	13.598	0.001	13.597	3.739	141.910	14.957	0.068	0.636
	August	13.976	0.000	13.976	3.843	141.910	15.374	0.070	0.653
	September	13.981	0.000	13.981	3.845	141.910	15.379	0.070	0.654
	October	10.983	0.000	10.983	3.020	141.910	12.081	0.055	0.513
	November	6.189	0.000	6.189	1.702	141.910	6.808	0.031	0.289
	December	4.808	0.000	4.808	1.322	141.910	5.288	0.024	0.225
	January	7.389	0.000	7.389	2.032	141.910	8.128	0.037	0.345
	February	5.829	0.000	5.829	1.603	141.910	6.412	0.029	0.273
	March	13.164	0.000	13.164	3.620	141.910	14.480	0.066	0.615
	April	14.962	0.000	14.962	4.115	141.910	16.458	0.075	0.699
	May	15.146	0.000	15.146	4.165	106.451	16.660	0.076	0.708
	June	14.717	0.000	14.717	4.047	63.392	16.188	0.074	0.688
20 MW Dargai	July	9.354	0.038	9.316	0.820	6.055	10.247	0.047	0.139
	August	9.056	0.025	9.031	0.795	6.055	9.934	0.045	0.135
	September	11.155	0.001	11.154	0.982	6.055	12.269	0.056	0.167
	October	7.919	0.000	7.919	0.697	6.055	8.711	0.040	0.118
	November	3.585	0.000	3.585	0.315	6.055	3.943	0.018	0.054
	December	2.833	0.000	2.833	0.249	6.055	3.117	0.014	0.042
	January	5.931	0.000	5.931	0.522	6.055	6.524	0.030	0.089
	February	4.061	0.000	4.061	0.357	6.055	4.467	0.020	0.061
	March	10.148	0.003	10.145	0.893	6.055	11.159	0.051	0.152
	April	11.516	0.003	11.513	1.013	6.055	12.664	0.058	0.172
	May	10.282	0.001	10.281	0.905	10.788	11.309	0.051	0.154
	June	1.073	0.000	1.073	0.094	16.535	1.180	0.005	0.016
4 MW Kur-ram Garhi	July	3.517	2.804	0.713	0.182	9.329	0.785	0.004	0.031
	August	4.379	3.054	1.325	0.338	9.329	1.457	0.007	0.057
	September	4.363	2.819	1.544	0.394	9.329	1.699	0.008	0.067
	October	3.806	2.084	1.722	0.439	9.329	1.894	0.009	0.075
	November	3.826	2.621	1.205	0.307	9.329	1.325	0.006	0.052
	December	3.952	3.060	0.892	0.228	9.329	0.981	0.004	0.039
	January	4.289	4.037	0.252	0.064	9.329	0.277	0.001	0.011
	February	3.646	3.193	0.453	0.116	9.329	0.498	0.002	0.020
	March	3.026	1.818	1.208	0.308	9.329	1.329	0.006	0.052
	April	3.369	2.910	0.459	0.117	9.329	0.505	0.002	0.020
	May	3.438	2.548	0.890	0.227	8.593	0.979	0.004	0.039
	June	3.18	2.90	0.28	0.07	7.70	0.31	0.00	0.01

Name of Power House	Month	Export (GWh)	Import (GWh)	NEO (GWh)	Variable Energy Charges (Mln. Rs.)	Capacity Charges (Mln. Rs.)	Water Use/ NHP Charges (Mln. Rs.)	IRSA Charge Amount (Mln. Rs.)	GST @ 17% (NEOx-RatexGST Rate) (Mln. Rs.)
1 MW Chitral	July	0.250	0.000	0.250	0.086	-1.792	0.275	0.001	0.015
	August	0.205	0.000	0.205	0.070	-1.792	0.225	0.001	0.012
	September	0.186	0.000	0.186	0.064	-1.792	0.205	0.001	0.011
	October	0.140	0.000	0.140	0.048	-1.792	0.154	0.001	0.008
	November	0.155	0.000	0.155	0.053	-1.792	0.170	0.001	0.009
	December	0.183	0.000	0.183	0.063	-1.792	0.201	0.001	0.011
	January	0.195	0.000	0.195	0.067	-1.792	0.215	0.001	0.011
	February	0.160	0.000	0.160	0.055	-1.792	0.176	0.001	0.009
	March	0.159	0.000	0.159	0.055	-1.792	0.175	0.001	0.009
	April	0.146	0.000	0.146	0.050	-1.792	0.161	0.001	0.009
	May	0.173	0.000	0.173	0.059	-0.005	0.190	0.001	0.010
	June	0.201	0.000	0.201	0.069	2.165	0.221	0.001	0.012
1450 MW Ghazi Barotha	July	1,321.826	575.979	745.847	58.922	2,288.808	820.432	3.729	10.017
	August	1,790.358	1,024.513	765.845	60.502	2,288.808	842.430	3.829	10.285
	September	1,644.834	906.130	738.704	58.358	2,288.808	812.574	3.694	9.921
	October	726.590	126.053	600.537	47.442	2,288.808	660.591	3.003	8.065
	November	860.965	161.934	699.031	55.223	2,288.808	768.934	3.495	9.388
	December	755.696	256.675	499.021	39.423	2,288.808	548.923	2.495	6.702
	January	728.453	617.971	110.482	8.728	2,288.808	121.530	0.552	1.484
	February	595.977	148.677	447.300	35.337	2,288.808	492.030	2.237	6.007
	March	529.025	261.727	267.298	21.117	2,288.808	294.028	1.336	3.590
	April	600.759	192.701	408.058	32.237	2,288.808	448.864	2.040	5.480
	May	776.005	36.358	739.647	58.432	1,764.551	813.611	3.698	9.933
	June	847.987	108.205	739.782	58.443	1,127.954	813.760	3.699	9.935
184 MW Chashma	July	66.999	0.002	66.997	12.796	606.138	73.697	0.335	2.175
	August	63.315	0.109	63.206	12.072	606.138	69.527	0.316	2.052
	September	72.076	0.000	72.076	13.767	606.138	79.284	0.360	2.340
	October	81.005	0.001	81.004	15.472	606.138	89.104	0.405	2.630
	November	87.866	0.002	87.864	16.782	606.138	96.650	0.439	2.853
	December	65.456	0.501	64.955	12.406	606.138	71.451	0.325	2.109
	January	38.799	1.038	37.761	7.212	606.138	41.537	0.189	1.226
	February	55.302	0.002	55.300	10.562	606.138	60.830	0.277	1.796
	March	44.122	1.222	42.900	8.194	606.138	47.190	0.215	1.393
	April	63.081	4.445	58.636	11.199	606.138	64.500	0.293	1.904
	May	88.833	0.419	88.414	16.887	459.074	97.255	0.442	2.871
	June	76.943	0.377	76.566	14.624	280.496	84.223	0.383	2.486
96 MW Jinnah	July	17.957	0.000	17.957	4.794	288.133	19.752	0.090	0.815
	August	16.142	0.000	16.141	4.310	288.133	17.756	0.081	0.733
	September	25.604	0.000	25.604	6.836	288.133	28.165	0.128	1.162
	October	26.597	0.000	26.597	7.101	288.133	29.257	0.133	1.207
	November	30.407	0.000	30.407	8.119	288.133	33.448	0.152	1.380
	December	22.717	0.000	22.717	6.065	288.133	24.989	0.114	1.031
	January	4.468	0.148	4.319	1.153	288.133	4.751	0.022	0.196
	February	10.153	0.058	10.095	2.695	288.133	11.104	0.050	0.458
	March	18.072	0.003	18.069	4.824	288.133	19.876	0.090	0.820
	April	28.264	0.000	28.264	7.546	288.133	31.090	0.141	1.283
	May	29.689	0.001	29.689	7.927	223.963	32.657	0.148	1.348
	June	26.199	0.002	26.197	6.995	146.043	28.817	0.131	1.189
22 MW Rasul	July	6.1871	1.9480	4.2391	0.6655	27.0165	4.6630	0.0212	0.1131
	August	5.0649	0.0900	4.9749	0.7811	27.0165	5.4724	0.0249	0.1328
	September	5.6578	0.3270	5.3308	0.8369	27.0165	5.8638	0.0267	0.1423
	October	7.8094	0.0750	7.7344	1.2143	27.0165	8.5079	0.0387	0.2064
	November	7.3198	0.0040	7.3158	1.1486	27.0165	8.0474	0.0366	0.1953
	December	5.9473	0.0570	5.8903	0.9248	27.0165	6.4794	0.0295	0.1572
	January	1.5061	1.6710	-0.1649	-0.0259	27.0165	-0.1814	-0.0008	-0.0044
	February	1.5887	1.7350	-0.1463	-0.0230	27.0165	-0.1609	-0.0007	-0.0039
	March	5.4140	0.3780	5.0360	0.7907	27.0165	5.5396	0.0252	0.1344
	April	6.6791	0.0520	6.6271	1.0405	27.0165	7.2898	0.0331	0.1769
	May	7.9636	0.1700	7.7936	1.2236	23.7132	8.5730	0.0390	0.2080
	June	5.4454	1.1740	4.2714	0.6706	19.7021	4.6985	0.0214	0.1140
13.8 MW Nandipur	July	3.596	0.000	3.596	0.475	-0.310	3.956	0.018	0.081
	August	4.325	0.001	4.324	0.571	-0.310	4.756	0.022	0.097
	September	3.834	0.000	3.834	0.506	-0.310	4.218	0.019	0.086
	October	3.413	0.001	3.412	0.450	-0.310	3.753	0.017	0.077
	November	1.966	0.005	1.961	0.259	-0.310	2.157	0.010	0.044
	December	0.552	0.033	0.519	0.068	-0.310	0.571	0.003	0.012
	January	0.014	0.052	-0.038	-0.005	-0.310	-0.041	0.000	-0.001
	February	0.012	0.041	-0.029	-0.004	-0.310	-0.032	0.000	-0.001
	March	2.199	0.008	2.191	0.289	-0.310	2.410	0.011	0.049
	April	2.747	0.001	2.746	0.363	-0.310	3.021	0.014	0.062
	May	3.399	0.000	3.399	0.449	5.027	3.739	0.017	0.076
	June	3.293	0.000	3.293	0.435	11.507	3.622	0.016	0.074

Name of Power House	Month	Export (GWh)	Import (GWh)	NEO (GWh)	Variable Energy Charges (Mln. Rs.)	Capacity Charges (Mln. Rs.)	Water Use/ NHP Charges (Mln. Rs.)	IRSA Charge Amount (Mln. Rs.)	GST @ 17% (NEOx-RatexGST Rate) (Mln. Rs.)
13.5 MW Shadiwal	July	2.0521	0.0020	2.0501	0.3649	5.5280	2.2551	0.0103	0.0620
	August	2.2700	0.0000	2.2700	0.4041	5.5280	2.4970	0.0114	0.0687
	September	2.4946	0.0000	2.4946	0.4440	5.5280	2.7441	0.0125	0.0755
	October	3.1654	0.0000	3.1654	0.5634	5.5280	3.4819	0.0158	0.0958
	November	3.2484	0.0000	3.2484	0.5782	5.5280	3.5732	0.0162	0.0983
	December	3.1701	0.0000	3.1701	0.5643	5.5280	3.4871	0.0159	0.0959
	January	1.0776	0.0320	1.0456	0.1861	5.5280	1.1502	0.0052	0.0316
	February	0.0083	0.0370	-0.0287	-0.0051	5.5280	-0.0315	-0.0001	-0.0009
	March	1.6388	0.0090	1.6298	0.2901	5.5280	1.7927	0.0081	0.0493
	April	3.1851	0.0000	3.1851	0.5670	5.5280	3.5037	0.0159	0.0964
	May	2.8406	0.0000	2.8406	0.5056	8.1152	3.1246	0.0142	0.0860
	June	2.9894	0.0000	2.9894	0.5321	11.2567	3.2883	0.0149	0.0905
13.20 MW Chichoki	July	3.5329	1.1520	2.3809	0.4190	4.7809	2.6190	0.0119	0.0712
	August	3.7992	1.0330	2.7662	0.4869	4.7809	3.0429	0.0138	0.0828
	September	3.2265	0.2730	2.9535	0.5198	4.7809	3.2489	0.0148	0.0884
	October	3.4479	0.0530	3.3949	0.5975	4.7809	3.7343	0.0170	0.1016
	November	2.4290	0.3120	2.1170	0.3726	4.7809	2.3287	0.0106	0.0633
	December	2.0355	1.3970	0.6385	0.1124	4.7809	0.7023	0.0032	0.0191
	January	1.7656	1.8010	-0.0354	-0.0062	4.7809	-0.0390	-0.0002	-0.0011
	February	1.5273	1.5640	-0.0367	-0.0065	4.7809	-0.0403	-0.0002	-0.0011
	March	2.2360	0.7820	1.4540	0.2559	4.7809	1.5994	0.0073	0.0435
	April	2.7492	0.5830	2.1662	0.3812	4.7809	2.3828	0.0108	0.0648
	May	3.0693	0.7110	2.3583	0.4151	7.7875	2.5941	0.0118	0.0706
	June	3.0747	0.7770	2.2977	0.4044	11.4385	2.5275	0.0115	0.0687
1.1 MW Renal Khurd	July	0.2168	0.0000	0.2168	0.0742	-1.3829	0.2385	0.0011	0.0126
	August	0.2129	0.0000	0.2129	0.0728	-1.3829	0.2342	0.0011	0.0124
	September	0.1762	0.0000	0.1762	0.0603	-1.3829	0.1939	0.0009	0.0102
	October	0.1391	0.0000	0.1391	0.0476	-1.3829	0.1530	0.0007	0.0081
	November	0.1220	0.0000	0.1220	0.0417	-1.3829	0.1342	0.0006	0.0071
	December	0.1174	0.0027	0.1147	0.0392	-1.3829	0.1262	0.0006	0.0067
	January	0.0210	0.0273	-0.0063	-0.0022	-1.3829	-0.0069	0.0000	-0.0004
	February	0.0331	0.0175	0.0156	0.0053	-1.3829	0.0172	0.0001	0.0009
	March	0.1824	0.0000	0.1824	0.0624	-1.3829	0.2007	0.0009	0.0106
	April	0.2402	0.0000	0.2402	0.0821	-1.3829	0.2642	0.0012	0.0140
	May	0.1990	0.0000	0.1990	0.0680	0.1517	0.2189	0.0010	0.0116
	June	0.1990	0.0000	0.1990	0.0681	2.0151	0.2189	0.0010	0.0116

Source: WAPDA

TABLE 17

Thermal Electricity Generation by Sector and by Fuel (GWh)

			2017-18*	2018-19*	2019-20*	2020-21*	2021-22*
Thermal Generation by:							
GENCOs (I, II, III and IV)			16,199.10	13,016.99	7,907.85	6,802.93	6,349.56
KE Own Power Plants			10,337.75	10,727.68	9,629.00	10,186.00	7,890.50
IPPs: CPPA-G System			62,436.23	62,597.73	60,720.31	68,708.63	76,118.75
IPPs: KE System			1,819.04	2,118.31	1,863.60	2,184.57	2,110.16
Others (SPPs/CPPs/N-CPPs): CPPA-G System			665.53	405.13	170.99	168.58	114.49
Others (SPPs/CPPs/N-CPPs): KE System			550.49	523.74	534.30	579.02	482.50
Total Thermal Generation			**92,008.13**	**89,389.58**	**80,826.05**	**88,629.72**	**93,065.96**
Thermal Generation using:							
Gas	CPPA-G System**	Generation on Gas (GWh)	23,291.97	22,439.40	15,236.30	14,448.21	14,837.62
		Share of Gas Generation (%)	25.32	25.10	18.85	16.30	15.94
	KE System‡	Generation on Gas (GWh)	6,369.15	5,557.74	5,087.56	3,420.59	1,409.14
		Share of Gas Generation (%)	6.92	6.22	6.29	3.86	1.51
	Total	**Generation on Gas (GWh)**	**29,661.12**	**27,997.14**	**20,323.86**	**17,868.80**	**16,246.76**
		Share of Gas Generation (%)	**32.24**	**31.32**	**25.15**	**20.16**	**17.45**
RLNG	CPPA-G System	Generation on RLNG (GWh)	20,678.32	28,148.92	23,830.59	26,983.81	26,869.82
		Share of RLNG Generation (%)	22.47	31.49	29.48	30.45	28.86
	KE System	Generation on RLNG (GWh)	496.34	2,664.40	2,795.00	4,778.00	4,450.33
		Share of RLNG Generation (%)	0.54	2.98	3.46	5.39	4.78
	Total	**Generation on RLNG (GWh)**	**21,174.66**	**30,813.32**	**26,625.59**	**31,761.81**	**31,320.14**
		Share of RLNG Generation (%)	**23.01**	**34.47**	**32.94**	**35.84**	**33.65**

			2017-18*	2018-19*	2019-20*	2020-21*	2021-22*
RFO	CPPA-G System	Generation on RFO (GWh)	22,755.88	9,091.79	4,178.25	6,331.06	13,143.98
		Share of RFO Generation (%)	24.73	10.17	5.17	7.14	14.12
	KE System‡‡	Generation on RFO (GWh)	5,403.30	4,734.08	3,730.43	4,265.00	3,948.02
		Share of RFO Generation (%)	5.87	5.30	4.62	4.81	4.24
	Total	**Generation on RFO (GWh)**	**28,159.18**	**13,825.87**	**7,908.68**	**10,596.06**	**17,092.00**
		Share of RFO Generation (%)	**30.61**	**15.47**	**9.78**	**11.96**	**18.36**
HSD	CPPA-G System	Generation on HSD (GWh)	788.18	27.74	0.67	369.25	1,157.37
		Share of HSD Generation (%)	0.86	0.03	-	0.42	1.24
	KE System	Generation on HSD (GWh)	-	-	-	33.00	269.22
		Share of HSD Generation (%)	-	-	-	0.04	0.29
	Total	**Generation on HSD (GWh)**	**788.18**	**27.74**	**0.67**	**402.25**	**1,426.59**
		Share of HSD Generation (%)	**0.86**	**0.03**	**-**	**0.45**	**1.53**
Coal	CPPA-G System	Generation on Coal (GWh)	11,786.50	16,312.01	25,553.34	27,547.78	26,576.00
		Share of Coal Generation (%)	12.81	18.25	31.62	31.08	28.55
	KE System	Generation on Coal (GWh)	438.49	413.51	412.91	453.00	406.69
		Share of Coal Generation (%)	3.59	2.47	1.59	1.62	0.44
	Total	**Generation on Coal (GWh)**	**12,224.99**	**16,725.52**	**25,966.25**	**28,000.78**	**26,982.69**
		Share of Coal Generation (%)	**13.29**	**18.71**	**32.13**	**31.59**	**28.99**
Total Thermal Generation			**92,008.13**	**89,389.59**	**80,825.06**	**88,629.71**	**93,065.96**

** Net Electricity Generation during FY 2017-18, 2018-19, 2019-20 and 2020-21. ** Including generation of SPPs/CPPs/N-CPPs in CPPA-G System.*
‡ Including generation of IPPs in KE system. ‡‡ Including generation of IPPs/CPPs in KE System.

Source: GENCOs/IPPs/KE

TABLE 18
Fuel Consumption and Cost of Generation Data (GENCOs)

Year	Gen. on Gas (GWh)	Gas Consumption		Gen. on RFO (GWh)	RFO Consumption		Gen. on RLNG (GWh)	RLNG Consumption		Cost of Generation (Paisa/ kWh)	Overall Fuel Cost of Generation (Rs.Million)
		Total (MMCFT)	Cft/kWh (Average)		(000 M.Ton)	(Kg/kWh)		Total (MMCFT)	Cft/kWh (Average)		
TPS Jamshoro (GENCO-I)											
2017-18	525.80	8,782.00	12.33	1,088.24	328.59	0.30	178.01	0.00	0.00	1,130.00	20,252.92
2018-19	373.65	6,474.85	12.20	350.30	109.42	0.32	156.14	0.00	0.00	1,572.10	13,812.35
2019-20	64.10	886.91	13.72	145.80	49.94	0.33	0.00	0.00	0.00	2,063.90	4,421.75
2020-21	0.00	0.00	0.00	199.55	64.94	0.33	0.00	0.00	0.00	1,952.40	3,895.94
2021-22	0.00	0.00	0.00	245.51	78.417	0.32	0.00	0.00	0.00	3108	7631.72
TPS Muzaffargarh (GENCO-III)											
2017-18	28.56	384.13	10.62	2,892.01	8,799.58	0.27	119.79	1,575.75	12.44	1,372.18	41,731.74
2018-19	(0.37)	0.00	0.00	836.63	262.18	0.28	0.47	7.15	13.14	1,788.24	16,858.09
2019-20	10.90	7.46	12.97	288.96	92,801.55	0.28	0.00	0.00	0.00	2,090.83	7,015.71
2020-21	-7.62	0.00	0.00	289.84	82,754.00	0.26	0.03	15.60	0.00	1,918.63	6,012.81
2021-22	0.00	0.00	0.00	217.83	61,836	0.25	0.00	0.00	0.00	3,199	6,808.28

Year	Gen. on Gas (GWh)	Gas Consumption		Gen. on RLNG (GWh)	RLNG Consumption		Cost of Generation (Paisa/kWh)	Overall Fuel Cost of Generation (Rs. Million)
		Total (MMCFT)	Cft/kWh (Average)		Total (MMCFT)	Cft/kWh (Average)		
GTPS Faisalabad (GENCO-III)								
2017-18	14.68	1,297.21	11.71	90.607	n.p.	n.p.	1,780.89	1,609.00
2018-19	0.00	0.00	0.00	149.528	1801.87	11.47	2,027.71	2,805.00
2019-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020-21	0.00	0.00	0.00	14.26	197.48	12.66	2,067.37	321.76
2021-22	0.00	0.00	0.00	96.65	1,222.29	11.45	3,503	2879.76
TPS Nandipur								
2017-18	2,381.70	2,133.61	8.57	0.00	0.00	0.00	898.00	22,138.18
2018-19	1,729.09	14,299.31	8.01	0.00	0.00	0.00	1,128.05	20,127.64
2019-20	1,476.33	12,030.47	7.88	0.00	0.00	0.00	1,108.49	16,933.94
2020-21	1,481.98	-	-	0.00	0.00	0.00	9,62.00	14,813.81
2021-22	0.00	0.00	0.00	1,648.61	13,383.39	7.8	2,198	37,195

Year	Gen. on Gas (GWh)	Gas Consumption		Gen. on RFO (GWh)	RFO Consumption		Cost of Generation (Paisa/kWh)	Overall Fuel Cost of Generation (Rs. Million)
		Total (MMCFT)	Cft/kWh (Average)		(000 M.Ton)	(Kg/kWh)		
SPS Faisalabad (GENCO-III)								
2017-18	6.26	85.13	11.86	0.00	0.00	0.00	4,094.50	41.29
2018-19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2019-20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2020-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2021-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Power Station	Year	Gen. on Gas (GWh)	Gas Consumption		Cost of Generation (Paisa/kWh)	Overall Fuel Cost of Generation (Rs. Million)
			Total (MMCFT)	Cft/kWh (Average)		
GTPS Kotri (GENCO-I)	2017-18	94.92	1,258.87	13.26	677.60	643.16
	2018-19	37.19	552.03	14.89	936.20	347.06
	2019-20	0.00	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00	0.00
TPS Guddu (Units 1-4) (GENCO-II)	2017-18	258.11	4,209.89	14.81	609.80	1,733.15
	2018-19	10.02	171.43	14.63	599.89	70.29
	2019-20	0.00	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00	0.00
TPS Guddu (Units 5-10) (GENCO-II)	2017-18	3,617.95	43,758.57	11.89	461.37	16,980.30
	2018-19	3,467.30	43,384.35	12.28	645.72	22,808.77
	2019-20	1,294.84	20,020.65	15.16	1,033.77	13,648.88
	2020-21	1,477.10	23,253.11	15.74	991.80	14,650.08
	2021-22	1385.71	21,394.19	15.44	1023.71	14,185.59
TPS Guddu (Units 11-13) (GENCO-II)	2017-18	1,043.97	16,311.50	15.56	605.51	6,348.11
	2018-19	837.20	13,445.69	15.95	806.43	6,799.87
	2019-20	311.56	6,182.73	19.67	1,381.28	4,341.99
	2020-21	223.96	4,673.71	20.87	1,160.08	2,598.15
	2021-22	148.30	2,411.30	16.26	1129.09	1,674.39
TPS Guddu (Units 14-16) (GENCO-II)	2017-18	3,855.08	39,464.48	10.04	413.31	16,242.95
	2018-19	5,069.78	44,942.71	8.67	475.07	24,638.39
	2019-20	4,315.35	41,643.01	9.43	729.98	31,501.33
	2020-21	3,123.82	30,291.33	9.70	695.86	21,737.45
	2021-22	2,609.95	25,472.57	9.76	687.11	17,933.18
TPS Quetta (Isolated Generation) (GENCO-II)	2017-18	0.00	0.00	0.00	0.00	0.16
	2018-19	0.00	0.00	0.00	0.00	0.00
	2019-20	0.00	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00	0.00

	Year	Generation on Coal (GWh)	Coal Consumption (000 M. Tons)	Coal Consumption (kg/kWh)	Cost of Generation (Paisa/kWh)	Overall Fuel Cost of Generation (Rs. Million)
FBC Lakhara (GENCO-IV)	2017-18	3.39	5.30	1.01	2,023.72	22.50
	2018-19	0.06	0.26	4.04	2,373.65	1.45
	2019-20	0.00	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00	0.00

*Note: Net Electricity Generation during FY 2017-18, 2018-19 and 2019-20. * TPS Nandipur Electricity Generation on RLNG.*

Source: GENCOs

TABLE 19

Auxiliary Consumption and other Factors (GENCOs)

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
TPS Jamshoro (GENCO-I)	2017-18	214.07	10.67	650	79.17	26.94	32.25	87.94
	2018-19	117.16	11.88	550	91.24	57.38	71.06	71.10
	2019-20	25.56	10.25	320	75.49	45.07	0.94	74.57
	2020-21	24.17	10.28	290	66.01	40.85	0.88	95.83
	2021-22	23.29	8.347	355	83.22	50.00	4.32	90.22
GTPS Kotri (GENCO-I)	2017-18	6.89	6.77	102	11.39	59.86	8.07	92.59
	2018-19	3.73	9.14	81	5.75	56.20	3.23	80.47
	2019-20	0.00	0.00	0	0.00	0.00	0.00	86.17
	2020-21	0.00	0.00	0	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0	0.00	0.00	0.00	0.00
TPS Guddu (Units 1-4) (GENCO-II)	2017-18	25.43	8.95	150	21.63	71.43	19.09	49.39
	2018-19	1.69	14.45	110	1.22	52.38	0.79	50.00
	2019-20	0.00	0.00	0	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0	0.00	0.00	0.00	0.00
TPS Guddu (Units 5-10) (GENCO-II)	2017-18	62.49	1.70	608	69.10	101.33	79.27	91.79
	2018-19	64.89	1.84	582	69.28	97.00	76.08	90.87
	2019-20	25.46	0.63	468	32.12	78.00	28.36	83.17
	2020-21	19.20	0.60	440	38.82	28.47	31.06	66.82
	2021-22	27.612	0.73	393	41.05	26.89	28.76	78.95
TPS Guddu (Units 11-13) (GENCO-II)	2017-18	4.43	0.42	252	47.49	96.92	46.03	46.09
	2018-19	6.13	0.73	252	38.20	96.92	37.02	60.61
	2019-20	2.78	0.13	252	14.20	96.92	13.76	62.33
	2020-21	2.45	0.34	160	16.15	6.23	6.46	22.26
	2021-22	0.883	0.59	95	17.93	6.55	6.55	28.22
TPS Guddu (Units 14-16) (GENCO-II)	2017-18	74.90	1.91	769	58.34	102.95	62.24	76.06
	2018-19	116.50	2.25	798	72.52	106.83	80.29	90.32
	2019-20	101.87	1.80	795	61.80	106.43	68.16	86.44
	2020-21	77.98	1.70	748	47.67	48.93	48.93	69.92
	2021-22	76.717	2.03	600	51.12	41.06	42.55	57.07
TPS Quetta (Isolated Generation) (GENCO-II)	2017-18	0.37	0.00	0	0.00	0.00	0.00	0.00
	2018-19	0.00	0.00	0	0.00	0.00	0.00	0.00
	2019-20	0.00	0.00	0	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0	0.00	0.00	0.00	0.00
TPS Muzaffargarh (GENCO-III)	2017-18	342.22	10.15	1,100	34.99	81.48	28.51	86.61
	2018-19	113.75	12.06	1,105	9.74	81.85	7.97	98.98
	2019-20	51.44	0.60	660	5.79	48.89	3.23	79.83
	2020-21	37.08	10.32	635	3.76	74.44	2.8	77.48
	2021-22	29.75	11.37	340	8.25	53.97	4.45	74.26
SPS Faisalabad (GENCO-III)	2017-18	0.93	13.00	42	1.95	31.82	0.86	34.18
	2018-19	0.00	0.00	0	0.00	0.00	0.00	0.00
	2019-20	0.00	0.00	0	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0	0.00	0.00	0.00	0.00
	2021-22	-	-	-	-	-	-	-
GTPS Faisalabad (GENCO-III)	2017-18	7.18	6.48	118	10.72	48.36	6.02	97.51
	2018-19	9.74	4.86	119	15.08	48.77	15.74	90.68
	2019-20	5.06	0.00	0	0.00	0.00	0.00	91.89
	2020-21	6.17	39.54	80	2.23	55.56	2.62	96.25
	2021-22	10.74	10.01	85	14.42	59.03	8.51	82.48
TPS Nandipur (GENCO-III)	2017-18	82.30	3.34	526	53.47	114.35	61.15	88.44
	2018-19	52.70	2.95	561	36.31	36.05	39.10	90.81
	2019-20	52.10	2.89	541	32.23	30.87	33.47	95.31
	2020-21	57.51	2.87	541	32.48	31.10	33.73	95.03
	2021-22	49.73	2.98	541	35.84	34.31	37.21	90.81
FBC Lakhra (GENCO-IV)	2017-18	3.90	74.25	32	1.87	51.28	0.96	n.p
	2018-19	35.67	58.47	15	0.05	24.04	0.01	n.p
	2019-20	0.00	0.00	0	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0	0.00	0.00	0.00	0.00

Source: GENCOs

TABLE 20
Heat Rate and Plant Efficiency Data (GENCOs)

Power Station	Year	Heat Rate (Btu/kWh)		Plant Efficiency (%)	
		On Gross Generation	On Net Export to NTDC	On Gross Generation	On Net Export to NTDC
TPS Jamshoro (GENCO-I)	2017-18	11,099.13	12,424.96	30.75	27.46
	2018-19	11,271.12	12,774.07	30.28	26.71
	2019-20	11,622.72	12,950.44	29.36	26.35
	2020-21	11,186.50	12,468.66	30.51	27.37
	2021-22	11438.31	12996.67	29.83	26.26
GTPS Kotri (GENCO-I)	2017-18	12,627.00	13,549.00	27.03	25.19
	2018-19	13,405.16	14,752.95	25.46	23.13
	2019-20	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0	0	0	0
TPS Guddu (Units 1-4) (GENCO-II)	2017-18	12,196.00	13,395.00	27.98	25.48
	2018-19	11,998.00	14,023.00	28.45	24.34
	2019-20	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00
TPS Guddu (Units 5-10) (GENCO-II)	2017-18	9,227.00	9,387.00	36.99	36.36
	2018-19	8,874.00	9,267.00	38.46	36.83
	2019-20	10,075.00	10,280.00	33.88	33.20
	2020-21	10,526.00	10,663.00	32.42	32.00
	2021-22	9,687	9,880	35.23	34.54
TPS Guddu (Units 11-13) (GENCO-II)	2017-18	12,110.00	12,161.00	28.18	28.06
	2018-19	11,019.00	12,299.00	30.97	27.75
	2019-20	13,844.00	13,977.00	24.65	24.42
	2020-21	15,165.00	15,331.00	22.50	22.26
	2021-22	12,176	12,248	28.03	27.86
TPS Guddu (Units 14-16) (GENCO-II)	2017-18	7,070.00	7,205.00	48.27	47.37
	2018-19	6,798.00	6,901.00	50.21	49.46
	2019-20	5,933.00	6,097.00	57.53	55.98
	2020-21	5,994.00	6,144.00	56.94	55.55
	2021-22	6,091	6,270	56.03	54.43
TPS Quetta (Isolated Generation) (GENCO-II)	2017-18	0.00	0.00	0.00	0.00
	2018-19	0.00	0.00	0.00	0.00
	2019-20	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00
TPS Muzaffargarh (GENCO-III)	2017-18	10,584.33	11,780.40	32.24	28.97
	2018-19	10,729.67	12,202.05	31.81	27.97
	2019-20	10,683.58	11,037.73	31.94	30.92
	2020-21	10805.4	24145	31.83	23.32
	2021-22	9618.1	10852.24	35.49	31.45
SPS Faisalabad (GENCO-III)	2017-18	11,442.72	13,152.91	29.83	25.95
	2018-19	0.00	0.00	0.00	0.00
	2019-20	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0	0	0	0
GTPS Faisalabad (GENCO-III)	2017-18	11,412.37	12,202.53	29.91	27.96
	2018-19	11,678.00	11,331.00	30.12	29.02
	2019-20	0.00	0.00	0.00	0.00
	2020-21	12,754.00	14,285.00	26.76	23.89
	2021-22	11431	12703	29.87	26.86
TPS Nandipur (GENCO-III)	2017-18	7,505.00	7,764.00	45.47	43.95
	2018-19	7,187.00	7,416.00	47.48	46.02
	2019-20	7,032.00	7,281.00	48.52	46.87
	2020-21	6761.80	6961.56	50.46	49.01
	2021-22	6876.28	7032.32	49.62	48.52
FBC Lakhra (GENCO-IV)	2017-18	13,424.00	n.p.	25.42	n.p.
	2018-19	53,628.60	0.00	6.36	0.00
	2019-20	0.00	0.00	0.00	0.00
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00

Note: Authority approved heat rate numbers are available on website
Source: GENCOs

TABLE 21

Fuel Consumption and Cost of Generation Data (IPPs)

(Residual Furnace Oil based Power Plant)

Power Station	Year	Units Generated (GWh) (Net)	Quantity of RFO Used (000 M. Tons)	Average Fuel Cost (Rs./ kWh)	Overall Generation Cost (Rs./kWh)
Lal Pir Power	2017-18	1,089.06	269.53	10.16	13.70
	2018-19	613.80	153.27	13.74	20.95
	2019-20	186.32	48.24	15.25	n.p.
	2020-21	620.78	151.87	14.53	n.p.
	2021-22	1022.67	244.37	27.87	n.p
Pak Gen. Power	2017-18	1,237.28	305.85	10.11	13.25
	2018-19	495.56	125.04	14.14	22.99
	2019-20	149.76	38.39	15.49	n.p.
	2020-21	445.54	109.16	15.05	n.p.
	2021-22	1304.35	312.92	27.54	n.p
Hub Power	2017-18	5,196.60	1,245.89	11.58	16.08
	2018-19	814.43	204.13	16.43	n.p.
	2019-20	32.38	9.62	17.10	19.20
	2020-21	188.55	47.59	18.80	20.97
	2021-22	1228.71	30.36	25.94	28.37
Saba Power	2017-18	465.88	120.21	12.59	14.12
	2018-19	225.41	59.82	17.76	22.38
	2019-20	50.83	14.25	18.23	40.06
	2020-21	121.65	33.15	17.89	28.12
	2021-22	329.67	88.24	31.33	35.94
Kohinoor Energy	2017-18	645.40	124.92	9.44	11.35
	2018-19	387.44	75.05	12.98	17.90
	2019-20	363.86	70.11	12.16	17.26
	2020-21	337.07	64.82	11.99	16.00
	2021-22	515.81	99.68	22.33	24.45
Attock Gen.	2017-18	912.45	174.29	8.95	14.25
	2018-19	532.18	97.21	12.89	20.86
	2019-20	320.96	58.53	10.12	20.24
	2020-21	384.03	71.94	11.56	20.75
	2021-22	721.82	131.11	21.62	32.98
Atlas Power	2017-18	1,246.45	245.18	n.p.	n.p.
	2018-19	691.30	132.07	n.p.	n.p.
	2019-20	259.33	48.96	n.p.	n.p.
	2020-21	517.08	102.33	n.p.	n.p.
	2021-22	1007.49	199.22	n.p.	n.p.
Nishat Power	2017-18	1,171.19	230.38	9.29	9.29
	2018-19	675.10	132.80	13.04	13.04
	2019-20	277.46	54.59	13.83	13.83
	2020-21	523.40	102.96	12.50	12.50
	2021-22	794.25	156.23	22.82	22.82
Nishat Chunian	2017-18	1,099.67	221.80	10.41	11.73
	2018-19	599.74	117.97	13.64	19.04
	2019-20	351.23	69.09	14.19	23.40
	2020-21	537.57	105.74	12.11	16.27
	2021-22	905.86	173.582	22.34	25.29
Liberty Power Tech.	2017-18	1,175.61	224.14	n.p.	n.p.
	2018-19	776.26	148.78	n.p.	n.p.
	2019-20	458.54	88.12	n.p.	n.p.
	2020-21	606.66	116.07	n.p.	n.p.
	2021-22	945.606	178.17	n.p.	n.p.
Narowal Energy	2017-18	1,199.68	234.04	9.39	12.88
	2018-19	636.13	125.03	12.90	17.09
	2019-20	338.08	67.32	13.42	18.33
	2020-21	496.06	98.00	12.35	16.83
	2021-22	867.50	170.42	22.71	26.35

(Gas based Power Plant)					
Power Station	**Year**	**Units Generated (GWh) (Net)**	**Quantity of Gas Used (MMBTU)**	**Average Fuel Cost (Rs./ kWh)**	**Overall Generation Cost (Rs./kWh)**
Altern Energy	2017-18	145.12	n.p.	n.p.	n.p.
	2018-19	22.03	n.p.	n.p.	n.p.
	2019-20	3.73	36259	14.30	57.28
	2020-21	12.40	126054	10.66	23.37
	2021-22	0	0	0	0
Fauji Kabirwala	2017-18	1,017.26	404931	9.16	9.94
	2018-19	563.13	259336	12.19	13.10
	2019-20	346.32	2994671	11.93	15.04
	2020-21	389.96	3518311	9.35	12.24
	2021-22	357.21	3183962	24.05	26.81
Habibullah Coastal	2017-18	880.33	7416480	3.37	4.48
	2018-19	716.78	6231700	4.93	7.28
	2019-20	108.37	1006228	n.p.	n.p.
	2020-21	-	-	-	-
	2021-22	-	-	-	-
Rousch Power	2017-18	2,591.64	21012425	8.58	10.20
	2018-19	1,035.85	8699965	11.98	15.92
	2019-20	217.53	1901263	13.21	28.13
	2020-21	284.36	2403898	12.25	23.61
	2021-22	495.90	4249153	25.26	31.81
TNB Liberty Power	2017-18	1,041.56	8776938	6.47	8.49
	2018-19	1,307.61	10910993	10.15	12.40
	2019-20	896.74	7946696	12.26	15.63
	2020-21	983.33	8498852	9.00	12.00
	2021-22	1054.06	8815307	11.05	13.89
Engro Power Gen. Qadir-pur	2017-18	1,668.42	13221041	4.16	9.02
	2018-19	1,385.13	11258742	5.58	6.22
	2019-20	700.74	6077764	7.68	8.99
	2020-21	648.50	6169067	7.15	8.57
	2021-22	793.86	6634350	7.9	9.1
Davis Energen.	2017-18	8.82	85456	15.46	16.15
	2018-19	Complex stopped due to gas stoppage (non-payment)			
	2019-20	Complex stopped due to gas stoppage (non-payment)			
	2020-21	Complex stopped due to gas stoppage (non-payment)			
	2021-22	-			

Source: IPPs

Year	RLNG			RFO		HSD			Average Fuel Cost (Rs./kWh)	Overall Generation Cost (Rs./kWh)
	Units Generated (GWh) (Net)	Quantity of RLNG used (MMBTU)	Cost of Fuel (Rs. in Million)	Units Generated (GWh) (Net)	Quantity of RFO used (000 M.Tons)	Units Generated (GWh) (Net)	Quantity of HSD used (000 Liters)	Cost of Fuel (Rs. in Million)		
Kot Addu Power Company Limited (Dual Fuel)										
2017-18	4,101.22	36631183	41,723.00	3,272.72	632	62.81	24802	1,495.00	9.82	10.56
2018-19	3,514.06	30440566	43,642.00	1,442.41	286	2.92	7321	468.00	12.90	14.24
2019-20	2,523.98	21678499	30,793.00	952.69	188	0.00	3919	302.00	12.70	14.40
2020-21	2,313.21	20013290	23,701.00	1,138.92	223	110.11	29553	2,660.00	11.33	12.84
2021-22	-	-	-	3219	638	59	21028	n.p	n.p	n.p

Power Station	Year	Gas			HSD			RLNG			Average Fuel Cost (Rs./ kWh)	Overall Generation Cost (Rs./ kWh)
		Units Generated (GWh) (Net)	Quantity of Gas used (MMBTU)	Cost of Fuel (Rs. in Million)	Units Generated (GWh) (Net)	Quantity of HSD used (Metric Ton)	Cost of Fuel (Rs. in Million)	Units Generated (GWh)	Quantity of RLNG used (MMBTU)	Cost of Fuel (Rs. in Million)		
Sapphire Electric	2017-18	-	-	-	171.07	37706	2,248.56	643.89	4883647	5,959.36	9.70	10.02
	2018-19	-	-	-	2.49	593	39.64	806.02	6252321	8,898.82	10.76	11.14
	2019-20	-	-	-	0.22	2424	169.98	296.54	2337975	3,546.50	12.41	16.53
	2020-21	-	-	-	130.05	28700	2,573.97	437.99	3544896	4,727.40	12.85	14.71
	2021-22				80.32	17477	1327.77	700.18	5568946	15.644.76	21.75	23.35
Saif Power	2017-18	-	-	-	160.28	36306	2,166.54	681.28	5146931	6,262.62	10.35	15.67
	2018-19	-	-	-	2.77	570	39.85	825.43	6403632	9,105.83	12.26	17.44
	2019-20	-	-	-	0.12	53	3.73	476.18	3738827	5,027.09	12.03	21.68
	2020-21	-	-	-	33.79	7167	637.88	605.62	4757884	5,969.31	10.52	15.24
	2021-22				82.582	17951	2061.73	652.41	5105962	14649.56	23.58	28.13
Orient Power	2017-18	-	-	-	143.88	33309	1,965.00	697.51	5270563	6,430.00	9.98	12.19
	2018-19	-	-	-	3.37	799	47.00	874.43	6795121	9,696.00	11.10	12.85
	2019-20	-	-	-	0.33	121	4.00	337.67	2735769	4,075.00	12.07	16.83
	2020-21	-	-	-	57.18	18413	1618	540.74	4334139	5,670.00	11.69	14.58
	2021-22				62.08	13634	1432	774.25	6167599	17318.00	22.42	25.20
Foundation Power	2017-18	1,392.39	10818257	-	0.00	0	-	-	-	-	3.97	4.995
	2018-19	1,330.60	10526917	-	0.00	0	-	-	-	-	n.p.	n.p.
	2019-20	777.30	6578836	-	0.00	0	-	-	-	-	n.p.	n.p.
	2020-21	1,000.37	8258762	-	0.00	0	-	-	-	-	n.p.	n.p.
	2021-22	1275.97	10020395	-	0.096	82092					n.p.	n.p.
Halmore Power	2017-18	-	-	-	246.14	52449	3,115.91	624.87	4953062	5,976.66	10.26	15.24
	2018-19	-	-	-	3.25	791	47.27	609.66	4849884	7,003.45	11.50	13.54
	2019-20	-	-	-	-	-	-	347.69	2846605	4,039.40	11.62	15.72
	2020-21	-	-	-	38.12	11088	941.84	471.67	3816584	4,717.45	10.89	13.52
	2021-22	-	-	-	48	10385	1062	628	4986056	14539	23.08	25.81
Uch Power	2017-18	4,442.99	33721523	15,425.00	0.00	-	-	-	-	-	-	4.09
	2018-19	3,895.85	29954223	16,323.00	0.00	-	-	-	-	-	-	4.33
	2019-20	4,087.33	31456577	19,270.00	0.00	-	-	-	-	-	-	5.05
	2020-21	4,088.44	31503489	27,776.00	0.00	-	-	-	-	-	-	-
	2021-22	4.297.00	32978917	34,986.00	3.5	0.759	44.0	-	-	-	7.32	8.25
Uch-II Power	2017-18	2,593.04	19524716	12,785.00	0.00	-	-	-	-	-	3.83	5.23
	2018-19	3,018.37	22553022	17,030.00	0.00	-	-	-	-	-	5.12	6.78
	2019-20	2,148.02	16349080	15,263.00	0.00	-	-	-	-	-	4.58	6.33
	2020-21	2,339.37	17715815	22,505.00	0.00	-	-	-	-	-		
	2021-22	2.825.00	21106347	19.306.30	4.40	914.00	100.50				6.06	7.98

Note: Net Electricity Generation during FY 2017-18, 2018-19, 2019-20 and 2020-21.

** Electricity Generated on RLNG instead of Gas at Rousch Power, Davis Energen.*

Source: IPPs

TABLE 22
Auxiliary Consumption and other Factors (IPPs)

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Lal Pir Power	2017-18	76.29	6.55	350	58.61	35.52	n.p.	85.17
	2018-19	42.78	6.52	350	54.25	20.02	n.p.	76.29
	2019-20	15.34	7.61	350	44.60	6.08	n.p.	93.11
	2020-21	41.26	6.23	350	63.31	20.25	n.p.	96.91
	2021-22	68.38	6.27	350	77.85	33.36	n.p	92.61
Pak Gen. Power	2017-18	86.89	6.56	350	58.95	40.35	n.p.	86.41
	2018-19	35.96	6.77	350	50.65	16.16	n.p.	87.77
	2019-20	11.62	7.20	350	48.71	4.88	n.p.	83.77
	2020-21	31.32	6.57	350	63.99	14.53	n.p.	96.10
	2021-22	85.85	6.18	350	78.91	42.54	n.p	91.82
Altern Energy	2017-18	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
	2018-19	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.	n.p.
	2019-20	0.25	6.27	15	2.89	1.45	1.50	n.p.
	2020-21	0.81	6.10	15	9.53	4.83	4.98	n.p.
	2021-22	0	0	0	0	0	0	97
Fauji Kabirwala	2017-18	31.42	3.00	156	92.09	78.16	87.14	89.58
	2018-19	18.01	3.10	153	54.71	43.81	44.67	82.94
	2019-20	11.67	3.26	141	36.56	27.27	28.21	98.47
	2020-21	13.13	3.26	147	48.86	30.54	31.16	96.25
	2021-22	12.22	3.31	147	45.30	27.96	28.25	92.69
Habibullah Coastal	2017-18	17.81	1.97	126	81.71	79.72	99.42	97.46
	2018-19	21.48	2.91	124	74.69	65.15	93.85	94.40
	2019-20	6.62	5.78	75	45.93	39.04	99.09	99.92
	2020-21	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hub Power	2017-18	375.34	6.73	1,200	49.48	49.48	53.28	n.p.
	2018-19	71.55	7.96	1,200	7.87	7.87	9.45	n.p.
	2019-20	4.00	10.06	1,200	0.34	0.34	0.37	n.p.
	2020-21	17.74	9.41	1,200	1.79	1.79	1.96	n.p.
	2021-22	104.03	8.47	1,200	11.69	11.69	12.84	91.04
KAPCO	2017-18	171.00	2.30	1,579	63.30	86.00	73.60	86.00
	2018-19	120.00	2.40	1,506	42.20	91.80	46.00	91.80
	2019-20	88.00	2.50	1,449	29.50	88.90	33.20	88.90
	2020-21	105.00	2.90	1,422	30.30	85.60	35.40	85.60
	2021-22	168.00	3.30	1.525	42.40	90.00	47.00	90.00
Kohinoor Energy	2017-18	20.45	3.07	124	91.87	59.42	64.31	88.00
	2018-19	12.45	3.11	124	85.82	35.67	39.06	95.15
	2019-20	11.55	3.08	124	86.89	33.41	36.16	98.01
	2020-21	10.60	3.05	124	86.03	31.04	33.85	97.71
	2021-22	16.35	3.07	124	90.82	47.49	51.76	92.38
Rousch Power	2017-18	49.99	1.93	454	76.81	74.90	85.46	96.00
	2018-19	28.41	2.74	418	41.52	29.94	45.32	95.00
	2019-20	11.73	5.39	411	7.41	6.29	7.06	97.00
	2020-21	12.80	4.51	413	9.05	8.20	8.70	97.00
	2021-22	17.74	3.58	429	28.41	14.33	27.83	91.40
Saba Power	2017-18	30.75	6.17	134	48.21	42.51	42.51	88.17
	2018-19	16.33	6.73	134	23.73	20.57	20.57	86.69
	2019-20	4.08	7.40	126	5.13	4.63	4.63	90.20
	2020-21	9.08	6.92	123	12.95	11.32	11.32	87.43
	2021-22	21.99	6.44	124	35.25	30.10	30.10	85.41
TNB Liberty Power	2017-18	19.66	1.85	221	58.66	56.00	89.38	79.80
	2018-19	31.62	2.35	226	81.04	70.30	85.74	93.02
	2019-20	25.46	2.75	215	67.70	48.08	71.56	94.14
	2020-21	20.49	2.03	220	74.46	53.06	81.42	91.05
	2021-22	17.17	1.60	225	86.96	56.78	87.82	99.03
Uch Power	2017-18	71.30	1.57	551	92.05	93.56	96.84	95.16
	2018-19	62.84	1.58	549	80.96	82.02	96.79	83.63
	2019-20	72.87	1.75	551	84.41	85.32	94.06	89.83
	2020-21	72.60	1.74	550	84.97	86.38	90.17	94.54
	2021-22	75.80	1.73	550	89.17	90.22	94.87	94.20
Attock Gen.	2017-18	23.55	2.52	158	66.03	66.69	91.77	91.12
	2018-19	15.51	2.90	158	37.48	37.94	52.93	96.93
	2019-20	8.97	2.77	158	22.66	22.92	32.92	99.60
	2020-21	11.28	2.85	158	28.00	38.00	38.00	98.19
	2021-22	19.63	2.65	157	52.00	53.00	69.00	90.28

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Atlas Power	2017-18	48.37	3.88	215	66.54	66.54	71.82	n.p
	2018-19	24.61	3.68	215	35.66	35.66	39.31	n.p
	2019-20	9.11	3.51	215	13.82	13.82	15.40	n.p
	2020-21	19.55	3.83	215	27.27	27.27	30.34	n.p
	2021-22	37.98	3.77	215	53.77	53.77	58.11	n.p
Engro Power Gen. Qadirpur	2017-18	46.00	3.00	220	91.00	93.00	98.00	93.00
	2018-19	43.20	3.12	220	79.17	96.11	82.79	92.00
	2019-20	28.99	4.14	218	38.79	95.81	40.39	92.00
	2020-21	31.12	4.58	151	40.29	97.03	41.81	90.00
	2021-22	32.95	4	209	50	84	60	n.p
Saif Power	2018-19	22.94	2.65	224	50.50	45.98	46.98	88.92
	2018-19	23.16	2.72	224	47.90	44.76	45.96	94.34
	2019-20	14.09	2.87	206	28.55	25.79	26.47	92.34
	2020-21	18.51	2.81	214	37.09	34.65	35.87	94.00
	2021-22	21.04	2.78	212	43.36	39.75	41.45	94.77
Orient Power	2017-18	22.47	2.67	219	43.86	45.16	56.05	78.00
	2018-19	23.81	2.71	218	45.98	47.11	59.48	93.00
	2019-20	12.82	3.79	210	18.41	18.14	27.51	93.00
	2020-21	20.04	3.21	214	33.21	33.46	48.57	93.00
	2021-22	24.14	2.89	218	43.87	44.89	59.37	92.00
Nishat Power	2017-18	32.42	2.69	195	77.62	68.70	77.62	92.40
	2018-19	18.71	2.70	195	41.88	39.60	41.88	96.81
	2019-20	8.22	2.88	195	17.29	16.27	17.29	95.22
	2020-21	14.93	2.77	195	32.65	30.73	32.65	96.37
	2021-22	22.41	2.74	195	51.13	46.61	51.13	93.70
Nishat Chunian	2017-18	27.93	2.47	196	92.90	64.14	79.60	90.34
	2018-19	15.69	2.55	196	92.90	64.14	79.60	95.44
	2019-20	9.79	2.71	196	54.73	20.43	21.84	89.09
	2020-21	14.58	2.64	196	66.26	31.35	47.95	95.89
	2021-22	23.41	2.58	196	71.77	51.47	56.04	n.p
Sapphire Electric Power	2017-18	33.59	3.97	224	56.77	43.88	45.69	81.52
	2018-19	24.44	2.94	222	46.73	43.51	44.70	97.74
	2019-20	13.22	4.41	208	17.90	16.12	16.62	95.32
	2020-21	20.28	3.57	221	35.73	30.57	31.47	88.89
	2021-22	24.30	3.11	223	48.08	42.01	43.19	91.14
Halmore Power	2017-18	26.61	3.05	221	50.49	49.13	51.23	94.51
	2018-19	20.68	3.37	214	37.36	37.36	39.09	82.14
	2019-20	14.27	4.10	204	20.04	20.04	19.99	99.02
	2020-21	19.06	3.67	215	32.06	32.06	33.54	82.67
	2021-22	20.27	3.00	211	39.73	39.73	41.94	89.00
Narowal Energy	2017-18	22.35	1.83	216	64.05	64.05	68.89	n.p.
	2018-19	12.95	2.00	214	33.96	33.96	35.75	n.p.
	2019-20	7.11	2.07	214	18.00	18.00	18.65	n.p.
	2020-21	10.03	1.98	214	26.41	26.41	27.97	n.p.
	2021-22	15.68	1.78	214	46.31	46.31	52.75	87.80
Liberty Power Tech.	2017-18	25.55	2.13	196	96.50	68.42	71.02	95.42
	2018-19	17.33	2.18	196	96.20	45.18	47.11	98.16
	2019-20	10.65	2.27	196	95.20	26.61	28.11	97.78
	2020-21	13.88	2.24	196	95.30	35.50	37.24	96.85
	2021-22	20.18	2.13	196	95.70	53.86	56.50	n.p
Foundation Power	2017-18	34.97	2.46	198	94.48	94.10	99.37	94.48
	2018-19	34.51	2.51	198	n.p.	90.87	89.70	93.83
	2019-20	27.43	3.01	195	n.p.	52.74	51.60	92.86
	2020-21	28.99	2.63	196	n.p.	71.86	70.81	97.84
	2021-22	32.31	2.39	195	n.p	88.51	88.31	91.75
Davis Energen.	2017-18	0.54	6.00	8	15.10	11.30	59.30	n.p.
Uch-II Power	2017-18	60.88	2.28	375	79.13	80.71	87.34	90.62
	2018-19	67.81	2.19	367	94.01	94.66	95.60	98.40
	2019-20	55.12	2.49	355	68.83	69.29	72.87	94.82
	2020-21	57.00	2.37	371	71.96	72.97	76.05	94.58
	2021-22	65.30	2.25	362	89.18	89.83	95.81	93.99
Huaneng Shandong Ruyi	2017-18	76.48	5.79	1,244	60.20	56.74	86.00	94.00
	2018-19	76.48	5.79	1,244	75.37	71.03	86.00	95.00
	2019-20	76.48	5.79	1,244	58.15	54.80	90.00	98.00
	2020-21	76.48	5.79	1,244	67.38	63.50	94.09	96.00
	2021-22	76.48	5.79	1244	n.p	59.01	99.25	100
QATPL (Bhikki)	2017-18	25.26	2.50	1,146	92.09	83.87	92.09	97.87
	2018-19	157.73	2.50	1,171	70.50	60.39	70.50	89.45
	2019-20	131.74	2.47	1,163	53.91	51.88	53.91	96.74
	2020-21	188.62	2.58	1,181	77.27	71.84	77.27	93.74
	2021-22	171.39	2.74	1,126	67.11	61.80	67.11	94.68

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
NPPMCL (Haveli Bahadur Shah)	2017-18	28.71	2.17	1,238	93.22	92.67	93.45	98.83
	2018-19	175.57	2.41	1,261	77.54	69.93	79.42	89.88
	2019-20	189.06	2.61	1,261	69.92	69.86	70.03	95.81
	2020-21	191.82	2.44	1,246	78.58	77.07	80.35	95.92
	2021-22	182.00	2.37	1,221	87.16	74.40	87.74	84.35
NPPMCL (Balloki)	2018-19	175.30	3.45	1,219	68.21	50.43	68.80	76.85
	2019-20	219.95	3.59	1,214	62.06	56.78	62.10	94.82
	2020-21	223.89	3.58	1,217	75.77	58.73	75.83	81.09
	2021-22	255.57	3.43	1,206	81.47	70.38	81.45	89.66
Port Qasim Electric Power	2017-18	245.23	6.91	1,243	84.06	94.16	69.15	94.65
	2018-19	501.43	6.23	1,243	85.90	94.16	65.32	99.11
	2019-20	558.13	5.86	1,243	86.34	94.16	77.36	99.59
	2020-21	483.97	5.47	1,243	89.44	94.16	72.41	98.96
	2021-22	444.94	5.93	1243	83.83	94.16	64.68	88
China Power Hub	2019-20	364.91	6.09	660	59.02	59.32	82.95	95.44
	2020-21	465.01	5.55	660	72.41	72.49	93.74	94.57
	2021-22	376.74	5.28	660	61.83	61.65	94.88	73
Engro Powergen Thar	2019-20	403.11	9.00	612	80.90		93.50	85.30
	2020-21	360.97	9.00	608	74.10	91.71	90.00	81.40
	2021-22	335.73	9.00	606	69.85	77.87	96.22	71.88
Lucky Electric	2021-22	88.36	7.63	607	71.97	71.97	71.64	75.74

Source: IPPs

TABLE 23
Heat Rate and Plant Efficiency Data (IPPs)

Power Station	Year	Heat Rate (Btu/kWh)		Plant Efficiency (%)	
		On Gross Generation	On Net Export to NTDC	On Gross Generation	On Net Export to NTDC
Lal Pir Power	2017-18	8,945.63	9,572.25	38.15	35.65
	2018-19	9,053.00	9,684.00	37.69	35.24
	2019-20	9,274.86	10,038.39	36.79	33.99
	2020-21	8,855.96	9,444.58	38.53	36.13
	2021-22	8653.68	9232.32	39.43	36.96
Pak Gen. Power	2017-18	8,933.40	9,560.79	38.20	35.69
	2018-19	9,124.72	9,786.82	37.40	34.87
	2019-20	9,224.70	9,940.67	36.99	34.33
	2020-21	8,835.67	9,456.69	38.62	36.09
	2021-22	8697.58	9270.03	39.24	36.81
Altern Energy	2017-18	n.p.	n.p.	n.p.	n.p.
	2018-19	n.p.	n.p.	n.p.	n.p.
	2019-20	9,115.80	9,725.00	37.40	35.10
	2020-21	9,543.70	10,163.50	35.80	33.60
	2021-22	0	0	0	0
Fauji Kabirwala	2017-18	7,608.51	7,843.99	44.84	43.50
	2018-19	7,608.93	7,852.21	44.84	43.45
	2019-20	7,685.32	7,944.45	44.40	42.95
	2020-21	7,863.36	8,128.24	43.39	41.98
	2021-22	7,764.49	8,030.02	43.94	42.49
Habibullah Coastal	2017-18	8,035.62	8,394.52	42.47	40.66
	2018-19	8,454.51	8,666.81	40.37	39.38
	2019-20	8,755.07	9,251.66	38.98	36.89
	2020-21	0.00	0.00	0.00	0.00
	2021-22	0.00	0.00	0.00	0.00
Hub Power	2017-18	8,382.94	9,152.16	40.70	37.28
	2018-19	8,222.22	8,934.61	41.50	38.19
	2019-20	7,951.83	8,791.88	42.91	38.81
	2020-21	8,206.18	8,832.85	41.58	38.63
	2021-22	8385.67	8853.47	40.69	38.54
KAPCO	2017-18	7,997.00	8,181.00	45.00	44.00
	2018-19	7,996.00	8,179.00	45.00	44.00
	2019-20	7,920.00	8,102.00	45.50	44.40
	2020-21	7,882.00	8,095.00	45.70	44.50
	2021-22	8.039.00	8.301.00	44.80	43.40
Kohinoor Energy	2017-18	7,741.54	7,986.85	44.08	42.72
	2018-19	7,738.19	7,986.85	44.08	42.72
	2019-20	7,741.12	7,986.85	44.08	42.72
	2020-21	7,743.37	7,986.85	44.07	42.72
	2021-22	7,741.49	7,986.85	44.08	42.72

Power Station	Year	Heat Rate (Btu/kWh)		Plant Efficiency (%)	
		On Gross Generation	On Net Export to NTDC	On Gross Generation	On Net Export to NTDC
Rousch Power	2017-18	7,166.19	7,304.41	47.66	46.76
	2018-19	7,364.59	7,566.55	46.38	45.14
	2019-20	7,471.42	7,874.21	45.71	43.38
	2020-21	7,305.60	7,635.36	46.75	44.73
	2021-22	7,452.84	7,719.47	45.83	44.25
Saba Power	2017-18	9,680.00	10,317.00	35.25	33.07
	2018-19	9,896.00	10,610.00	34.48	32.16
	2019-20	10,376.00	11,205.00	32.88	30.45
	2020-21	10131.69	10894.97	33.68	31.32
	2021-22	10,018.35	10,707.41	34.06	31.87
TNB Liberty Power	2017-18	8,288.26	8,467.86	41.17	40.29
	2018-19	8,123.67	8,344.21	42.00	40.89
	2019-20	8,589.48	8,861.71	39.72	38.50
	2020-21	8,428.61	8,627.99	40.48	39.55
	2021-22	8,205.69	8,363.17	41.58	40.80
Uch Power	2017-18	6,712.85	6,847.25	50.83	49.83
	2018-19	6,797.38	6,936.25	50.20	49.19
	2019-20	6,820.72	6,950.81	50.02	49.09
	2020-21	6,826.12	6,950.83	49.98	49.09
	2021-22	6.806.00	6.921.00	50.14	49.30
Attock Gen.	2017-18	7,386.00	7,582.00	46.21	45.00
	2018-19	7,356.00	7,582.00	46.40	45.00
	2019-20	7,366.00	7,582.00	46.33	45.00
	2020-21	7,360.00	7,582.00	46.37	45.00
	2021-22	7,376.00	7,582.00	46.27	45.00
Atlas Power	2017-18	7,400.00	7,584.00	46.10	45.00
	2018-19	7,400.00	7,584.00	46.10	45.00
	2019-20	7,400.00	7,584.00	46.10	45.00
	2020-21	7,400.00	7,584.00	46.10	45.00
	2021-22	7,400.00	7,584.00	46.1	45.00
Engro Power Gen. Qadirpur	2017-18	7,260.00	7,625.00	47.00	45.00
	2018-19	7,260.00	7,705.51	47.00	44.28
	2019-20	7,260.00	7,741.26	47.00	44.08
	2020-21	7,260.00	7,743.06	47.00	44.07
	2021-22	7,260.00	7,713.00	47.00	44.20
Nishat Power	2017-18	7,378.00	7,582.00	46.21	45.00
	2018-19	7,378.00	7,582.00	46.21	45.00
	2019-20	7,364.00	7,582.00	46.29	45.00
	2020-21	7,372.00	7,582.00	46.25	45.00
	2021-22	7,374.00	7,582.00	46.24	45.00
Nishat Chunian	2017-18	7,402.00	7,582.00	46.10	45.00
	2018-19	7,402.00	7,582.00	46.10	45.00
	2019-20	7,402.00	7,582.00	46.10	45.00
	2020-21	7,420.00	7,582.00	46.00	45.00
	2021-22	7420	7582	46.00	45.00
Narowal Energy	2017-18	7,451.00	7,451.00	46.64	45.80
	2018-19	7,737.44	7,885.59	46.53	45.66
	2019-20	7,749.92	7,887.43	46.45	45.65
	2020-21	7,744.22	7,887.14	46.48	45.64
	2021-22	7747.91	7884.41	46.48	45.68
Liberty Power Tech.	2017-18	7,417.70	7,582.54	46.00	45.00
	2018-19	7,417.70	7,582.54	46.00	45.00
	2019-20	7,417.70	7,582.54	46.00	45.00
	2020-21	7,417.70	7,582.54	46.00	46.00
	2021-22	n.p	7528.537	n.p	45%
Foundation Power	2017-18	6,834.21	7,005.66	49.91	48.69
	2018-19	6,938.53	7,146.12	49.18	47.75
	2019-20	7,314.41	7,569.29	46.64	45.08
	2020-21	7,141.27	7,359.02	47.78	46.36
	2021-22	6.899.48	7.090.02	49.45	48.12
Davis Energen.	2017-18	9,426.00	9,685.00	28.90	28.10
	2018-19	Complex stopped due to gas stoppage (non-payment)			
	2019-20	Complex stopped due to gas stoppage (non-payment)			
	2020-21	Complex stopped due to gas stoppage (non-payment)			
	2021-22	-			

Power Station	Year	Heat Rate (Btu/kWh)		Plant Efficiency (%)	
		On Gross Generation	On Net Export to NTDC	On Gross Generation	On Net Export to NTDC
Uch-II Power	2017-18	6,607.62	6,794.74	51.64	50.22
	2018-19	6,567.20	6,747.54	51.96	50.57
	2019-20	6,679.56	6,880.32	51.08	49.59
	2020-21	6670	6861	51.15	49.73
	2021-22	6.558.00	6.737.00	52.03	50.64
Huaneng Shandong Ruyi (Sahiwal Imported Coal)	2017-18	8,749.08	n.p.	39.00	n.p.
	2018-19	8,749.08	n.p.	39.00	n.p.
	2019-20	8,749.08	n.p.	39.00	n.p.
	2020-21	8,749.08	n.p.	39.00	n.p.
	2021-22	8.749.08	n.p	39.00	n.p
QATPL (Bhikki)	2017-18	5,428.99	5,539.16	62.85	61.60
	2018-19	5,425.54	5,538.26	62.89	61.61
	2019-20	5,422.95	5,531.97	62.92	61.68
	2020-21	5,428.99	5,539.16	62.85	61.60
	2021-22	5,426.43	5,537.62	62.88	61.62
NPPMCL (Haveli Bahadur Shah)	2017-18	5,511.44	5,626.80	61.93	60.66
	2018-19	5,522.35	5,654.29	61.80	60.36
	2019-20	5,524.69	5,672.84	61.78	60.16
	2020-21	5,530.16	5,668.24	61.72	60.21
	2021-22	5,416.00	5,551.00	63.00	61.47
NPPMCL (Balloki)	2018-19	5,607.90	5,800.26	60.85	58.83
	2019-20	5,603.60	5,805.54	60.89	58.77
	2020-21	5,593.32	5,795.28	61.00	58.86
	2021-22	5,486.00	5,661.00	62.19	60.27
Port Qasim Electric Power	2017-18	8,340.13	8,912.84	40.87	38.24
	2018-19	8,228.30	8,762.43	41.42	38.90
	2019-20	8,308.08	8,825.35	41.02	38.62
	2020-21	8,246.83	8,716.90	41.33	39.10
	2021-22	8703.02	8726.83	39.16	39.06
China Power Hub	2019-20	8,195.06	8,704.90	41.64	39.20
	2020-21	8,186.81	8,660.72	41.68	39.40
	2021-22	8,226.89	8,669.52	41.48	39.36
Orient Power (Gas)	2020-21	6504	6666	52.48	52.48
	2021-22	6504	6666	51.20	51.20
Lucky Electric	2021-22	8042.02	8706.66	42.43	39.19

Note: Authority approved heat rate numbers are available on website
Source: IPPs

TABLE 24

Monthly Source-wise CPPA-G System Power Sent Out and Fuel Cost (2021-22)

			July	August	September	October	November	December	January	February	March	April	May	June
Hydel	Generation	GWh	4,695.76	5,594.30	5,085.48	2,627.25	2,816.49	1,768.84	512.93	1,473.76	1,703.91	2,404.35	3,590.82	3,361.21
		%	29.94	34.79	36.24	23.26	33.20	20.03	5.83	18.22	16.36	18.55	24.50	24.22
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Coal	Generation	GWh	2,383.33	2,293.86	2,392.52	1,885.78	1,379.12	2,103.65	2,916.70	2,563.87	2,586.62	2,168.93	2,018.49	1,883.13
		%	15.20	14.27	17.05	16.69	16.26	23.82	33.15	31.70	24.83	16.74	13.77	13.57
	Fuel Cost	Mln. Rs.	19,992.38	20,682.81	24,080.63	21,434.92	18,127.45	28,004.21	41,139.87	33,572.49	32,104.21	31,094.24	36,372.00	39,183.46
		Rs./kWh	8.39	9.02	10.06	11.37	13.14	13.31	14.10	13.09	12.41	14.34	18.02	20.81
HSD	Generation	GWh	123.49	19.84	2.34	57.10	24.99	250.56	592.08	-	-	58.49	28.48	0.00
		%	0.79	0.12	0.02	0.51	0.29	2.84	6.73	-	-	0.45	0.19	0.00
	Fuel Cost	Mln. Rs.	2,388.53	448.95	50.94	1,440.25	679.79	3,529.38	15,382.25	-	-	1,622.28	857.05	0.00
		Rs./kWh	19.34	22.63	21.77	25.22	27.20	14.09	25.98	-	-	27.74	30.09	
RFO	Generation	GWh	1,612.26	1,627.56	997.44	1,228.66	145.40	353.26	1,238.00	526.73	1,106.19	1,564.11	1,290.33	1,454.04
		%	10.28	10.12	7.11	10.88	1.71	4.00	14.07	6.51	10.62	12.07	8.80	10.48
	Fuel Cost	Mln. Rs.	27,316.29	28,306.32	18,393.60	26,017.75	2,941.03	7,853.32	28,235.19	11,301.74	24,913.08	44,093.62	43,451.97	52,637.95
		Rs./kWh	16.94	17.39	18.44	21.18	20.23	22.23	22.81	21.46	22.52	28.19	33.68	36.20
Gas	Generation	GWh	1,362.20	1,313.21	1,248.28	1,092.75	1,095.16	1,215.57	1,264.36	918.40	992.72	1,276.57	1,464.59	1,479.32
		%	8.69	8.17	8.90	9.67	12.91	13.77	14.37	11.36	9.53	9.85	9.99	10.66
	Fuel Cost	Mln. Rs.	11,123.13	10,910.42	10,401.77	8,719.57	8,596.99	9,384.68	9,795.16	7,514.88	7,710.68	10,707.03	14,823.02	13,205.10
		Rs./kWh	8.17	8.31	8.33	7.98	7.85	7.72	7.75	8.18	7.77	8.39	10.12	8.93
RLNG	Generation	GWh	3,137.69	2,895.92	2,651.95	2,703.38	1,208.70	1,191.79	626.08	1,226.01	1,965.68	2,516.85	3,355.23	3,390.54
		%	20.01	18.01	18.90	23.93	14.25	13.50	7.12	15.16	18.87	19.42	22.89	24.43
	Fuel Cost	Mln. Rs.	37,131.07	38,562.54	38,841.55	45,276.62	20,893.69	21,049.47	9,184.46	17,307.35	28,235.70	41,352.15	93,697.51	96,234.53
		Rs./kWh	11.83	13.32	14.65	16.75	17.29	17.66	14.67	14.12	14.36	16.43	27.93	28.38
Nuclear	Generation	GWh	1,659.86	1,630.19	1,281.80	1,392.92	1,485.19	1,549.06	1,264.57	1,013.26	1,563.66	2,251.19	1,890.38	1,265.67
		%	10.58	10.14	9.13	12.33	17.51	17.54	14.37	12.53	15.01	17.37	12.90	9.12
	Fuel Cost	Mln. Rs.	1,659.81	1,627.93	1,257.88	1,417.46	1,520.69	1,641.65	1,360.18	1,147.04	1,616.12	2,282.12	2,002.53	1,423.11
		Rs./kWh	1.00	1.00	0.98	1.02	1.02	1.06	1.08	1.13	1.03	1.01	1.06	1.12
Import Iran	Generation	GWh	40.00	45.24	48.27	41.41	36.69	36.47	31.65	33.82	42.75	51.95	54.52	51.49
		%	0.26	0.28	0.34	0.37	0.43	0.41	0.36	0.42	0.41	0.40	0.37	0.37
	Fuel Cost	Mln. Rs.	467.74	559.01	633.03	593.87	483.43	483.91	474.97	530.63	741.95	916.04	1,033.64	1,007.73
		Rs./kWh	11.69	12.36	13.11	14.34	13.18	13.27	15.01	15.69	17.36	17.63	18.96	19.57
Mixed	Generation	GWh	9.88	16.98	16.18	11.87	11.84	7.88	2.30	10.15	13.22	9.38	16.77	9.87
		%	0.06	0.11	0.12	0.11	0.14	0.09	0.03	0.13	0.13	0.07	0.11	0.07
	Fuel Cost	Mln. Rs.	44.32	79.30	75.05	53.35	52.80	35.36	14.44	51.96	63.88	41.62	78.59	46.41
		Rs./kWh	4.49	4.67	4.64	4.49	4.46	4.49	6.28	5.12	4.83	4.44	4.69	4.70
Wind Power	Generation	GWh	550.37	549.95	230.40	184.82	175.19	210.08	194.88	165.07	267.92	464.78	779.13	811.59
		%	3.51	3.42	1.64	1.64	2.07	2.38	2.22	2.04	2.57	3.59	5.32	5.85
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh		-	-	-	-	-	-	-	-	-	-	-
Solar Power	Generation	GWh	61.82	67.01	60.75	63.17	50.62	45.18	46.58	58.12	68.73	87.31	89.89	86.27
		%	0.39	0.42	0.43	0.56	0.60	0.51	0.53	0.72	0.66	0.67	0.61	0.62
	Fuel Cost	Mln. Rs.	-	-	-	-	-	-	-	-	-	-	-	-
		Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Bagasse	Generation	GWh	45.02	24.06	16.48	7.14	54.33	98.47	107.13	98.67	107.01	106.49	78.26	83.01
		%	0.29	0.15	0.12	0.06	0.64	1.12	1.22	1.22	1.03	0.82	0.53	0.60
	Fuel Cost	Mln. Rs.	269.30	143.93	98.58	42.70	324.80	589.08	640.90	590.23	640.13	637.05	468.17	496.59
		Rs./kWh	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98	5.98
Total	**Generation**	**GWh**	**15,681.77**	**16,078.12**	**14,031.89**	**11,296.23**	**8,483.71**	**8,830.80**	**8,797.26**	**8,087.85**	**10,418.24**	**12,960.41**	**14,656.89**	**13,876.08**
		%	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
	Fuel Cost	**Mln. Rs.**	**100,392.57**	**101,321.21**	**93,833.03**	**104,996.47**	**53,620.67**	**72,571.06**	**106,227.41**	**72,016.32**	**96,025.75**	**132,746.14**	**192,784.47**	**204,234.88**
		Rs./kWh	6.40	6.30	6.69	9.29	6.32	8.22	12.08	8.90	9.22	10.24	13.15	14.72

Source: CPPA-G

TABLE 25

Electricity Statistics of K-Electric Limited

1	Units Generated by KE Own (GWh)					
	Name of Plant	Year	Units Generated	Auxiliary Consumption		Units Sent Out
				GWh	%	
1.1	Bin Qasim Thermal Power Station-I (BQTPS-I)	2017-18	4,764.70	430.58	9.04	4,334.12
		2018-19	4,646.94	429.17	9.24	4,217.77
		2019-20	4,195.00	370.34	8.83	3,824.66
		2020-21	5,130.00	400.00	7.80	4,730.00
		2021-22	3,591.00	302.00	8.41	3,289.00
1.2	Bin Qasim Thermal Power Station-II (BQTPS-II)	2017-18	3,750.79	241.75	6.45	3,509.04
		2018-19	4,065.70	249.75	6.14	3,815.95
		2019-20	4,278.00	247.46	5.78	4,030.54
		2020-21	4,173.00	247.00	5.92	3,926.00
		2021-22	3,821.00	233.00	6.10	3,588.00
1.3	Bin Qasim Thermal Power Station-III (BQTPS-III)	2021-22	256.10	12.60	4.92	243.50
1.4	Korangi Town Gas Turbine Power Station-II (KTGTPS-II)	2017-18	323.11	13.21	4.09	309.90
		2018-19	390.33	14.71	3.77	375.62
		2019-20	313.00	13.27	4.24	299.73
		2020-21	381.00	15.77	4.14	365.23
		2021-22	122.49	7.49	6.11	115.00
1.5	Site Gas Turbine Power Station-II (SGTPS-II)	2017-18	498.14	16.28	3.27	481.86
		2018-19	368.02	12.78	3.47	355.24
		2019-20	414.00	16.77	4.05	397.23
		2020-21	227.00	11.33	4.99	215.67
		2021-22	110.56	7.56	6.84	103.00
1.6	Korangi Combined Cycle Power Plant	2017-18	1,001.01	78.93	7.88	922.08
		2018-19	1,256.68	92.34	7.35	1,164.34
		2019-20	1,158.00	81.26	7.02	1,076.74
		2020-21	1,027.00	78.30	7.62	948.70
		2021-22	595.70	43.70	7.34	552.00
1.7	Total Units Generated from KE's Own Power Plants	2017-18	10,337.75	780.76	7.55	9,556.99
		2018-19	10,727.67	798.76	7.45	9,928.91
		2019-20	10,358.00	729.10	7.04	9,628.90
		2020-21	10,938.00	752.40	6.88	10,185.60
		2021-22	8,496.85	606.35	7.14	7,890.50

2	Units Purchased by KE (GWh)					
		2017-18	2018-19	2019-20	2020-21	2021-22
2.1	KANUPP	330.86	129.99	193.00	219.00	45.77
2.2	Gul Ahmed	712.71	675.54	496.00	673.00	705.43
2.3	Tapal Energy	752.38	645.02	627.00	737.00	715.86
2.4	NTDC (Mixed Generation)	5,128.20	4,936.71	5,003.14	5,764.40	8,897.54
2.6	Anoud Power	43.73	51.58	59.52	12.00	0
2.7	International Steel Limited	56.00	46.00	51.21	43.00	28.54
2.8	International Industries Limited	12.00	12.65	10.66	10.00	9.29
2.9	FFBL Power	438.49	413.51	413.00	452.88	406.69
2.10	SNPCL-I	176.71	403.06	371.86	394.35	688.87
2.11	SNPCL-II	177.24	394.69	367.83	380.22	
2.12	Oursun Pakistan	0.00	57.00	88.28	90.87	89.58
2.13	NTDC - 150 MW (Wind)	0.00	20.00	423.00	353.64	139
2.14	Gharo Solar	0.00	0.00	65.00	108.69	102.64
2.15	Lottee Chemicals	-	-	-	61.00	35.44
2.16	Lucky Cement	-	-	-	0.02	2.98
2.17	Net Metering Import	-	-	-	-	44
Total		**7,828.32**	**7,785.75**	**8,169.50**	**9,300.07**	**11,911.63**

Description			2017-18	2018-19	2019-20	2020-21	2021-22
3	Total Units Purchased by KE including Own Generation (GWh)		18,166.07	18,513.42	18,527.50	20,238.07	20,408.48
4	Units Available for Distribution (GWh)		17,385.31	17,714.66	17,798.40	19,485.67	19,802.13
5	Units Sold (GWh)		13,860.32	14,318.11	14,276.96	16,068.85	16,763.22
6	T&D Losses (excluding Auxiliary Consumption)	GWh	3,524.99	3,396.55	3,521.44	3,416.82	3,038.91
		%	20.28	19.17	19.79	17.54	15.35
7	Average Fuel Price						
			2017-18	2018-19	2019-20	2020-21	2021-22
7.1	Gas (Rs./MMBtu)		400.00*	559.00*	824.00*	846.00*	857
7.2	RLNG (Rs./MMBtu)		1,401.30	1,605.70	1,561.00	1,358.00	2,878
7.3	Furnace Oil (Rs./M. Ton.)		45,591.00	69,641.62	62,130.00	60,285.00	121,887
7.4	HSD (Rs./Liters)		0.00	0.00	0.00	98.00	133
7.5	RLNG (Rs./MMBtu) - PLL (Supply from PLL initiated from February 08, 2022)		-	-	-	-	5,253
8	Cost of Fuel in KE Own System		2017-18	2018-19	2019-20	2020-21	2021-22
8.1	Cost of Fuel (Rs. in Million)		71,870.00	120,614.57	116,186.00	126,409.00	212,615.00
8.2	Cost of Fuel (Paisa/kWh)**		752.00	1214.88	1,207.00*	1,241.00*	2,695*

** Excluding GIDC which is under litigation.* *** Based on per unit sent out.*
Source: KE

TABLE 26
Fuel Consumption and Cost of Generation Data (K-Electric Limited and their IPPs)

Bin Qasim TPS-I									
Year	Gen. on Gas (GWh) (Net)	Gas Consumption		Residual Furnace Oil		Gen. on RLNG (GWh) (Net)	RLNG Consumption		Overall Generation Cost (Rs./ kWh)**
		Total MMCFT	CFT/kWh (Average)	Gen. on RFO (GWh) (Net)	Quantity of RFO Used (000 M. Tons)		Total MMCFT	CFT/kWh (Average)	
2017-18*	783.18	7,710.67	9.85	3,894.21	1,015.57	87.32	847.74	9.71	11.72
2018-19*	855.00	8,672.23	10.14	3,361.94	n.p.	430.00	4,362.57	10.15	17.59
2019-20	761.00	8,552.00	11.24	2,548.00	734.00	516.00	5,821.00	11.28	16.03
2020-21	695.00	7,618.00	10.96	2,843.00	787.00	1,192.00	12,974.00	10.04	15.02
2021-22	156.12	1,744.33	11.17	2,526.74	694.71	606.24	6,784.63	11.19	31.46

Korangi CCPP									
Year	Gen. on Gas (GWh) (Net)	Gas Consumption		HSD		Gen. on RLNG (GWh) (Net)	RLNG Consumption		Overall Generation Cost (Rs./ kWh)**
		Total MMCFT	CFT/kWh (Average)	Gen. on HSD (GWh) (Net)	Quantity of HSD Used (000 M. Tons)		Total MMCFT	CFT/kWh (Average)	
2017-18*	897.07	6,562.04	7.31	-	-	103.94	748.04	7.20	4.22
2018-19*	823.28	6,325.76	7.68	-	-	433.40	3,334.39	7.69	7.92
2019-20	688.00	5,593.00	8.13	-	-	389.00	3,161.00	8.13	8.99
2020-21	351.00	2,903.00	8.27	33	7,949.00	565.00	4,677.00	8.28	10.08
2021-22	67.06	558.85	10.22	269.22	62,853.96	216.18	1,809.51	8.37	24.03

Power Station	Year	Gen. on Gas (GWh) (Net)	Gas Consumption		Gen. on RLNG (GWh) (Net)	RLNG Consumption		Overall Generation Cost (Rs./ kWh)**
			Total MMCFT	CFT/kWh (Average)		Total MMCFT	CFT/kWh (Average)	
Bin Qasim TPS-II	2017-18*	3,523.55	25,928.49	7.36	227.24	1,690.91	7.44	3.85
	2018-19*	2,510.24	19,118.21	7.62	1,555.47	11,868.60	7.63	8.17
	2019-20	2,387.00	19,729.00	8.27	1,643.00	13,554.00	8.25	9.51
	2020-21	1,277.00	10,448.00	8.18	2,649.00	21,671.00	8.18	9.87
	2021-22	375.68	3,094.83	8.24	3,211.84	26,470.14	8.24	23.05
Bin Qasim III	2021-22	-	-	-	244	1,891.55	11.17	36.27
Korangi Town GTPS-II	2017-18*	286.66	2,699.01	9.42	36.45	336.99	9.25	4.91
	2018-19*	259.12	2,418.98	9.34	131.21	1,222.94	9.32	8.63
	2019-20	196.00	1,900.00	9.69	104.00	1,006.00	9.67	9.75
	2020-21	130.00	1,261.00	9.70	235.00	2,269.00	9.66	10.75
	2021-22	24.58	251.12	10.22	89.94	923.66	10.27	22.26
Site GTPS-II	2017-18*	456.75	3,953.32	8.66	41.39	353.68	8.55	4.48
	2018-19*	253.70	2,174.20	8.57	114.32	980.14	8.57	7.86
	2019-20	254.00	2,283.00	8.99	143.00	1,292.00	9.03	9.91
	2020-21	79.00	744.00	9.42	137.00	1,303.00	9.51	11.28
	2021-22	20.9	203.03	9.71	81.96	796.61	9.72	23.31

** Firm quantity of 60 MMCFD RLNG is being supplied to KE on co-mingled basis by SSGC along with supply of indigenous Natural Gas on as and when available basis with effect from April, 2018.*
*** Based on Units Sent Out*

(Residual Furnace Oil based Power Plant)					
Power Station	Year	Gen. on RFO (GWh) (Net)	Quantity of RFO used (000 M. Tons)	Average Fuel Cost (Rs./kWh)	Overall Generation Cost (Rs./kWh)
Gul Ahmed	2017-18	712.71	170	9.88	12.70
	2018-19	675.54	153	14.69	18.18
	2019-20	496.14	107	12.94	15.97
	2020-21	673.00	145	13.71	15.96
	2021-22	705.43	154	24.80	27.59
Tapal Energy	2017-18	752.38	167	9.46	10.76
	2018-19	645.02	143	14.45	15.91
	2019-20	626.77	136	12.78	13.84
	2020-21	737.00	160	13.73	14.87
	2021-22	715.86	156	24.84	26.70
(Gas based Power Plant)					
Power Station	**Year**	**Gen. on Gas (GWh) (Net)**	**Quantity of Gas used (MMBTU)**	**Average Fuel Cost (Rs./kWh)**	**Overall Generation Cost (Rs./kWh)**
Sindh Nooriabad-I	2018-19	403.06	3274096	5.25	6.04
	2019-20	371.86	2999996	7.22	8.16
	2020-21	394.35	3232553	6.68	7.64
	2021-22	356.21	2954899	6.97	8.01
Sindh Nooriabad-II	2018-19	394.69	3137925	5.25	6.04
	2019-20	367.83	2978275	7.22	8.16
	2020-21	380.22	3105772	6.68	7.64
	2021-22	345.80	2872374	6.93	7.98

Source: KE/IPPs

TABLE 27

Auxiliary Consumption and other Factors (K-Electric and their IPPs)

Power Station	Year	Auxiliary Consumption		Maximum Load (MW)	Load Factor (%)	Capacity Factor (%)	Utilization Factor (%)	Availability Factor (%)
		(GWh)	(%)					
Bin Qasim TPS-I	2017-18	430.58	9.04	1,005	54.00	73.00	79.76	71.00
	2018-19	429.17	9.24	1,015	52.47	65.11	80.56	76.92
	2019-20	370.34	8.83	1,060	50.03	54.09	84.13	86.62
	2020-21	400.00	7.80	1,025	58.40	77.72	97.62	90.45
	2021-22	301.57	8.40	849	53.80	55.10	80.86	86.80
Bin Qasim TPS-II	2017-18	241.75	6.45	571	75.00	85.00	99.71	94.97
	2018-19	249.75	6.14	555	85.31	95.27	96.91	92.18
	2019-20	247.46	5.78	570	88.58	97.13	99.53	95.30
	2020-21	247.00	5.92	571	85.40	95.26	99.71	95.09
	2021-22	233.03	6.10	555	81.13	86.34	96.86	96.04
Korangi Town GTPS-II	2017-18	13.21	4.09	97	42.00	40.00	90.47	89.60
	2018-19	14.71	3.77	97	58.67	47.27	90.47	90.97
	2019-20	13.27	4.24	97	60.08	41.90	90.28	88.69
	2020-21	15.77	4.14	96	55.75	53.60	89.86	83.52
	2021-22	7.49	6.14	96	39.29	14.97	89.85	96.56
Site GTPS-II	2017-18	16.28	3.27	97	60.00	59.00	90.47	92.40
	2018-19	12.78	3.47	97	72.61	72.96	90.47	57.53
	2019-20	16.77	4.05	97	67.11	50.05	90.28	98.11
	2020-21	11.33	4.99	97	39.34	27.72	90.28	97.09
	2021-22	7.56	6.84	97	41.17	13.29	90.28	98.56
Korangi CCPP	2017-18	78.93	7.88	230	56.00	54.00	92.95	92.66
	2018-19	92.34	7.35	234	70.79	74.24	94.41	83.21
	2019-20	81.26	7.02	233	70.10	60.59	94.13	96.07
	2020-21	78.30	7.62	229	57.42	56.72	92.51	91.38
	2021-22	43.70	7.33	225	54.81	34.15	90.73	87.86
Gul Ahmed Energy	2017-18	21.10	1.83	128	97.50	64.87	84.94	n.p
	2018-19	23.63	3.37	128	95.40	60.62	88.32	n.p
	2019-20	17.45	3.41	128	96.38	50.60	52.23	n.p
	2020-21	19.48	2.81	128	97.11	60.13	61.92	93.22
	2021-22	18.35	2.53	127.5	97.39	62.83	64.51	95.06
Tapal Energy	2017-18	13.07	1.71	124	70.75	70.14	68.46	94.70
	2018-19	11.13	1.70	124	60.65	59.62	57.74	95.60
	2019-20	9.94	1.56	124	58.69	57.78	56.41	96.90
	2020-21	11.23	1.50	124	69.14	68.10	66.89	96.30
	2021-22	11.11	1.53	123.5	67.20	62.57	66.17	n.p
Sindh Nooriabad-I	2018-19	7.18	1.75	51	91.06	91.24	100.00	89.05
	2019-20	6.78	1.82	51	93.34	84.01	98.40	88.49
	2020-21	7.51	1.85	51	87.93	89.09	96.51	88.21
	2021-22	7.13	1.96	51	98.91	79.49	83.27	n.p
Sindh Nooriabad-II	2018-19	6.21	1.55	51	89.17	89.34	100.00	88.56
	2019-20	6.31	1.72	51	90.17	83.10	99.10	87.76
	2020-21	5.90	1.54	51	84.77	85.90	93.00	84.62
	2021-22	6.13	1.79	52	97.25	76.61	83.45	n.p

Source: KE/IPPs

TABLE 28
Heat Rate and Plant Efficiency Data (K-Electric and their IPPs)

Power Station	Year	Heat Rate (Btu/kWh) - LHV		Plant Efficiency (%)	
		On Gross Basis	On Net Basis	On Gross Basis	On Net Basis
Bin Qasim TPS-I	2017-18	10,499.69	11,542.81	32.50	29.56
	2018-19	9,905.00	10,913.00	34.45	31.27
	2019-20	9,776.89	10,724.09	34.90	31.82
	2020-21	9,469.00	10,272.00	36.03	33.22
	2021-22	9,496.00	10,366.68	35.93	32.91
Bin Qasim TPS-II	2017-18	7,792.00	8,328.89	43.79	40.97
	2018-19	7,149.00	7,617.00	47.73	44.80
	2019-20	7,076.68	7,511.18	48.22	45.43
	2020-21	7,082.25	7,469.32	48.55	45.68
	2021-22	7,020.73	7,476.76	48.60	45.64
Korangi Town GTPS-II	2017-18	9,226.00	9,619.10	36.98	35.47
	2018-19	8,246.00	8,569.00	41.38	39.82
	2019-20	7,987.81	8,341.41	42.72	40.91
	2020-21	7,955.00	8,304.27	42.89	41.09
	2021-22	8,238.77	8,777.41	41.42	38.87
Site GTPS-II	2017-18	8,977.00	9,280.52	38.01	36.77
	2018-19	7,961.00	8,248.00	42.86	41.37
	2019-20	7,832.50	8,162.82	43.56	41.80
	2020-21	8,205.00	8,677.00	41.36	39.32
	2021-22	8,255.46	8,861.90	41.33	38.50
Korangi CCPP	2017-18	7,721.00	8,382.19	44.19	40.71
	2018-19	7,246.00	7,821.00	47.09	43.63
	2019-20	6,931.99	7,455.34	49.22	45.77
	2020-21	7,010.00	7,588.00	48.68	44.97
	2021-22	7,201.87	7,771.53	47.38	43.91
Gul Ahmed Energy	2017-18	9,334.93	9,668.78	36.54	35.29
	2018-19	8,966.59	9,280.32	38.05	36.76
	2019-20	8,490.07	8,789.46	40.19	38.82
	2020-21	8,535.26	8,782.17	39.97	38.85
	2021-22	8,163.78	8,376.09	41.79	40.74
Tapal Energy	2017-18	8,795.87	8,948.67	38.79	38.13
	2018-19	8,796.88	8,948.64	38.79	38.13
	2019-20	8,613.24	8,749.90	39.62	39.00
	2020-21	8,604.72	8,735.85	39.66	39.06
	2021-22	8,253.28	8,381.33	41.34	40.71
Sindh Nooriabad-I	2017-18	7,862.68	7,990.77	43.40	42.70
	2018-19	7,980.73	8,122.74	42.75	42.01
	2019-20	7,923.36	8,067.49	43.06	42.29
	2020-21	7,966.91	8,197.08	42.83	41.62
	2021-22	8,132.59	8,295.45	41.95	41.13
Sindh Nooriabad-II	2017-18	7,917.82	8,046.83	43.09	42.40
	2018-19	7,827.01	7,950.09	43.59	42.92
	2019-20	7,960.82	8,097.06	42.86	42.14
	2020-21	8,125.23	8,168.42	41.99	41.77
	2021-22	8,157.77	8,306.48	41.83	41.08

Note: Authority approved heat rate numbers are available on www.nepra.org.pk
Source: KE/IPPs

TABLE 29

K-Electric Source-wise Own Generation and Fuel Cost Adjustments (2021-22)

Description	July	August	September	October	November	December	January	February	March	April	May	June
Fuel Cost - Gas (Rs./MMBTU)	857	857	857	857	857	857	857	857	857	857	857	857
Fuel Cost - FO (Rs./M.ton)	79,622	83,568	92,279	98,558	100,789	102,952	102,451	104,104	113,671	138,582	157,062	161,749
Fuel Cost - FO (Rs./MMBTU)	1,973	2,071	2,287	2,443	2,498	2,551	2,539	2,580	2,817	3,434	3,892	4,009
Fuel Cost - RLNG (Rs./MMBTU)	2,025	2,134	2,545	2,676	2,681	2,203	2,529	2,449	3,083	3,131	4,617	4,627
Fuel Cost - HSD (Rs./MMBTU)	2,621	2,647	2,739	2,967	3,050	3,060	3,252	3,408	3,466	3,838	4,011	5,045
Bin Qasim Thermal Power Station - I												
Units Sent Out (Mln kWh)	382.41	320.16	402.69	293.13	75.21	14.80	97.36	184.17	260.28	453.58	453.48	370.827
Fuel Cost (Rs./kWh)	18.207	19.888	23.582	25.061	26.184	25.948	26.597	26.353	29.328	36.783	42.150	42.917
Fuel Cost (Mln Rs.)	6,962.48	6,367.22	9,496.25	7,346.03	1,969.33	384.03	2,589.49	4,853.51	7,633.40	16,684.13	19,114.25	15914.81
Bin Qasim Thermal Power Station – II												
Units Sent Out (GWh)	351.19	357.85	338.63	353.71	354.03	283.27	142.15	62.47	318.94	346.41	350.10	328.369
Fuel Cost (Rs./kWh)	14.098	14.896	18.117	19.581	21.906	18.462	21.199	20.526	25.840	26.219	37.218	38.776
Fuel Cost (Mln Rs.)	4,951.09	5,330.50	6,135.00	6,926.02	7,755.32	5,229.62	3,013.48	1,282.26	8,241.53	9,082.68	13,030.14	12733.0
Bin Qasim Thermal Power Station – III												
Units Sent Out (GWh)	-	-	-	-	-	-	-	-	-	-	49.082	198.244
Fuel Cost (Rs./kWh)	-	-	-	-	-	-	-	-	-	-	66.750	34.844
Fuel Cost (Mln Rs.)	-	-	-	-	-	-	-	-	-	-	3,276.20	6907.71
Korangi Town Gas Turbine Power Station – II												
Units Sent Out (GWh)	22.25	24.40	27.88	23.01	2.10	0.06	-	0.75	0.02	7.18	10.31	1.000
Fuel Cost (Rs./kWh)	14.787	15.558	18.896	21.062	23.048	20.667	-	22.320	27.000	28.433	37.324	42.090
Fuel Cost (Mln Rs.)	329.01	379.62	526.83	484.63	48.40	1.24	-	16.74	0.54	204.15	384.81	42.090
Site Gas Turbine Power Station – II												
Units Sent Out (GWh)	22.499	18.489	21.141	19.856	4.192	0.174	0.032	2.278	0.132	4.828	11.890	2.143
Fuel Cost (Rs./kWh)	14.717	15.556	18.907	20.423	22.230	19.253	21.875	21.422	27.045	27.334	36.802	40.474
Fuel Cost (Mln Rs.)	331.11	287.61	399.71	405.52	93.19	3.35	0.70	48.80	3.57	131.97	437.57	86.735
Korangi Combined Cycle Power Plant												
Units Sent Out (GWh)	75.488	69.540	113.049	68.427	27.938	2.438	1.469	1.714	7.741	79.164	87.859	2.178
Fuel Cost (Rs./kWh)	14.274	14.902	19.538	20.920	22.354	23.265	25.865	26.156	27.557	30.349	32.148	38.767
Fuel Cost (Mln Rs.)	1,077.546	1,036.266	2,208.777	1,431.478	624.530	56.719	37.996	44.831	213.315	2,402.519	2,824.489	84.434
Total												
Units Sent Out (GWh)	853.837	790.439	903.39	758.133	463.47	300.742	241.011	251.382	587.113	891.162	913.639	902.761
Fuel Cost (Rs./kWh)	15.988	16.954	20.773	21.888	22.635	18.870	23.408	24.847	27.409	31.987	39.174	39.174
Fuel Cost (Mln Rs.)	13,651.24	13401.216	18766.567	16593.678	10490.77	5674.959	5641.666	6246.141	16092.355	28505.449	35791.26	35768.8

Source: KE

Table 30

K-Electric (Source-wise Power Purchase and Fuel Costs) (2021-22)

Company		July	August	September	October	November	December	January	February	March	April	May	June
CPPA-G													
Generation	GWh	761.717	**743.386**	747.786	773.176	735.165	709.747	693.899	689.565	776.56	745.668	758.153	762.717
	%	68.447	73.069	73.412	75.888	77.995	81.530	81.350	77.233	74.798	72.016	73.242	73.810
Fuel Cost	Mil Rs.	5,070.75	4,971.25	5,645.93	7,668.28	5,910.80	6,126.18	8,646.95	6,278.21	7,064.76	7,904.83	10,535.98	12084.412
	Rs./kWh	6.657	6.687	7.550	9.918	8.040	8.631	12.461	9.105	9.098	10.601	13.897	15.844
Gul Ahmed Energy Limited													
Generation	GWh	52.949	**35.287**	80.407	62.015	46.828	22.644	46.652	51.735	65.868	89.584	77.36	74.100
	%	4.758	3.468	7.894	6.087	4.968	2.601	5.469	5.794	6.344	8.652	7.473	7.171
Fuel Cost	Mil Rs.	868.171	618.244	1,499.23	1,339.10	1,087.96	558.86	1,047.45	980.197	1,563.72	2,850.28	2,800.36	2715.063
	Rs./kWh	16.396	17.520	18.646	21.593	23.233	24.680	22.452	18.946	23.740	31.817	36.199	36.641
Tapal Energy (Pvt.) Limited													
Generation	GWh	59.624	**46.064**	73.103	59.175	46.032	34.577	49.811	55.222	72.003	71.171	72.431	76.642
	%	5.358	4.528	7.177	5.808	4.884	3.972	5.840	6.185	6.935	6.874	6.997	7.417
Fuel Cost	Mil Rs.	1003.456	839.153	1377.621	1286.140	1089.099	833.021	1073.507	1012.698	1671.770	2194.968	2608.855	2766.361
	Rs./kWh	16.830	18.217	18.845	21.735	23.660	24.092	21.552	18.339	23.218	30.841	36.018	36.095
KANUPP													
Generation	GWh	42.578	3.143	-	-	-	-	-	-	-	-	-	-
	%	3.8260	0.3089	-	-	-	-	-	-	-	-	-	-
Fuel Cost	Mil Rs.	719.984	56.124	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	16.910	17.857	-	-	-	-	-	-	-	-	-	-
Anoud Power Generation Limited													
Generation	GWh	-	-	-	-	-	-	-	-	-	-	-	-
	%	-	-	-	-	-	-	-	-	-	-	-	-
Fuel Cost	Mil Rs.	-	-	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
International Industries Limited & International Steel Limited													
Generation	GWh	3.212	**4.448**	3.986	4.461	2.633	0.732	0.914	0.569	2.484	6.344	4.433	3.618
	%	0.289	0.437	0.391	0.438	0.279	0.084	0.107	0.064	0.239	0.613	0.428	0.350
Fuel Cost	Mil Rs.	34.276	47.443	42.512	47.532	28.074	7.797	9.744	6.086	26.509	67.625	47.266	38.585
	Rs./kWh	10.670	10.666	10.665	10.655	10.662	10.652	10.661	10.696	10.672	10.660	10.662	10.665
Sindh Nooriabad Power Company Limited (I & II)													
Generation	GWh	65.086	**66.461**	63.92	63.198	55.409	53.264	42.239	43.66	63.258	56.201	58.058	58.120
	%	5.849	6.533	6.275	6.203	5.878	6.119	4.952	4.890	6.093	5.428	5.609	5.624
Fuel Cost	Mil Rs.	444.954	454.374	436.479	430.952	377.893	361.922	286.507	296.643	431.93	383.299	396.906	415.255
	Rs./kWh	6.836	6.837	6.829	6.819	6.820	6.795	6.783	6.794	6.828	6.820	6.836	7.145
FFBL Power Company Limited													
Generation	GWh	39.604	**40.308**	26.641	37.676	39.045	34.168	3.219	34.198	33.723	38.983	40.026	39.099
	%	3.559	3.962	2.615	3.698	4.142	3.925	0.377	3.830	3.248	3.765	3.867	3.784
Fuel Cost	Mill Rs.	435.054	442.787	292.654	507.454	591.517	517.977	48.799	518.431	511.231	590.971	689.672	673.699
	Rs./kWh	10.985	10.985	10.985	13.469	15.150	15.160	15.160	15.160	15.160	15.160	17.231	17.231
Oursun Pakistan Limited													
Generation	GWh	6.006	**6.55**	6.626	7.504	6.983	6.482	7.023	7.648	8.959	8.997	8.671	7.789
	%	0.540	0.644	0.650	0.737	0.741	0.745	0.823	0.857	0.863	0.869	0.838	0.754
Fuel Cost	Mill Rs	-	-	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
CPPA-G 150 MW													
Generation	GWh	70.960	**63.025**	4.818	-	-	-	-	-	-	-	-	-
	%	6.376	6.195	0.473	-	-	-	-	-	-	-	-	-
Fuel Cost	Mill Rs	472.379	421.464	36.380	-	-	-	-	-	-	-	-	-
	Rs./kWh	6.657	6.687	7.551	-	-	-	-	-	-	-	-	-

Company		July	August	September	October	November	December	January	February	March	April	May	June
Gharo Solar													
Generation	GWh	7.054	**7.607**	7.611	8.691	7.419	6.565	7.197	8.315	10.605	11.259	10.708	9.613
	%	0.634	0.748	0.747	0.853	0.787	0.754	0.844	0.931	1.021	1.087	1.034	0.930
Fuel Cost	Mill Rs	-	-	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
Lotte Chemicals													
Generation	GWh	3.923	0.892	3.469	2.722	2.875	2.146	1.805	1.713	4.439	5.186	4.984	1.290
	%	0.353	0.088	0.341	0.267	0.305	0.247	0.212	0.192	0.428	0.501	0.481	0.125
Fuel Cost	Mil Rs.	78.991	18.927	75.366	72.454	76.668	47.015	39.351	42.244	136.114	161.492	228.674	59.361
	Rs./kWh	20.135	21.219	21.726	26.618	26.667	21.908	21.801	24.661	30.663	31.140	45.882	46.017
Lucky Cement													
Generation	GWh	0.148	0.198	0.242	0.222	0.196	0.211	0.218	0.213	0.308	0.358	0.308	0.362
	%	0.013	0.019	0.024	0.022	0.021	0.024	0.026	0.024	0.030	0.035	0.030	0.035
Fuel Cost	Mil Rs.	1.414	1.892	2.313	2.121	1.873	2.016	2.083	2.035	2.943	3.421	2.943	3.459
	Rs./kWh	9.556	9.556	9.556	9.556	9.556	9.556	9.556	9.556	9.556	9.556	9.556	9.556
Total Generation													
Generation	GWh	**1,112.86**	**1,017.37**	**1,018.61**	**1,018.84**	**942.59**	**870.54**	**852.98**	**892.84**	**1,038.21**	**1,035.42**	**1,035.13**	**1,033.35**
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.00	100.0	**100.0**
Fuel Cost	Mil Rs.	**9,129.43**	**7,759.41**	**9,408.49**	**11,354.03**	**9,163.88**	**8,454.79**	**11,154.39**	**9,136.55**	**11,408.97**	**14,178.50**	**17,310.65**	**18756.195**
	Rs./kWh	8.204	7.627	9.237	11.144	9.722	9.712	13.077	10.233	10.989	13.693	16.723	18.151

Source: KE

TABLE 31

K-Electric (Fuel-wise Own Generation and Fuel Costs) (2021-22)

		July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
Gas													
Generation	GWh	193.868	173.353	130.157	104.704	17.932	-	-	-	-	0.504	27.108	-
	%	22.706	21.931	14.408	13.811	3.869	-	-	-	-	0.057	2.816	-
Fuel Cost	Mil Rs.	1492.61	1318.63	981.01	790.97	133.87	-	-	-	-	3.88	214.82	-
	Rs./kWh	7.70	7.61	7.54	7.55	7.47	-	-	-	-	7.71	7.92	-
RFO													
Generation	GWh	203.60	170.63	288.38	177.50	26.56	9.94	89.35	105.64	257.02	435.61	405.51	370.634
	%	23.845	21.587	31.922	23.412	5.731	3.304	37.073	42.024	43.515	48.881	42.121	40.257
Fuel Cost	Mil Rs.	3,898	3,644	6,970	4,572	687	270	2,377	2,871	7,529	16,047	16,934	15904.518
	Rs./kWh	19.144	21.356	24.168	25.758	25.883	27.173	26.597	27.179	29.295	36.838	41.760	42.912
RLNG													
Generation	GWh	454.746	446.399	440.361	450.476	409.332	288.809	150.196	144.271	325.881	378.915	447.668	532.128
	%	53.259	56.475	48.745	59.419	88.321	96.032	62.317	57.391	55.174	42.519	46.500	57.799
Fuel Cost	Mil Rs.	8,223	8,437	9,847	10,630	9,436	5,356	3,227	3,335	8,350	10,132	19,290	19864.288
	Rs./kWh	18.082	18.899	22.361	23.598	23.052	18.546	21.486	23.117	25.622	26.738	43.089	37.330
HSD													
Generation	GWh	1.623	0.056	44.498	25.459	9.635	1.998	1.469	1.47	7.741	76.134	82.432	17.897
	%	0.1901	0.0071	4.9257	3.3581	2.0789	0.6644	0.6095	0.5848	1.3106	8.5433	8.5624	1.944
Fuel Cost	Mil Rs.	38.057	1.934	969.133	600.506	233.66	48.607	37.996	39.826	213.315	2,323.06	2,628.76	717.872
	Rs./kWh	23.449	34.536	21.779	23.587	24.251	24.328	25.865	27.093	27.557	30.513	31.890	40.112
Total Generation													
Generation	GWh	853.837	790.436	903.393	758.139	463.46	300.743	241.018	251.384	590.64	891.158	962.718	920.658
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.000
Fuel Cost	Mil Rs.	13651.23	13401.22	18766.57	16593.69	10490.77	5674.95	5641.68	6246.14	16092.35	28505.46	39067.46	36486.678
	Rs./kWh	15.99	16.95	20.77	21.89	22.64	18.87	23.41	24.85	27.25	31.99	40.58	39.631

Source : KE

TABLE 32

K-Electric (Fuel-wise Power Purchase and Fuel Costs) (2021-22)

Company		July	August	September	October	November	December	January	February	March	April	May	June
Nuclear													
Generation	GWh	42.578	3.143	-	-	-	-	-	-	-	-	-	-
	%	3.8260	0.3089	-	-	-	-	-	-	-	-	-	-
Fuel Cost	Mil Rs.	719.984	56.124	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	16.910	17.857	-	-	-	-	-	-	-	-	-	-
Coal													
Generation	GWh	39.604	40.308	26.641	37.676	39.045	34.168	3.219	34.198	33.723	38.983	40.026	39.099
	%	3.559	3.962	2.615	3.698	4.142	3.925	0.377	3.830	3.248	3.765	3.867	3.784
Fuel Cost	Mill Rs.	435.054	442.787	292.654	507.454	591.517	517.977	48.799	518.431	511.231	590.971	689.672	673.6992
	Rs./kWh	10.985	10.985	10.985	13.469	15.150	15.160	15.160	15.160	15.160	15.160	17.231	17.2306
Solar													
Generation	GWh	13.06	14.157	14.237	16.195	14.402	13.047	14.22	15.963	19.564	15.853	13.655	17.402
	%	1.174	1.392	1.398	1.590	1.528	1.499	1.667	1.788	1.884	1.531	1.319	1.684
Fuel Cost	Mil Rs.	-	-	-	-	-	-	-	-	-	-	-	-
	Rs./kWh	-	-	-	-	-	-	-	-	-	-	-	-
RFO													
Generation	GWh	112.573	81.351	153.51	121.19	92.86	57.221	96.463	106.957	137.871	160.755	149.791	150.742
	%	10.116	7.996	15.071	11.895	9.852	6.573	11.309	11.979	13.280	15.526	14.471	14.588
Fuel Cost	Mil Rs.	1,871.63	1,457.40	2,876.85	2,625.24	2,177.06	1,391.88	2,120.95	1,992.90	3,235.49	5,045.25	5,409.22	5,481.42
	Rs./kWh	16.626	17.915	18.740	21.662	23.445	24.325	21.987	18.633	23.468	31.385	36.112	36.363
Gas													
Generation	GWh	72.369	71.999	71.617	70.603	61.113	56.353	45.176	46.155	70.489	74.162	73.507	63.390
	%	6.503	7.121	7.031	6.930	6.484	6.473	5.296	5.169	6.789	7.162	7.101	6.134
Fuel Cost	Mil Rs.	559.635	522.636	556.670	553.059	484.508	418.750	337.685	347.008	597.496	615.837	675.789	516.661
	Rs./kWh	7.733	7.259	7.773	7.833	7.928	7.431	7.475	7.518	8.476	8.304	9.194	815.051
CPPA-G													
Generation	GWh	761.717	743.386	747.786	773.176	735.165	709.747	693.899	689.565	776.56	745.668	758.153	762.717
	%	68.447	73.069	73.412	75.888	77.995	81.530	81.350	77.233	74.798	72.016	73.242	73.810
Fuel Cost	Mil Rs.	5,070.75	4,971.25	5,645.93	7,668.28	5,910.80	6,126.18	8,646.95	6,278.21	7,064.76	7,904.83	10,535.98	12084.412
	Rs./kWh	6.657	6.687	7.550	9.918	8.040	8.631	12.461	9.105	9.098	10.601	13.897	15.844
CPPA-G 150 MW													
Generation	GWh	70.96	63.025	4.818	-	-	-	-	-	-	-	-	-
	%	6.376	6.195	0.473	-	-	-	-	-	-	-	-	-
Fuel Cost	Mill Rs	472.379	421.464	36.38	-	-	-	-	-	-	-	-	-
	Rs./kWh	6.657	6.687	7.551	-	-	-	-	-	-	-	-	-
Total Generation													
Generation	GWh	**1,112.86**	**1,017.37**	**1,018.61**	**1,018.84**	**942.59**	**870.54**	**852.98**	**892.84**	**1,038.21**	**1,035.42**	**1,035.13**	**1,033.35**
	%	**100.00**	**100.04**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**
Fuel Cost	Mil Rs.	**9,129.43**	**7,759.41**	**9,408.49**	**11,354.03**	**9,163.88**	**8,454.79**	**11,154.39**	**9,136.55**	**11,408.97**	**14,178.50**	**17,310.65**	**18,756.20**
	Rs./kWh	8.204	7.627	9.237	11.144	9.722	9.712	13.077	10.233	10.989	13.693	16.723	18.151

Source: KE

TABLE 33
Capacity and Energy Invoiced by Generators

S. No.	Fuel Type	FY 2017-18 (Rs. in Million)		FY 2018-19 (Rs. in Million)		FY 2019-20 (Rs. in Million)		FY 2020-21 (Rs. in Million)		FY 2021-22 (Rs. in Million)	
		Capacity Charges [1]	Energy Charges [1]	Capacity Charges [1]	Energy Charges [1]	Capacity Charges [2]	Energy Charges [2]	Capacity Charges	Energy Charges	Capacity Charges	Energy Charges
1	WAPDA Hydel	125,596	2,349	160,710	2,282	107,546	2,858	95,826	2,650	121,187	2,447
2	Thermal	57,942	219,465	60,470	165,001	40,113	77,841	31,661	58,582	33,453	83,126
3	Coal	37,369	73,916	81,675	112,031	199,489	180,522	205,636	201,925	224,826	360,937
4	Nuclear	67,351	9,135	70,929	9,037	94,984	9,842	91,329	11,264	202,559	19,880
5	IPP Hydel *	10,642	533	14,461	535	89,406	1,380	47,814	721	93,473	1,514
6	RFO	50,332	159,998	58,669	94,477	84,834	54,237	93,977	84,242	59,802	325,344
7	RLNG/Gas/HSD	62,679	208,798	109,305	297,672	132,494	302,169	126,091	304,278	114,285	607,395
8	Baggasse	3,100	7,908	1,345	5,752	2,283	3,878	5,718	4,989	4,467	5,604
9	Wind	793	40,313	5,012	59,046	85,815	0	75,975	0	94,788	-
10	Solar	29	12,900	595	15,249	18,505	0	18,150	0	19,310	-
11	Import	0	0	0	0	0	5,507	0	4,960	926	8,140
12	Mixed	1,815	10,885	5,123	5,471	625	1,142	753	1,260	588	686
	Total	**417,648**	**746,200**	**568,294**	**766,553**	**856,095**	**639,375**	**792,930**	**674,870**	**969,664**	**1,415,073**

[1] Capacity and Energy Charges invoiced by Generators
[2] Capacity and Energy Charges verified of Generators
[*] IPP Hydel includes Neelum Jhelum, Laraib Energy, Star Hydro, Mira Power, Jagran and Malakand.
Note: The amount of EPP of wind and solar power plants have been included in CPP as per Regulatory requirement.
Source: CPPA-G

TABLE 34
Energy Purchase Price (EPP) and Capacity Purchase Price (CPP) Data

Amount verified on account of EPP and CPP (Rs. in Million)															
Power Plant	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22		
	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP
WAPDA		2355.17	57681.82	24706.23	2056.37	62445.31	26809.11	2023.7	55169.24	28654.17	2135.57	57421.72	25,626.42	2007.681	68702.069
Tarbella 4thExt	-	-	-	2489.4	378.39	5513.08	5485.66	833.82	5459.31	3417.4	514.59	7611.05	3,276.12	439.00072	24848.865
Neelum Jhelum	-	-	-	3928.26	-	35819.46	4843.09	44161.25	-	1809.62	16500.87	-	4,306.00	66437.007	0
Jagran	-	-	-	31.67	82.03	-	86.25	223.38	-	113.23	293.27	-	121.25	314.03154	0
Pehur	-	-	-	4.8	18.83	-	-	-	-	-	-	-	-	-	-
Malakand-III	362.11	2865.02	-	399.25	2689.83	-	408.53	176.77	1577.5	321.57	101.84	1263.47	353.87	112.07	1,263.47
Laraib Energy	380.9	148.95	4712.24	354.38	178.03	5409.85	384.43	6247.69	179.1	465.29	6216.27	223.76	412.67	142.56	4135.118
Marala Hydro	266.57	46.65	4444.25	527.45	92.3	7153.05	-	-	-	-	-	-	-	-	-
Patrind Hydro	-	-	-	-	-	-	566.88	99.09	7760.55	624.45	109.28	5062.31	568.68	181.96	12,214.53
Gulpur Hydropower	-	-	-	-	-	-	183.18	35.56	1898.62	256.89	49.86	8664.38	243.95	47.35	7,724.46
Karot	-	-	-	-	-	-	-	-	-	-	-	-	424.60	0	0
Daral													130.66	0	0
Ranolia													17.42	0	0
GENCO-I	1799.92	21264.97	4331.71	917.28	13876.28	4241.65	213.05	3944.85	3992.07	199.55	3229.15	3432.44	245.51	7,385.84	3,381.92
GENCO-II	8783.73	42534.97	16094.29	9379.88	50950.76	17123.41	5921.76	45246	24321	4825	34180	18836	4,143.95	30,342.98	16,645.11
GENCO-III	5529.28	79916.62	17471.59	2714.38	35892.63	13866.42	1776.19	23492	14305	1777	21012	10546	1,887.49	45,432.17	13,511.39
GENCO-IV	3.39	16.36	23.88	-	-	-	-	-	-	-	-	-	**0.00**	**-**	-
Lalpir Power	1089.06	12032.96	3984.3	613.8	9124	4646.44	186.32	2894.08	5820.04	620.78	9079.76	4601.98	1,022.67	27,300.90	3,526.85
Pak Gen Power	1237.28	13600.54	4006.64	495.56	7590.6	4678.33	149.76	2358.61	5850.6	445.54	6828.03	5297.96	1,304.35	36,281.10	4,311.02

Power Plant	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22		
	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP
Altern Energy	145.12	1301.61	274.45	22.03	358.02	43.84	3.73	70.69	9.6	11.6	164.84	32.87	0.80	-	-
Fauji Kabirwala	1017.26	10157.99	1407.34	563.13	7400.89	1185.29	346.32	4411.68	1557.29	389.96	4518.36	1965.48	357.21	8,640.11	1,365.99
Habibullah Coastal	880.33	3284.81	1746.1	716.48	3718.31	2076.26	108.37	807.74	493.02	-	-	68.84	-	1,124.35	44.67
Hub Power	5196.6	55963.11	14823.06	813.26	12682.21	17153.53	33.25	679.73	20973.24	174.51	3587.31	22938.88	1,343.33	33,848.46	25,441.27
KAPCO	7436.04	73863.58	26450.53	4955.67	64613.17	24122.59	3476.67	45730.84	27808.83	3562.24	41419.82	34153.64	4,979.78	122,082.19	1,403.98
Kohinoor Energy	645.4	6852.41	1164.93	387.44	5592.34	1356.14	363.86	5020.78	1651.45	342.85	4634.7	1752.83	515.81	12,731.17	1,631.83
Rousch Power	2663.01	24335.16	6434.05	1035.85	12693.73	5559.7	209.35	2844.62	6079.49	283.64	3535.18	7876.64	495.90	12,439.62	4,607.02
Saba Power	465.88	5100.14	1572.85	225.41	3465.5	1829.46	50.83	758.63	2243.95	121.63	1835.42	2353.45	**329.67**	**8,790.09**	**2,208.02**
TNB Liberty Power	1041.56	7359.31	1375.56	1307.61	15037.86	2313.51	896.74	14133.51	2554.39	985.03	11076.22	2661.82	1,054.06	14,758.22	2,212.53
Uch Power	4442.99	16788.13	8581.9	3895.85	17893.55	9852.13	4087.33	21388.35	7486.68	4090.44	30533.43	6987.6	4,300.52	38,859.71	6,613.33
Davis Enerqen.	8.82	78.74	51.78	-	-	-	-	-	-	-	-	-	-	-	-
Attock Gen.	912.45	9382.54	3174.41	519.02	7263.88	2941.1	314.38	3584.05	1936.41	383.98	4934.2	1929.71	721.82	18,569.22	2,378.96
Atlas Power	1246.45	12979.3	4789.8	668.01	9379.3	5396.42	259.57	3803.49	4405.91	418.57	5768.6	3033.2	1,007.74	20,722.56	3,543.77
Engro Powergen. Qadirpur	1668.42	7704.87	3911.61	1384.11	8601.26	4448.13	821.94	7163.08	4148.62	680.06	5904.6	2504.34	788.64	6,959.71	2,161.21
Saif Power	841.56	8968.98	4353.02	828.2	9678.59	4871.37	476.28	5483.57	4883.63	624.32	6796.3	3103.27	734.99	17,436.07	2,613.39
Orient Power	841.35	8710.26	3627.13	877.58	10073.47	4257.93	461.83	4420.97	4667.79	595.44	6824.99	3638.06	836.33	18,907.47	3,686.67
Nishat Power	1171.19	12076.17	4374.54	775.99	9670.45	4965.24	276.42	4388.06	5224.05	523.36	7315.01	2736.17	794.25	16,385.73	2,904.35
Nishat Chunian	1099.67	11444.57	4637.47	599.74	8869.1	5229.58	351.23	5494.46	5465.65	537.46	7318.53	2640.65	882.45	18,071.26	2,639.02
Sapphire Electric	814.96	8619.89	4059.93	808.51	9347.4	5043.12	289.59	3759.4	5244.52	550.54	7234.66	3454.73	780.51	17,866.76	1,746.06
Halmore Power	870.99	9396.29	4596.08	612.91	7116.98	4833.91	347.69	4251.08	6179.73	5615.56	6780.17	6036.18	675.91	16,214.39	4,612.32
Narowal Energy	1199.68	12465.16	5120.15	636.13	9091.54	5823.43	338.02	5118.57	6819.13	442.09	6214.87	6641.96	867.50	18,186.68	3,935.30
Liberty Power Tech.	392.96	5764.66	4613.5	676.18	9529.9	4831.53	458.52	6604.9	6060.39	606.59	8563.92	4529.22	925.43	23,032.97	3,674.65
Foundation Power	1392.39	6083.91	3522.19	1328.95	7907.81	4210.22	769.63	6716.78	4566.34	997.11	7912.48	4810.39	1,269.59	9,727.85	2,433.20
Uch-II Power	2593.04	13718.34	8410.13	3016.91	18629.75	10296.42	2146.98	16512.87	11649.43	2339.3	17905.61	11640.03	2,827.98	22,281.07	12,722.15
Sahiwal Imported Coal	6558.18	41033.37	28868.6	8210.76	63218.34	48253.68	6156.54	55091.58	57721.81	7341.83	72193.83	51641.54	6,882.11	135,918.47	55,710.15
Quaid-e-Azam Thermal	983.3	10974.41	1839.12	6149.75	57579.63	15896.34	5192.5	50670.29	25996.48	7118.8	62720.36	19160.78	6,090.89	110,729.86	21,383.22
NPPMCL – HBS	1295.24	13218.62	1940.64	7127.24	68069.83	13200.39	7050.3	65400.36	20974.53	7682.35	64123.73	16545.69	7,488.56	127,962.96	18,489.23
NPPMCL – Balloki	-	-	-	4914.95	46992.17	9224.68	5911.84	55888.67	21062.2	6032.81	49527.77	13627.66	7,186.75	126,556.08	17,746.73
Port Qasim Electric	1511.13	7758.65	1551.36	7551.36	44511.22	47488.63	8967.35	60327.41	57843.23	8371.36	55318.43	54352.58	**7,478.63**	**115,217.07**	**61,230.54**
China Power Hub	-	-	-	-	-	-	5641.5	39814.01	38028.36	7923.4	55406.5	62849.94	6,764.90	91,686.70	58,363.72
Engro Powergen. Thar	-	-	-	-	-	-	4170.15	51853.17	28814.68	3902.65	53533.38	31073.58	4,423.62	53,736.75	33,858.06
Reshma Powergen	49.81	599.9	60.51	15.11	265.96	19.18	2.07	44.42	2.81	-	-	-	-	-	-
CHASNUPP-I	2433.42	2519.57	9993.39	2141.02	2020.62	10196.25	2044.64	1912.55	10939.25	2244.33	2182.16	11612.27	2,512.57	3,062.07	11,709.75
CHASNUPP-II	2301.74	1943.15	15224.88	2262.73	1563.17	16661.51	2636.12	2559.68	19050.07	2067.98	2263.23	18146.56	2,437.85	2,752.33	19,710.79
CHASNUPP-III	2246.55	2515.46	21566.07	2484.34	3443.79	24914.93	2322.85	2300.13	29862.04	2404.32	2281.76	30692.06	2,320.37	3,271.41	30,425.67
CHASNUPP-IV	1763.09	1816.16	13604.66	2117.59	2189.02	24676.71	2701.28	3053.53	29461.62	2456.15	2926.54	30338.34	2,179.48	2,802.66	30,438.59
KANUPP	-	-	-	-	-	-	-	-	-	1698.92	1573.88	9822.17	-	-	-
Tavanir-Iran (Import)	555.78	31.89	-	486.81	31.13	-	513.74	30.54	-	498.37	27.29	-	514.37	44.16	-
Zorlu Enerji Pakistan	156.05	2500.15	-	158.98	3124	-	145.33	3421.91	-	109.2	2293.3	-	123.95	2,948.82	0
FFC Energy	115.37	2430.03	34.84	115.75	2702.8	55.25	141.23	3054.14	-	123.77	2503.28	-	143.52	2,766.53	0
Three Gorges First	127.66	2948.59	-	129.21	2654.73	-	138.69	3689.87	-	138.69	3607.42	-	138.46	3756.121	0
Foundation Wind-I	144	2427	-	145	3138	-	144.6	3651.65	-	144.6	3494.83	-	144.59	3,699.71	-
Foundation Wind-II	141.89	2398.16	-	143.41	2758.29	-	143.6	3618.98	-	143.59	3481.41	-	143.60	3,684.47	0
Sapphire Wind	131.23	2409.04	-	138.62	3085.83	-	132.11	3449.65	-	110.68	2739.76	-	132.07	3,534.73	0
Yunus Energy	127.4	2590.75	49.91	128.69	2863.99	87.25	125.03	3333.32	-	119	2862.04	-	138.33	3,579.12	

Power Plant	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22		
	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP	Energy Delivered (GWh)	EPP	CPP
Metro Power	140.12	2061.83	3.63	138.46	2654.48	29.52	141.14	3891.81	-	140.32	3380.62	-	141.18	3,168.32	0
Gul Ahmed Wind	129.71	2438.28	-	130.66	2938.05	-	128.75	3472.88	-	116.69	2885.8	-	140.08	3,720.73	0
Master Wind	127.01	2530.39	-	135.82	2881.43	-	133.9	3614.53	-	118.61	2931.9	-	139.82	3,705.88	0
Tenaga Generasi	105.08	1954.61	-	115.67	2610.31	-	126	3401	-	105	2632	-	135.88	3,675.18	0
HydroChina Dawood	110.09	2036.78	-	119.65	2702.24	-	121.51	3285.35	-	102.26	2611.83	-	136.84	3,740.47	0
Sachal Energy	134.44	2421.47	-	136.28	3245.9	-	136.28	3727.29	-	134.62	3404.26	-	136.50	3,569.60	0
UEP Wind	273.51	4880	-	249.21	5609.65	-	256.95	6951.39	-	215.94	5511.32	-	260.50	7155.521	0
Artistic Wind	77.82	1217.63	-	198.55	3086.96	-	175.03	3040.58	-	172.4	2778.08	-	86.59	597.04	0
Act Wind	90.15	1496.8	-	91.35	1875.22	-	85.07	2275.96	-	77.97	1865.04	-	89.91	1920.652	0
Hawa Energy	61.75	789.88	-	170.1	3007.71	-	149.66	3079.26	-	154.77	3005.84	-	172.06	3,559.69	0
Jhimpir Wind	65.16	823.95	-	169.73	3061.77	-	155.72	3186.51	-	157.84	3069.46	-	168.01	3,474.47	0
Three Gorges Second	16.49	125.5	-	137.96	1633.86	-	135	2656	-	116	2290	-	140.82	3,030.20	0
Three Gorges Third	27.44	248.2	-	140.99	1669.79	-	138.19	2709	-	120	2372	-	144.75	3,113.26	0
Tricon Bostan-A	-	-	-	133.95	2467.95	23.81	159.78	2992.92	-	164.63	3191.79	-	183.94	3,838.88	0
Tricon Bostan-B	-	-	-	106.93	2000.55	24.69	158.93	2969	-	151.19	2951.09	-	180.16	3,759.73	0
Tricon Bostan-C	-	-	-	109.52	2050.28	24.09	152.91	3837.5	-	159.07	3068.26	-	181.15	3,779.41	0
Zephyr Wind	-	-	-	57.48	722.57	-	179.96	4037.69	-	149.34	2821.61	-	192.96	3,876.47	-
Quaid-e-Azam Solar	162.2	3061.84	-	164.47	3623.15	-	165.05	4280.54	-	165.74	3691.3	-	164.72	3,707.27	-
Appolo Solar	167.31	2719.6	-	166.83	3619.26	-	163.13	4197.3	-	164.91	4141.89	-	168.76	1920.652	-
Best Green Energy	167.68	2864.45	-	165.87	3747.02	-	162.97	4367.55	-	164.45	4228	-	167.47	4,632.04	
Crest Solar	233.34	3883.96	-	181.5	4110.32	-	165.41	4463.19	-	167.12	4337.42	-	169.34	4,715.61	-
AJ Power	10.27	161.84	-	18.66	352.62	-	18.12	356.8	-	18.59	350.44	-	18.84	340.91	-
Harappa Solar	20.66	332.09	-	31.75	564.26	-	30.76	620.72	-	28.37	613.24	-	31.48	581.17	-
Jamal Din Wali-II	180.96	1746.95	-	187.8	1731.48	-	161.88	1088.29	668.29	177.17	1193.04	588.27	169.47	1,141.23	675.77
Jamal Din Wali-III	196.59	2087.9	-	181.18	1726.18	-	129.21	869	732.35	144.44	972.1	733.19	136.74	922.42	464.42
RYK Mills	155.6	1490.35	-	141.31	1148.84	-	73.67	494.84	510.87	73.94	498.14	446.64	97.26	657.23	573.37
Chiniot Power	346.02	4154.33	-	194.67	1639.33	-	80.45	539.49	566.71	160.56	1081.53	965.99	222.53	1,523.86	1,481.77
Hamza Sugar Mills	-	-	-	-	-	-	45.22	303.71	318.79	39.99	269.68	238.79	61.07	412.6227	367.2992
The Thal Industries	55.99	638.58	-	65.84	795.66	-	36.79	255.36	291.62	46.37	217.82	191.98	73.68	498.17	448.7
Almoiz Industries	-	-	-	48.92	636.45	-	15.1	114.3	147.04	29.83	200.91	176.04	17.39	117.74	107.55
Chanar Energy	-	-	-	8.47	108.16	-	22.34	143.87	126.08	38.26	318.05	268.46	47.92	323.71	288.35
Master Green Energy	-	-	-	-	-	-	-	-	-	-	-	-	157.55	974.2	-
Tricom Wind Power	-	-	-	-	-	-	-	-	-	-	-	-	147.74	967.97	-
ACT2 Wind	-	-	-	-	-	-	-	-	-	-	-	-	87.09	590.36	
AEP Wind	-	-	-	-	-	-	-	-	-	-	-	-	195.71	2991.93	
Indus Wind Energy	-	-	-	-	-	-	-	-	-	-	-	-	87.64	574.74	-
Lakeside Energy	-	-	-	-	-	-	-	-	-	-	-	-	73.51	472.95	-
Liberty-I	-	-	-	-	-	-	-	-	-	-	-	-	69.94	466.443	0
Liberty-II	-	-	-	-	-	-	-	-	-	-	-	-	42.94	238.958	0
Din Energy	-	-	-	-	-	-	-	-	-	-	-	-	73.08	493.53	-
Gul Ahmad-II	-	-	-	-	-	-	-	-	-	-	-	-	84.42	533.86	-
Zenfa Pakisan New Energy	-	-	-	-	-	-	-	-	-	-	-	-	65.42	380.63	
NASDA Green Energy	-	-	-	-	-	-	-	-	-	-	-	-	62.56	392.38	-
Metro-II	-	-	-	-	-	-	-	-	-	-	-	-	47.84	233.74	-
SPPs	-	-	-	-	-	-	-	-	-	-	-	-	161.23	588	686
Lucky Electric Power	-	-	-	-	-	-	-	-	-	-	-	-	2,056.36	6,744.26	7,542.03
KANUPP-II	-	-	-	-	-	-	-	-	-	-	-	-	6,830.41	6,157.10	79,357.21
KANUPP-III	-	-	-	-	-	-	-	-	-	-	-	-	1,967.06	1,782.94	15,026.71
Total	82137.59	653464.25	330560.84	121538.21	769779.03	504314.76	121989.09	799274.14	611561.40	132215.96	818975.07	613923.56	144,208.76	1,597,534.48	720,930.11

Source: CPPA-G

TABLE 35

Merit Order for Power Generation Plants (CPPA-G System)

(Based on the revised fuel prices effective from 22-06-2022)

Merit No.	Plant Groups	Fuel Type	Fuel Cost (Rs./kWh)	VO&M Cost (Rs./kWh)	Specific Cost (Rs./kWh)
1	UCH (upto 152,375 MWh)	Gas	1.57846	0.44489	2.099853
2	LIBERTY Power (Upto 61,904 MWh)	Gas	2.4573	0.5495	3.0068
3	Engro Power Thar	Coal	2.5253	1.1053	3.6306
4	747 MW GUDDU (CCP)	Gas	5.9451	0.6616	6.6067
5	KAPCOB-I	Gas	6.80852	0.4403453	7.248865
6	Guddu (CCP)B-I (Unit 11-13)	Gas	7.3127	0.0689	7.3816
7	Foundation Power	Gas	6.9081474	0.7164	7.624547
8	GTPS FaisalabadB-IV (Unit 5-9)	Gas	7.769	0.1625	7.9315
9	KAPCOB-II	Gas	7.46781	0.5150697	7.98288
10	Engro PowerGen	Gas	7.366216	0.6332	7.999416
11	Guddu (CCP)B-II (Unit 5-10)	Gas	8.125	0.0689	8.1939
12	UCH-II	Gas	7.9203209	0.4153	8.335621
13	UCH (above 152,375 MWh)	Gas	7.9032	0.44489	8.424593
14	KAPCOB-III	Gas	7.72358	0.9928217	8.716402
15	HCPC	Gas	6.71361	0.8375	9.43771
16	747 MW GUDDU (OC)	Gas	8.8726	0.6616	9.5342
17	MuzaffargarhB-II (Unit 4)	Gas	9.4689	0.1625	9.6314
18	MuzaffargarhB-I (Unit -3)	Gas	9.4823	0.1625	9.6448
19	JamshoroB-II (Unit 4)	Gas	9.6567	0.0925	9.7492
20	MuzaffargarhB-I (Unit -1)	Gas	9.6844	0.1625	9.8469
21	JamshoroB-II (Unit 3)	Gas	9.8616	0.0925	9.9541
22	MuzaffargarhB-I (Unit -2)	Gas	9.812	0.1625	9.9745
23	JamshoroB-II (Unit 2)	Gas	10.1263	0.0925	10.2188
24	MuzaffargarhB-III (Unit -5)	Gas	10.0636	0.1625	10.2261
25	MuzaffargarhB-III (Unit -6)	Gas	10.3298	0.1625	10.4923
26	KAPCOB-I (S/Cycl)	Gas	10.21278	0.4403453	10.65313
27	Guddu(W/oCCP)B-I (Unit 11-13)	Gas	10.96905	0.0689	11.03795
28	KAPCOB-II (S/Cycl)	Gas	11.201715	0.5150697	11.71678
29	JamshoroB-II (Unit 4)	Mix.(*****)	12.0645	0.0925	12.157
30	Guddu(W/oCCP)B-II (Unit 5-10)	Gas	12.1875	0.0689	12.2564
31	JamshoroB-II (Unit 3)	Mix.(*****)	12.3295	0.0925	12.422
32	KAPCOB-III (S/Cycl)	Gas	11.58537	0.9928217	12.57819
33	JamshoroB-II (Unit 2)	Mix.(*****)	12.6655	0.0925	12.758
34	LIBERTY Power (Above 61,904 MWh)	Gas	12.2866	0.5495	12.8361
35	Lucky Electric Power Company	Coal	16.27	0.2167	16.4867
36	NPPMC - HBS (CC)	RLNG	24.28125444	0.2362	24.51745
37	NPPMC - Baloki (CC)	RLNG	24.43606364	0.2635	24.69956
38	JamshoroB-II (Unit 4)	Mix.(**)	24.69135	0.0925	24.78385
39	PORT QASIM	Coal	24.7848	0.2198	25.0046
40	QATPL - Bhikki (CC)	RLNG	24.47958578	0.6616	25.14119
41	JamshoroB-II (Unit 3)	Mix.(**)	25.22105	0.0925	25.31355
42	JamshoroB-II (Unit 2)	Mix.(**)	25.9153	0.0925	26.0078
43	MuzaffargarhB-II (Unit 4)	Mix.(**)	26.64735	0.1625	26.80985
44	MuzaffargarhB-I (Unit 3)	Mix.(**)	26.6867	0.1625	26.8492
45	MuzaffargarhB-I (Unit 1)	Mix.(**)	27.2699	0.1625	27.4324
46	MuzaffargarhB-I (Unit 2)	Mix.(**)	27.63755	0.1625	27.80005
47	MuzaffargarhB-III (Unit 5)	Mix.(**)	28.3646	0.1625	28.5271
48	China Power HUB Gen CO	Coal	28.6475	0.538	29.1855
49	MuzaffargarhB-III (Unit 6)	Mix.(**)	29.1359	0.1625	29.2984
50	Sahiwal Power	Coal	29.2396	0.2166	29.4562
51	Orient Power Company Ltd	RLNG	29.82623287	0.4429	30.26913
52	Halmore Power	RLNG	29.79618845	0.7569	30.55309
53	Sapphire Electric Co	RLNG	29.82623287	0.7451	30.57133
54	Saif Power	RLNG	29.82896555	0.7535	30.58247
55	Nandipur (CC)	RLNG	30.2137	0.7479	30.9616
56	Orient Power Company Ltd	HSD	30.5415	0.7261	31.2676
57	KAPCOB-I	RLNG	31.12445	0.4403453	31.5648
58	Halmore Power	HSD	30.5065	1.0926	31.5991
59	Sapphire Electric Co	HSD	30.537	1.0754	31.6124
60	Saif Power	HSD	30.5408	1.0875	31.6283
61	PAKGEN Power Ltd.	RFO	32.75032	0.28411	33.03443

Merit No.	Plant Groups	Fuel Type	Fuel Cost (Rs./kWh)	VO&M Cost (Rs./kWh)	Specific Cost (Rs./kWh)
62	Attock Gen	RFO	31.4148	1.7516	33.1664
63	ROUSCH	RLNG	32.8212	0.4667961	33.288
64	Liberty Power Tech Limited	RFO	32.4855	1.8855	34.371
65	KAPCOB-II	RLNG	34.13829	0.5150697	34.65336
66	KAPCOB-I	RFO	34.0726	0.7638336	34.83643
67	Nishat Chunian Power Ltd	RFO	33.21	1.7259	34.9359
68	FKPCL	RLNG	34.1087	1.2534849	35.36218
69	ALTERN ENERGY LTD. (Ph-II)	RLNG	34.40133	1.1524	35.55373
70	KAPCOB-III	RLNG	35.30752	0.9928217	36.30034
71	KEL	RFO	35.43806	0.99182	36.42988
72	Atlas Power	RFO	34.9816	1.73	36.7116
73	JamshoroB-I (Unit 1)	RFO	37.1351	0.0925	37.2276
74	Nishat Power Ltd	RFO	35.8567	1.73	37.5867
75	Narowal Power	RFO	36.3032	1.5076	37.8108
76	KAPCOB-II	RFO	37.39525	1.0751912	38.47044
77	SABA	RFO	38.38324	0.2842	38.66744
78	GTPS FaisalabadB-IV (Unit 5-9)	RLNG	38.6718	0.1625	38.8343
79	HUBCO	RFO	38.9881	0.2879	39.276
80	JamshoroB-II (Unit 4)	RFO	39.726	0.0925	39.8185
81	LALPIR (Pvt) Ltd	RFO	40.10329	0.28411	40.3874
82	JamshoroB-II (Unit 3)	RFO	40.5805	0.0925	40.673
83	Davis Energen	RLNG	39.74248	0.95798	40.70046
84	JamshoroB-II (Unit 2)	RFO	41.7043	0.0925	41.7968
85	QATPL - Bhikki (CC)	HSD	41.90674143	0.9545	42.86124
86	NPPMC - HBS (CC)	HSD	42.62643664	0.3064	42.93284
87	NPPMC - Baloki (CC)	HSD	42.88998136	0.3344	43.22438
88	MuzaffargarhB-II (Unit 4)	RLNG	43.2864	0.1625	43.4489
89	MuzaffargarhB-I (Unit -3)	RLNG	43.3477	0.1625	43.5102
90	MuzaffargarhB-II (Unit 4)	Mix.(****)	43.5561	0.1625	43.7186
91	MuzaffargarhB-I (Unit 3)	Mix.(****)	43.6194	0.1625	43.7819
92	MuzaffargarhB-II (Unit 4)	RFO	43.8258	0.1625	43.9883
93	MuzaffargarhB-I (Unit -3)	RFO	43.8911	0.1625	44.0536
94	MuzaffargarhB-I (Unit -1)	RLNG	44.2713	0.1625	44.4338
95	MuzaffargarhB-I (Unit 1)	Mix.(****)	44.56335	0.1625	44.72585
96	MuzaffargarhB-I (Unit -2)	RLNG	44.8548	0.1625	45.0173
97	MuzaffargarhB-I (Unit -1)	RFO	44.8554	0.1625	45.0179
98	MuzaffargarhB-I (Unit 2)	Mix.(****)	45.15895	0.1625	45.32145
99	ALTERN ENERGY LTD. (Ph-I)	RLNG	44.20228	1.1524	45.35468
100	MuzaffargarhB-I (Unit -2)	RFO	45.4631	0.1625	45.6256
101	JamshoroB-II (Unit 4)	Mix.(****)	46.02475	0.0925	46.11725
102	MuzaffargarhB-III (Unit -5)	RLNG	46.0047	0.1625	46.1672
103	MuzaffargarhB-III (Unit 5)	Mix.(****)	46.33515	0.1625	46.49765
104	MuzaffargarhB-III (Unit -5)	RFO	46.6656	0.1625	46.8281
105	JamshoroB-II (Unit 3)	Mix.(****)	47.00685	0.0925	47.09935
106	KAPCOB-I (S/Cycl)	RLNG	46.686675	0.4403453	47.12702
107	MuzaffargarhB-III (Unit -6)	RLNG	47.2215	0.1625	47.384
108	KAPCOB-I	HSD	47.03927	0.4427839	47.48205
109	MuzaffargarhB-III (Unit 6)	Mix.(****)	47.58175	0.1625	47.74425
110	MuzaffargarhB-III (Unit -6)	RFO	47.942	0.1625	48.1045
111	JamshoroB-II (Unit 2)	Mix.(****)	48.2861	0.0925	48.3786
112	KAPCOB-II (S/Cycl)	RLNG	51.207435	0.5150697	51.7225
113	KAPCOB-I (S/Cycl)	RFO	51.1089	0.7638336	51.87273
114	KAPCOB-II	HSD	51.62615	0.5953121	52.22146
115	JamshoroB-II (Unit 4)	RLNG	52.3235	0.0925	52.416
116	Engro PowerGen	HSD	51.8630618	0.6463	52.50936
117	JamshoroB-II (Unit 3)	RLNG	53.4332	0.0925	53.5257
118	KAPCOB-III (S/Cycl)	RLNG	52.96128	0.9928217	53.9541
119	KAPCOB-III	HSD	53.39244	1.5033257	54.89577
120	JamshoroB-II (Unit 2)	RLNG	54.8679	0.0925	54.9604
121	KAPCOB-II (S/Cycl)	RFO	56.092875	1.0751912	57.16807
122	KAPCOB-I (S/Cycl)	HSD	70.558905	0.4427839	71.00169
123	KAPCOB-II (S/Cycl)	HSD	77.439225	0.5953121	78.03454
124	KAPCOB-III (S/Cycl)	HSD	80.08866	1.5033257	81.59199

The calculation of fuel cost Rs./kWh and O&M cost Rs./kWh has not been calculated by NPCC Islamabad. The same has been communicated to NPCC by Chief Financial Officer CPPA-G vide letter No.CPPA-G/MIT/5133-36, dated 21-06-2022 received in the office of General Manager (System Operation) through Email dated 21-06-2022, because NPCC has no any Data regarding heat rate, fuel cost and O&M cost etc.
Source: NTDC/NPCC

TABLE 36

Economic Merit Order Ranking of Generation Plants (FY 2021-22)

Plant Groups	Fuel Type	July to December, 2021						January to June, 2022					
		16-Jul	16-Aug	16-Sep	16-Oct	16-Nov	16-Dec	16-Jan	16-Feb	16-Mar	16-Apr	16-May	16-Jun
LIBERTY Power (Upto 61.904 MWh)	Gas	1	1	2	2	2	3	2	2	2	2	2	2
UCH (upto 152.375 MWh)	Gas	2	2	1	1	1	1	1	1	1	1	1	1
Engro Power Thar	Coal	3	3	3	3	3	3	3	3	3	3	3	3
747 MW GUDDU (CCP)	Gas	4	4	4	4	4	4	4	4	4	4	4	4
China Power HUB Gen CO	Coal	5	6	5	5	5	15	31	31	37	28	34	43
LIBERTY Power (Above 61.904 MWh)	Gas	6	5	19	19	19	17	16	16	16	16	16	34
PORT QASIM	Coal	7	12	15	15	16	29	38	38	29	35	35	45
KAPCO B-I	Gas	8	7	6	6	6	5	5	5	5	5	5	5
Guddu (CCP) B-I (Unit 11-13)	Gas	9	9	8	8	7	6	6	6	6	6	6	6
UCH-II	Gas	10	8	7	7	10	9	9	11	11	11	11	12
Foundation Power	Gas	11	11	10	10	9	8	8	7	7	7	7	7
UCH (above 152.375 MWh)	Gas	12	10	9	9	8	7	7	13	13	13	13	13
Engro PowerGen	Gas	13	13	11	11	11	12	12	9	9	9	10	10
GTPS Faisalabad B-IV (Unit 5-9)	Gas	14	14	13	13	13	11	11	8	8	8	8	8
KAPCO B-II	Gas	15	15	12	12	12	10	10	10	10	10	9	9
Guddu (CCP) B-II (Unit 5-10)	Gas	16	16	14	14	14	13	13	12	12	12	12	11
KAPCO B-III	Gas	17	17	16	16	15	14	14	14	14	14	14	14
747 MW GUDDU (OC)	Gas	18	18	17	17	17	18	17	17	17	17	17	16
HCPC	Gas	19	19	18	18	18	16	15	15	15	15	15	15
Sahiwal Power	Coal	20	28	31	31	35	35	37	37	38	74	72	53
Muzaffargarh B-II (Unit 4)	Gas	21	20	20	20	20	19	18	18	18	18	18	17
Muzaffargarh B-I (Unit -3)	Gas	22	21	21	21	21	20	19	19	19	19	19	18
NPPMC - HBS (CC)	RLNG	23	33	36	38	36	36	34	34	34	36	36	39
Jamshoro B-II (Unit 4)	Gas	24	22	22	22	22	21	20	20	20	20	20	19
NPPMC - Baloki (CC)	RLNG	25	36	37	37	37	37	35	35	35	37	37	40
Muzaffargarh B-I (Unit -1)	Gas	26	23	23	23	23	22	21	21	21	21	21	20
Jamshoro B-II (Unit 3)	Gas	27	24	24	24	24	23	22	22	22	22	22	21
Muzaffargarh B-I (Unit -2)	Gas	28	25	25	25	25	24	23	23	23	23	23	22
QATPL - Bhikki (CC)	RLNG	29	38	38	38	38	38	36	36	36	38	38	41
Jamshoro B-II (Unit 2)	Gas	30	26	26	26	26	25	24	24	24	24	24	23
Muzaffargarh B-III (Unit -5)	Gas	31	27	27	27	27	26	25	25	25	25	25	24
Muzaffargarh B-III (Unit -6)	Gas	32	29	28	28	28	27	26	26	26	26	26	25
KAPCO B-I (S/Cycl)	Gas	33	30	29	29	29	28	27	27	27	27	27	26
KAPCO B-II (S/Cycl)	Gas	34	31	30	30	30	30	28	28	28	29	28	28
Orient Power Company Ltd	RLNG	35	39	39	39	45	43	39	39	39	44	44	54
Jamshoro B-II (Unit 4)	Mix.(*****)	36	32	32	32	31	31	29	29	30	30	29	29
Sapphire Electric Co	RLNG	37	40	40	40	47	46	41	40	41	48	49	57
Halmore Power	RLNG	38	42	41	41	48	47	40	41	40	47	47	56
Saif Power	RLNG	39	43	42	42	49	48	42	42	42	49	48	58
Nandipur (CC)	RLNG	40	45	44	43	52	49	43	43	43	51	50	60
Jamshoro B-II (Unit 3)	Mix.(*****)	41	34	33	33	32	32	30	30	31	31	30	31
KAPCO B-III (S/Cycl)	Gas	42	35	34	34	33	33	32	32	32	32	31	32
KAPCO B-I	RLNG	43	48	48	44	53	52	44	44	44	53	52	65
Jamshoro B-II (Unit 2)	Mix.(*****)	44	37	35	35	34	34	33	33	33	33	32	33
Atlas Power	RFO	45	63	65	62	65	64	64	76	47	52	68	81
ROUSCH	RLNG	46	53	52	47	63	61	45	45	45	56	54	69
KAPCO B-II	RLNG	47	56	57	53	71	67	46	47	46	59	55	72
KAPCO B-I	RFO	48	69	63	56	44	63	65	72	70	69	115	89
Nishat Power Ltd	RFO	49	66	56	54	69	62	89	77	74	39	90	67
GTPS Faisalabad B-IV (Unit 5-9)	RLNG	50	58	58	57	82	76	56	56	61	65	60	86
ALTERN ENERGY LTD. (Ph-II)	RLNG	51	59	59	58	73	70	48	48	54	61	57	79
FKPCL	RLNG	52	60	61	61	75	71	49	49	48	60	56	77
KAPCO B-III	RLNG	53	62	66	66	80	73	52	52	49	62	58	80
Muzaffargarh B-II (Unit 4)	Mix.(**)	54	41	46	48	50	44	53	53	51	41	40	47
Muzaffargarh B-I (Unit 3)	Mix.(**)	55	44	47	49	51	45	54	54	52	42	41	48
Muzaffargarh B-I (Unit 1)	Mix.(**)	56	46	50	52	54	50	57	58	56	45	43	49
KAPCO B-II	RFO	57	92	74	73	64	75	79	79	80	82	117	111
Muzaffargarh B-I (Unit 2)	Mix.(**)	58	49	51	55	55	51	58	60	58	50	46	50
Jamshoro B-II (Unit 4)	Mix.(**)	59	47	43	45	39	39	47	51	50	40	39	36
Jamshoro B-II (Unit 3)	Mix.(**)	60	50	45	46	40	41	50	55	53	43	42	37
Muzaffargarh B-III (Unit 5)	Mix.(**)	61	51	53	63	61	58	61	61	60	54	51	51

Plant Groups	Fuel Type	July to December, 2021						January to June, 2022					
		16-Jul	16-Aug	16-Sep	16-Oct	16-Nov	16-Dec	16-Jan	16-Feb	16-Mar	16-Apr	16-May	16-Jun
KEL	RFO	62	61	60	51	46	77	78	50	62	72	99	73
Attock Gen	RFO	63	55	54	65	74	59	51	57	66	73	92	66
Davis Energen	RLNG	64	71	78	78	85	82	62	62	67	70	64	88
Liberty Power Tech Limited	RFO	65	68	64	64	70	68	74	46	59	77	101	78
Jamshoro B-II (Unit 2)	Mix.(**)	66	52	49	50	42	42	55	59	57	46	45	38
Muzaffargarh B-III (Unit 6)	Mix.(**)	67	54	55	67	68	60	63	63	64	55	53	52
Nishat Chunian Power Ltd	RFO	68	57	62	60	57	72	75	72	65	58	89	76
Muzaffargarh B-II (Unit 4)	RLNG	69	87	86	85	88	87	70	67	68	75	65	95
Muzaffargarh B-I (Unit -3)	RLNG	70	88	87	86	89	88	71	68	69	76	66	96
HUBCO	RFO	71	70	70	72	83	79	88	84	79	63	85	85
Narowal Power	RFO	72	67	68	68	62	55	66	64	63	57	112	75
Muzaffargarh B-I (Unit -1)	RLNG	73	95	93	88	93	91	73	69	71	79	71	100
Muzaffargarh B-I (Unit -2)	RLNG	74	99	98	89	97	94	76	71	72	84	74	105
LALPIR (Pvt) Ltd	RFO	75	64	69	69	78	80	91	82	84	68	110	83
Jamshoro B-II (Unit 4)	RLNG	76	103	103	91	101	100	80	74	91	112	107	118
Muzaffargarh B-III (Unit -5)	RLNG	77	106	104	92	102	101	81	75	73	95	86	109
ALTERN ENERGY LTD. (Ph-I)	RLNG	78	100	100	90	96	96	77	73	78	91	84	106
Jamshoro B-II (Unit 3)	RLNG	79	110	108	96	105	106	84	78	92	115	108	119
Muzaffargarh B-III (Unit -6)	RLNG	80	113	110	98	109	108	87	81	76	102	95	115
KAPCO B-I (S/Cycl)	RLNG	81	112	109	97	106	107	86	80	75	100	94	113
Muzaffargarh B-II (Unit 4)	Mix.(****)	82	83	46	93	98	93	97	88	85	80	69	93
Muzaffargarh B-I (Unit 3)	Mix.(****)	83	84	47	94	99	95	98	89	86	83	70	94
Jamshoro B-II (Unit 2)	RLNG	84	114	113	102	111	113	90	83	97	117	113	122
SABA	RFO	85	90	71	70	81	78	85	70	55	90	114	84
PAKGEN Power Ltd.	RFO	86	72	72	75	41	65	82	66	77	114	116	101
Muzaffargarh B-I (Unit 1)	Mix.(****)	87	91	50	100	103	99	100	91	87	87	77	99
Muzaffargarh B-I (Unit 2)	Mix.(****)	88	94	51	103	104	104	102	95	90	92	82	103
KAPCO B-I	HSD	89	65	67	59	43	40	60	96	94	81	79	64
Jamshoro B-II (Unit 4)	Mix.(****)	90	97	43	95	91	92	93	90	95	103	96	90
Muzaffargarh B-III (Unit 5)	Mix.(****)	91	101	53	106	110	110	104	98	93	101	93	108
Jamshoro B-II (Unit 3)	Mix.(****)	92	104	45	101	94	98	99	92	99	107	100	97
Jamshoro B-I (Unit 1)	RFO	93	73	75	87	84	81	95	94	89	71	63	63
Muzaffargarh B-II (Unit 4)	RFO	94	77	94	107	107	102	111	104	100	86	75	91
Muzaffargarh B-I (Unit -3)	RFO	95	78	95	108	108	103	112	105	104	88	76	92
Muzaffargarh B-III (Unit 6)	Mix.(****)	96	109	55	111	116	114	109	100	98	105	98	114
KAPCO B-II (S/Cycl)	RLNG	97	115	115	113	119	119	101	93	88	111	106	117
KAPCO B-I (S/Cycl)	RFO	98	118	116	114	95	116	117	116	117	118	121	123
Jamshoro B-II (Unit 2)	Mix.(****)	99	111	49	105	100	105	103	97	101	110	105	104
Muzaffargarh B-I (Unit -1)	RFO	100	86	101	110	112	109	113	111	110	98	88	98
Orient Power Company Ltd	HSD	101	76	81	79	77	83	92	10	105	89	78	55
Sapphire Electric Co	HSD	102	81	82	80	67	84	94	107	107	94	83	61
Muzaffargarh B-I (Unit -2)	RFO	103	89	105	112	114	112	115	112	112	99	91	102
NPPMC - HBS (CC)	HSD	104	75	76	71	56	53	59	85	81	64	59	42
Saif Power	HSD	105	85	83	82	66	85	96	108	108	96	81	62
NPPMC - Baloki (CC)	HSD	106	79	77	74	58	54	72	86	82	66	61	44
QATPL - Bhikki (CC)	HSD	107	80	79	76	59	56	67	87	83	67	62	46
KAPCO B-II	HSD	108	82	80	77	60	57	68	109	111	106	104	71
Muzaffargarh B-III (Unit -5)	RFO	109	96	111	115	117	115	116	113	113	104	97	107
Jamshoro B-II (Unit 4)	RFO	110	93	84	99	86	86	105	101	100	78	67	68
KAPCO B-III (S/Cycl)	RLNG	111	116	117	118	121	120	106	99	96	116	111	120
Jamshoro B-II (Unit 3)	RFO	112	98	88	107	87	90	108	102	102	85	73	70
Halmore Power	HSD	113	74	73	81	79	74	107	106	106	93	80	59
Muzaffargarh B-III (Unit -6)	RFO	114	105	114	117	118	117	118	115	114	108	102	112
Jamshoro B-II (Unit 2)	RFO	115	107	96	109	90	97	110	110	109	97	87	74
KAPCO B-II (S/Cycl)	RFO	116	120	119	119	115	121	120	118	118	119	122	124
KAPCO B-III	HSD	117	102	85	83	72	66	83	114	115	113	109	82
Engro PowerGen	HSD	118	108	92	84	76	69	69	117	116	109	103	87
KAPCO B-I (S/Cycl)	HSD	119	117	118	116	92	89	114	119	119	120	118	110
KAPCO B-II (S/Cycl)	HSD	120	119	120	120	113	111	119	120	120	121	119	116
KAPCO B-III (S/Cycl)	HSD	121	121	121	121	120	118	121	121	121	122	120	121
Lucky Electric Power Company	Coal	-	-	-	-	-	-	-	-	-	-	33	35
Guddu(W/oCCP) B-I (Unit 11-13)	Gas	-	-	-	-	-	-	-	-	-	-	-	27
Guddu(W/oCCP) B-II (Unit 5-10)	Gas	-	-	-	-	-	-	-	-	-	-	-	30

Source: NTDC/NPCC

TABLE 37

Monthly Utilization Factor of Power Plants (%)

S. No.	Power Producers	Fuel	Dep. Cap. (MW)	2021 (%)						2022 (%)					
				Jul.	Aug	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.
1	Uch Power	Gas	551	90	90	90	55	85	82	100	93	96	95	91	87
2	China Power	Coal	1220	47	42	47	39	39	42	90	93	86	99	71	61
3	Port Qasim	Coal	1320	84	88	89	71	31	58	79	79	77	37	37	34
4	HBS	RLNG	1200	72	76	47	14	61	77	58	73	86	87	89	93
5	Uch-II	Gas	381	89	90	87	83	73	87	98	95	30	90	91	90
6	Bhikki	RLNG	1180	75	72	79	64	48	5	3	5	49	77	72	78
7	Engro Thar	Coal	660	77	88	81	52	62	74	61	68	2	26	70	91
8	Foundation	Gas	171	91	88	91	91	61	82	102	95	94	93	29	88
9	Sahiwal Coal	Coal	1320	76	62	79	51	32	56	88	74	67	47	39	35
10	Liberty	Gas	212	88	65	88	90	73	45	0	0	0	37	90	86
11	Balloki	RLNG	1223	77	69	84	66	13	39	9	72	67	86	85	81
12	Guddu 747	Gas	721	47	46	32	33	31	48	52	21	46	44	40	47
13	Nandipur	RLNG	411	99	99	72	44	4	0	0	0	6	13	82	95
14	Liberty Power	RFO	196	55	73	57	71	5	12	60	40	69	63	65	71
15	Engro Energy	Gas	213	49	36	57	45	43	55	54	24	0	24	58	52
16	Saif Power	RLNG	204	76	82	48	51	9	0	0	0	0	58	70	78
17	Nishat Chunian	RFO	196	45	66	65	74	10	14	56	27	63	55	67	67
18	Kohinoor	RFO	124	68	60	46	53	12	7	59	41	54	58	55	50
19	Nishat Power	RFO	195	52	67	56	66	5	21	31	15	43	65	65	65
20	Fauji Kabirwala	Gas	151	74	84	67	8	0	0	0	0	0	0	69	19
21	Orient Power	RLNG	213	64	80	49	15	0	0	0	4	33	61	79	75
22	Attock Gen.	RFO	156	67	66	56	58	3	23	68	30	53	78	60	66
23	Atlas Power	RFO	214	69	62	46	18	7	20	63	37	66	80	62	62
24	KAPCO	FO/HSD	1336	78	52	47	53	7	12	44	15	28	44	65	61
25	Halmore Power	RLNG	199	26	73	51	65	9	0	0	0	16	65	79	76
26	Narowal Energy	RFO	214	56	64	49	62	8	21	58	31	49	55	43	52
27	Sapphire Power	RLNG	203	78	86	36	59	10	18	0	0	24	58	70	79
28	Lalpir Power	RFO	350	53	63	30	37	0	0	18	1	28	60	48	58
29	Pak Gen Power	RFO	349	58	68	29	12	0	19	54	41	46	57	64	63
30	Saba Power	RFO	126	33	20	31	44	0	9	32	31	48	41	36	31
31	Rousch Power	RLNG	395	50	25	0	15	0	0	0	0	0	2	37	41
32	Altern Energy	Gas	27	0	0	0	0	0	0	0	0	0	0	0	0
33	HUBCO	RFO	1200	23	22	15	24	0	1	7	0	4	14	12	15
34	GENCO-I	RFO/Gas	649	15	1	8	3	0	0	0	0	1	13	0	10

Source: CPPA-G

TABLE 38

Detail of Liquidated Damages against Power Plants

S. No.	Name of Companies	Amount Verified on account of EPP and CPP (Rs. in Million)				
		FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	Laraib Energy (AJ&K)	-	-	-	276.28	-
2	Gulpur Hydropower	-	-	1.02	0.07	-
3	GENCO-I	213.75	749.18	323.49	-	-
4	GENCO-II	4,043.01	2,199.70	604.00	-	3,249.9
5	GENCO-III	1,599.81	2,842.79	2,510.00	-	1,574.38
6	Lalpir Power	-	-	0.12	23.05	-
7	Pak Gen. Power	-	-	0.36	27.71	-
8	Fauji Kabirwala	-	-	581.86	-	813.43
9	Habibullah Coastal	-	-	3,494.10	314.16	-
10	Hub Power	107.60	1.46	-	2.05	-
11	Japan Power	-	-	214.32	1228.80	-
12	KAPCO	0.54	-	-	-	-
13	Kohinoor Energy	-	-	109.10	0.02	0.04
14	Rousch Power	857.00	-	-	0.01	0.10
15	Saba Power			14.32	-	233.20
16	TNB Liberty Power	1.24	1,777.86	3.19	2.70	25.09
17	Uch Power	-	-	237.86	2.20	3.613
18	Engro Power Gen. Qadirpur	-	-	1.79	-	-
19	Narowal Energy	-	-	398.54	-	-
20	HydroChina Dawood	-	-	77.50	-	-
21	Appolo Solar Development	-	-	251.18	-	-
22	Best Green Energy	-	-	351.33	-	-
23	Crest Energy	-	-	351.33	-	-
24	Hamza Sugar Mills	-	27.20	-	-	-
25	Malakand III (PEDO)	-	-	-	-	123.95
26	Sahiwal Imported Coal	-	-	-	-	665.6
27	China Power Hub	-	-	-	-	253.6
28	Thar Energy Ltd	-	-	-	-	596.12
29	Lucky Electric Power	-	-	-	-	1,217.29
	Total	**6,822.95**	**7,598.19**	**9,522.60**	**1,876.98**	**8,756.32**

Source: CPPA-G

TABLE 39

Reimbursement Claims Lodged by CPPA-G against Gas Supply Company (Rs. in Million)

S. No.	IPP Name	Gass Supply Company (SNGP/SSGC)	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	NPPMCL – Haveli Bahadur Shah	SNGPL	1,224.80	22.55	-	-
2	NPPMCL – Balloki	SNGPL	1,403.24	503.81	-	-
3	Quaid-e-Azam Thermal Power	SNGPL	1,545.03	-	-	-
	Total		**4,173.07**	**526.36**	**-**	**-**

Source: CPPA-G

TABLE 40

Detail of Partial Load Adjustment Charges

S. No.	Name of Company	Verified Charges on account of Partial Load Adjustment (Rs. in Million)				
		FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	GENCO-I	1,418.12	894.87	177.74	41.73	-
2	GENCO-III	1,582.59	431.23	192.00	-	26.34
3	KAPCO	23.00	77.25	188.88	262.20	536.20
4	Hub Power	747.36	578.02	70.13	224.98	2,616.84
5	Attock Gen.	408.71	161.74	41.84	58.13	999.44
6	Atlas Power	-	-	99.56	1,337.38	281.12
7	Engro Powergen. Qadirpur	-4.83	43.64	453.89	674.48	556.07
8	Saif Power	-	-	419.62	489.50	1,208.84
9	Orient Power	-	-	444.99	538.67	1,190.79
10	Nishat Power	-	-	70.38	72.99	146.38
11	Nishat Chunian	-	-	96.83	92.84	223.17
12	Sapphire Electric	-	-	339.18	686.00	1,256.25
13	Halmore Power	-	-	388.91	442.17	1,031.31
14	Narowal Energy	90.36	100.46	79.11	68.00	189.8
15	Liberty Power Tech.	100.01	75.96	54.77	55.25	153.52
16	Foundation Power	19.63	151.70	764.15	678.99	468.91
17	Uch-II Power	159.56	90.55	715.67	557.25	713.18
18	Sahiwal Imported Coal	-	-	937.77	773.56	2,702.72
19	Quaid-e-Azam Thermal	378.94	3,681.59	3,774.47	4,172.34	8,291
20	NPPMCL – Haveli Bahadur Shah	381.67	3,863.69	4,387.76	4,007.62	8,353
21	NPPMCL – Balloki	-	2,812.61	4,432.36	3,074.56	8,306
22	Port Qasim Electric Power	-	-	573.44	406.08	2,492.30
	Total	**5,305.12**	**12,963.31**	**18,703.45**	**18,714.72**	**41,743.17**

Source: CPPA-G

TABLE 41

Verified Amount on Account of Non-Project Missed Volume (Rs. in Million)

S. No.	Company Name	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	Zorlu Enerji Pakistan	73.48	13.57	30.94	-	-
2	FFC Energy	58.63	10.53	21.25	45.50	8.76
3	Three Gorges First Wind	80.09	13.67	13.75	56.90	2.34
4	Foundation Wind Energy-I	7.00	4.00	21.32	62.26	5.60
5	Foundation Wind Energy-II	98.77	69.57	4.67	66.63	5.52
6	Sapphire Wind	91.80	63.98	1,050.27	169.26	56.67
7	Yunus Energy	167.43	65.55	940.26	244.54	67.25
8	Metro Power Company	71.18	71.91	8.11	33.10	0.48
9	Gul Ahmed Wind	142.57	49.33	1,001.57	158.71	59.12
10	Master Wind Energy	166.38	31.54	169.73	986.84	58.21
11	Tenaga Generasi	209.80	88.85	12.50	12.93	74.82
12	HydroChina Dawood	204.73	79.45	12.45	17.38	107.33
13	Sachal Energy Development	136.43	76.80	1.24	0.83	0.64
14	UEP Wind Power	364.43	111.86	2,046.97	321.95	176.64
15	Artistic Wind Power	0.58	77.93	692.59	106.20	1.97
16	Act Wind	43.35	21.22	548.87	79.03	33.08
17	Hawa Energy	0.42	42.89	671.16	274.84	47.04
18	Jhampir Power	0.56	43.07	700.53	280.43	41.08

S. No.	Company Name	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
19	Three Gorges Second Wind	0.12	105.58	813.89	135.55	57.81
20	Three Gorges Third Wind	1.31	104.60	819.38	136.91	57.68
21	Tricon Bostan Consulting-A	-	93.95	727.48	276.86	52.95
22	Tricon Bostan Consulting-B	-	68.29	841.31	148.23	52.28
23	Tricon Bostan Consulting-C	-	77.18	729.72	302.63	52.31
24	Zephyr Power	-	4.24	10.72	4.98	74.80
25	Quaid-e-Azam Solar Park	6.39	3.07	4.17	3.72	1.04
26	Appolo Solar Development	4.58	4.42	-	-	1.02
27	Best Green Energy	7.05	4.38	1.31	5.06	4.47
28	Crest Energy	6.24	5.09	2.72	4.13	3.69
29	AJ Power	-	0.75	1.62	1.81	0.65
30	Harappa Solar	1.76	2.13	1.51	2.30	1.90
31	Master Green Energy	-	-	-	-	8.58
32	Tricom Wind Power	-	-	-	-	9.54
33	ACT2 Wind	-	-	-	-	1.53
34	AEP Wind	-	-	-	-	48.18
35	Indus Wind Energy	-	-	-	-	1.10
36	Lakeside Energy	-	-	-	-	-
37	Liberty-I	-	-	-	-	0.24
38	Liberty-II	-	-	-	-	-
39	Din Energy	-	-	-	-	1.19
40	Gul Ahmad-II	-	-	-	-	-
41	Zenfa Pakisan New Energy	-	-	-	-	-
42	NASDA Green Energy	-	-	-	-	-
43	Metro-II	-	-	-	-	-
	Total	**1,945.08**	**1,409.40**	**11,902.01**	**3,939.51**	**1,177.52**

Note: June, 2022 invoices are on provisional basis (claim).

Source: CPPA-G

TABLE 42

Year-wise Details of the Circular Debt (Provisional) (Rs. in Million)

S. No.	Description	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
1	Due for Payments against verified invoices of Power Generation Companies	441,412	694,261	1,038,115	1,244,835	1,351,023
2	Payable to GENCOs (Invoices based)	16,419	17,464	48,040	-	-
3	Payable s to Fuel Suppliers by GENCOs	86,067	100,677	105,092	105,314	101,473
	Total (Payables to IPPs/GENCOs)	**543,898**	**812,402**	**1,143,207**	**1,350,149**	**1,452,497**
4	Energy Payable Swap by GOP through Loan from Commercial Banks by Power Holding (Pvt.) Limited	582,863	805,787	1,007,218	930,000	800,253
	Grand Total (Circular Debt)	**1,126,761**	**1,618,189**	**2,150,425**	**2,280,149**	**2,252,750**

Source: CPPA-G

TABLE 43

Plan for Private Sector Power Generation Projects

Sr. #	Project	Sponsor/ Company Name	Location	Fuel	Capacity (MW)	Expected COD/Remarks
2022						
1	1263 MW RLNG based Project	PTPL	Near Trimmu Barrage, Jhang, Punjab	RLNG	1,263	**July-22** Under Testing and Commissioning
2*	330 MW Thar Coal based Power Project	Thar Energy Limited	Thar Block-II, Sindh	Coal	330	**Sep-22** FC Achieved. Under Construction
3*	330 MW Thar Coal based Power Project	Thal Nova Power Thar (Pvt) Ltd	Thar Block-II, Sindh	Coal	330	**Dec-22** FC Achieved. Under Construction
4*	1320 MW Thar Coal based Power Project	Thar Coal Block-I Power Generation Co. Ltd.	Thar Block-I, Sindh	Coal	1320	**Dec-22** Under FC / under Construction
2023						
5	Riali-II Hydropower Project	Riali Hydro Power Co.	Ghori Wala Nullah, Muzaffarabad AJ&K	Hydel	7.08	**Jul-23** (As per IGCEP) LOS issued Under FC / under Construction
2024						
6*	Suki Kinari Hydropower Project	S.K Hydro Pvt Ltd	Kunhar River, Mansehra, KP	Hydel	884	**Nov-24**** FC Achieved. Under Construction
7	Kathai-II Hydropower Project	Kathai-II Hydro (Pvt) Ltd.	Kathai Nullah, Hattian, AJ&K	Hydel	8.00	**Dec-24** (As per IGCEP) LOS issued FC in Progress
2025						
8*	300 MW Imported coal based Power Project	CIHC Pak Power Co. Ltd	Gwadar, Balochistan	Coal	300	**Jun-25***** LOS issued FC in progress
2028						
9*	Azad Pattan Hydropower Project	Azad Pattan Power (Pvt) Ltd.	Jehlum River, Sudhnoti, AJ&K	Hydel	700.7	**Sep-28** LOS issued FC in progress
2029						
10*	Kohala Hydropower Project	Kohala Hydro Company Limited	Jehlum River/ Kohala, AJ&K	Hydel	1,124	**Mar-29** LOS issued FC in progress
Misc./Under Litigation						
11	330 MW Thar Coal based Power Project	Siddiqsons Energy Limited	Thar Block-II, Sindh	Coal	330	-
Candidate Projects in the IGCEP Portfolio						
12	Mahl Hydropower Project	CWE Investment Corporation/ China Three Gorges & Trans Tech Pakistan	Jehlum River, AJ&K/ Punjab	Hydel	640	LOI issued. FS completed and approved by POE. Tariff determined by NEPRA. Further processing will be as per IGCEP
13	Athmuqam Hydropower Project	Korea Hydro and Nuclear Company	Neelum River, AJ&K	Hydel	450	LOI issued. FS completed and approved by POE. Further processing will be as per IGCEP
14	Turtonas-Uzghor Hydropower Project	Sinohydro-Sachal Consortium	Golen Gol River, Chitral Valley KP	Hydel	82	LOI issued. FS completed and approved by POE. FS tariff determined by NEPRA. Company filed Review Motion. Further processing will be as per IGCEP
15	Ashkot Hydropower Project	Ashkot Energy (Pvt) Ltd.	Neelum River, AJ&K	Hydel	300	The project has been transferred by GoAJK to PPIB for further processing as per IGCEP
16*	1320MW Thar coal based Power Project	Oracle Coal Fields PLC England	Thar Block VI, Sindh	Coal	1,320	-
To be processed as per the requirements of new capacity in the IGCEP						
17	Kaigah Hydropower Project	-	Kaigah, Indus River, KP	Hydel	548	-
18	Chakothi-Hattian Hydropower Project	-	Muzaffarabad, AJ&K	Hydel	500	
19	Rajdhani Hydropower Project	-	Poonch River AJ&K	Hydel	132	
20	Neckeherdim-Paur Hydropower Project	-	Yarkun River, Chitral Valley KP	Hydel	80	

* *CPEC Projects*

** *Expected COD. To be finalized as per CPPAG decision*

*** *Subject to the approval of Sinosure*

COD = Commercial Operation Date, FC = Financial Close, LOS = Letter of Support, LOI = Letter of Intent/Interest, FS = Feasibility Study, POE = Panel of Experts, IGCEP = Indicative Generation Capacity Expansion Plan

Source: Private Power Infrastructure Board

TABLE 44

Investment Plan for Power Generation Projects (K-Electric Limited) (2022-23 to 2026-27)*

S. No.	Name of Project	Proposed Location	Capacity Addition/ (Deletion) (MW)	Expected Commissioning Year	Estimated Cost (US$ Million)**
KE's Own Programme					
1	Addition of BQPS-III 900 MW RLNG Plant (Phase-II)	Bin Qasim	471***	2023	654+
Plan to induct IPPs/Additional Supply from National Grid in KE system [1]					
1	Additional supply from National Grid	-	300	2024	-
2	Additional supply from National Grid	-	650	2024	-
3	150 MW WUB Solar	-	150	2025	108
4	350 MW Solar Projects	-	350	2025	252
5	Base Load Local Coal Plant	-	330	2026	450
6	200 MW Solar Project	-	200	2027	144
7	Base Load Plant	-	330	2027	450

+ includes cost of unit one BQPS III

** These are estimates and are subject to change. ** Including simultaneous investment in the associated transmission projects.*

**** Gross ISO capacity as per KE Generation License*

Source: KE

TABLE 45

Status of Renewable Energy Projects

A	EXISTING PROJECTS (IN-OPERATION AND CONSTRUCTION)				
S. No	Name of Project	Capacity (MW)	Expected Commissioning year	Estimated Cost (US$ Million)	Latest Status of the Project
WIND TECHNOLOGY:					
1	FFC Energy Limited	49.50	16 May, 2013	133.557	In Operation
2	Zorlu Enerji Pakistan (Pvt.) Limited	56.40	26 Jul, 2013	143.74	In Operation
3	Three Gorges Pakistan First Wind Farm (Pvt.) Limited	49.50	25 Nov, 2014	124.82	In Operation
4	Foundation Wind Energy II (Pvt.) Limited	50.00	10 Dec, 2014	124.907	In Operation
5	Foundation Wind Energy –I Limited	50.00	11 Apr, 2015	125.889	In Operation
6	Sapphire Wind Power Company Limited	52.80	22 Nov, 2015	129.36	In Operation
7	Metro Power Company Limited	50.00	16 Sep, 2016	125.236	In Operation
8	Yunus Energy Limited	50.00	16 Sep, 2016	131	In Operation
9	Tapal Wind Energy Pvt. Limited	30.00	7 Oct, 2016	78.6	In Operation
10	Tenega Generasi Limited	49.50	11 Oct, 2016	123.13	In Operation
11	Master Wind Energy Pvt. Limited	52.80	14 Oct, 2016	125.48	In Operation
12	Gul Ahmed Wind Power Ltd	50.00	18 Oct, 2016	131	In Operation
13	Hydro China Dawood Power Pvt. Limited	49.50	5 Apr, 2017	121.75	In Operation
14	Sachal Energy Development	49.50	18 Apr, 2017	133.918	In Operation
15	United Energy Pakistan Pvt. Limited	99.00	16 Jun, 2017	242.55	In Operation
16	Hawa Energy Pvt. Limited	49.73	15 Mar, 2018	107.5	In Operation
17	Jhampir Wind Power Limited	49.73	16 Mar, 2018	106.64	In Operation
18	Artistic Energy Pvt. Ltd.	49.30	16 Mar, 2018	129.16	In Operation
19	Three Gorges Pakistan Second Wind Farm (Pvt.) Ltd.	49.50	20 Jun, 2018	106.42	In Operation
20	Three Gorges Pakistan Third Wind Farm pakistan (Pvt.) Ltd.	49.50	9 Jun, 2018	106.42	In Operation
21	Tricon Boston Consulting Corporation Pvt. Limited –A	49.60	16 Aug, 2018	106.64	In Operation
22	Tricon Boston Consulting Corporation Pvt. Limited-B	49.60	14 Sep, 2018	106.64	In Operation
23	Tricon Boston Consulting Corporation Pvt. Limited-C	49.60	11 Sep, 2018	106.64	In Operation
24	Zephyr Power Pvt. Limited	48.30	28 Mar, 2021	106.5015	In Operation
25	Master Green Energy Limited	50.00	20 Aug, 2021	63.906	In Operation
26	Tricom Wind Power Pvt. Ltd	50.00	1 Sep, 2021	63.906	In Operation
27	Artistic Wind Power Pvt. Ltd.	50.00	16 Feb, 2022	63.906	In Operation
28	ACT2 Wind Pvt. Ltd	50.00	27 Feb, 2022	62.952	In Operation
29	Din Energy Ltd.	50.00	25 Mar, 2022	63.906	In Operation
30	Indus Wind Energy Ltd.	50.00	26 Mar, 2022	64.072	In Operation
31	Liberty Wind Power 1 Pvt. Ltd	50.00	9 Apr, 2022	62.952	In Operation
32	Gul Ahmed Electric Ltd	50.00	7 Apr, 2022	63.906	In Operation
33	Lakeside Energy Pvt. Ltd	50.00	14 Apr, 2022	73.932	In Operation
34	Nasda Green Energy Pvt. Ltd	50.00	2 May, 2022	63.906	In Operation
35	Liberty Wind Power 2 Pvt. Ltd	50.00	27 May, 2022	63.906	In Operation
36	Metro Wind Power Ltd.	60.00	6 June, 2022	62.952	In Operation
SOLAR PV TECHNOLOGY:					
1	Quaid-e-Azam Solar Power (Pvt.) Ltd.	100.00	15 Jul, 2015	151.4	In Operation
2	Appolo Solar Development Pakistan (Ltd.)	100.00	31 May, 2016	151.4	In Operation
3	Best GreenEnergy Paksitan (Pvt.) Ltd.	100.00	31 Jul, 2016	151.4	In Operation

S. No	Name of Project	Capacity (MW)	Expected Commissioning year	Estimated Cost (US$ Million)	Latest Status of the Project
4	Crest Energy Paksitan Limited	100.00	31 Jul, 2016	151.4	In Operation
5	Harappa Solar Private Limited	18.00	14 Oct, 2017	19.206	In Operation
6	AJ Power Private Limited	12.00	13 Dec, 2017	12.804	In Operation
7	Zhenfa Pakistan New Energy Company (Pvt.) Limited	100.00	14 Apr, 2022	57.39	In Operation
BAGASSE / BIOMASS TECHNOLOGY:					
1	JDW Sugar Mills (Unit-II)	26.35	12 Jun, 2014	26.24	In Operation
2	JDW Sugar Mills (Unit-III)	26.35	3 Oct, 2014	26.24	In Operation
3	RYK Mills Limited	30.00	24 Mar, 2015	29.88	In Operation
4	Chiniot Power Ltd.	62.40	28 Nov, 2015	62.15	In Operation
5	Hamza Sugar Mill Limited.	15.00	Mar, 2017	14.94	In Operation
6	Layyah Sugar Mills	41.00	1 Dec, 2017	40.84	In Operation
7	Almoiz Industries Ltd.	36.00	Feb, 2019	35.86	In Operation
8	Chanar Energy Limited	22.00	Feb, 2019	21.91	In Operation

B	Future Upcoming Projects				
S. No.	Name of Project	Capacity (MW)	Expected Commissioning year	Estimated Cost (US$ Million)	Latest Status of the Project
WIND TECHNOLOGY:					
1	Western Energy Pvt. Ltd.	50.00	2024	63.117	Decision on LPM and tariff petition awaited.
2	Meridian Energy (Pvt.) Ltd	50.00	Feb, 2023	30.342	Under Construction
3	HND Energy (Pvt.) Limited	50.00	Feb, 2023	30.342	Under Construction
4	Helios Power (Pvt.) Limited	50.00	Feb, 2023	30.342	Under Construction
5	Trans Atlantic Energy Pvt. Ltd.	50.00	2024	62.872	Decision on LPM and tariff petition awaited.
SOLAR TECHNOLOGY:					
1	Access Solar Private Limited	11.52	2023	7.52	Tariff petition under review.
2	Safe Solar Power Pvt. Ltd	10.27	2023	6.403	Project to file new tariff petition.
3	Access Electric Private Limited	10.00	2023	6.446	Tariff petition under review.
4	Siachen Energy Limited	100.00	2023	61.078	Generation License acquired & tariff acquired. LOS to be issued.
5	Zorlu Solar Pakistan Pvt. Ltd.	100.00	2024	53.016	Generation License acquired. Tariff petition under review.
BAGASSE/BIOMASS TECHNOLOGY					
1	Shahtaj Sugar Mills Ltd.	32.00	2024	31.011	LOS Stage
2*	Hunza Power (Pvt.) Ltd.	49.80	2024	49.60	LOS Stage
3*	Bahawalpur Energy Ltd.	31.20	2024	31.08	LOS Stage
4*	Indus Energy Limited.	31.00	2024	30.88	LOS Stage
5*	Ittefaq Power (Pvt.) Ltd.	31.20	2024	31.08	LOS Stage
6*	Kashmir Power Private Ltd	40.00	2024	39.84	LOS Stage
7*	Alliance Sugar Mills Ltd.	30.00	2024	29.88	LOS Stage
8*	RYK Energy Limited.	25.00	2024	24.90	LOS Stage
9*	Two Star Industries Pvt Ltd.	48.90	2024	48.70	LOS Stage
10*	TAY Powergen Company Pvt. Ltd.	30.00	2024	29.88	LOS Stage
11*	Hamza Sugar Mill Ltd (Unit-II)	30.00	2024	29.88	LOS Stage
12*	Faran Power Ltd.	26.50	2024	26.39	LOS Stage
13*	Sheikhoo Power Ltd.	30.00	2024	29.88	LOS Stage
14*	Mehran Energy Ltd.	26.50	2024	26.39	LOS Stage
15*	Habib Sugar Mills Ltd.	26.50	2024	26.39	LOS Stage

* *Expected COD of Bagasse based Power Projects is subject to the outcomes of the Court decision as the projects are sub-judice and subject to review of the tariff determination by NEPRA.*

Source: Alternative Energy Development Board

TABLE 46

Unit Received, Delivered and Transmission Losses in NTDC System (500/220 kV) (GWh)

	Unit	2017-18	2018-19	2019-20	2020-21	2021-22
Unit Received by NTDC	GWh	120,062.00	122,302.00	125,941.00	132,270.00	140,346
Unit Delivered by NTDC	GWh	117,139.00	118,838.00	122,471.00	128,620.00	136,674
Unit Losses (Transmission)	GWh	2,923.00	3,464.00	3,470.00	3,587.00	3,672
	%	2.43	2.83	2.76	2.71	2.62

TABLE 47

Grid Stations, Power Transformers and Transmission Lines with NTDC

Number of Grid Stations and Power Transformers and their MVA Capacity				
As on 30th June	500 kV Grid Stations		220 kV Grid Stations	
	2021	2022	2021	2022
Number of Grid Stations	16	17	46	50
Total No. of Power Transformers (500/220 kV)	44	46	-	-
Total Capacity (MVA)	24,000	25,500	-	-
Total No. of Power Transformers (220/132 kV)	34	36	129	140
Total Capacity (MVA)	6,610	7200	25,770	28,160

Length of Transmission Lines in NTDC System (km)						
As on 30th June	500 kV		220 kV		Total Transmission Lines and No. of Circuits	
	No. of Circuits	TL (km)	No. of Circuits	TL (km)	No. of Circuits	Total km
2018	45	5,618	122	10,478	167	16,096
2019	48	6,417	149	11,219	197	17,636
2020	53	7,238	152	11,281	205	18,519
2021	61	8,059	156	11,438	217	19,497
2022	67	8387.81	163	11,611.29	230	19,999.1

Note: NTDC has reported 5 T/Ls (167.14 km) at 132 kV level in 2021 and 8 T/Ls (256.64 km) in 2022

Source: NTDC

TABLE 48

Loading Position of Transmission Lines and Power Transformers in NTDC System

A: Loading Position of Transmission Lines						
		2017-18	2018-19	2019-20	2020-21	2021-22
Overloaded Transmission Lines/Circuits (Nos.) (>80%)	500 kV	9	16	12	14	18
	220 kV	43	54	36	50	58
Underutilized Transmission Lines/Circuits (Nos.) (<30%)	500 kV	39	32	40	39	43
	220 kV	120	92	101	59	71
B: Loading Position of Power Transformers						
		2017-18	2018-19	2019-20	2020-21	2021-22
Overloaded Power Transformers (Nos.) (>80%)	500 kV	22	16	19	29	31
	220 kV	60	57	82	122	128
Underutilized Power Transformers (Nos.) (<30%)	500 kV	17	18	17	10	7
	220 kV	64	68	46	21	24

Source: NTDC

TABLE 49

Grid Stations and Transmission Lines with K-Electric Limited

Number of Grid Stations in KE Transmission System											
No.		2017-18		2018-19		2019-20		2020-21		2021-22	
		MVA	No.	MVA	No.	MVA	No.	MVA	No.	MVA	No.
KE's Owned Grid Stations	220 kV	7	3000	9	3500	10	4500	10	4500	10	4500
	132 kV	54	5550	56	6109	57	6373	58	6557	58	6824
	66 kV	3	69	3	69	3	79	3	79	3	79
Consumers Owned Grid Stations	220 kV	1	80	1	80	1	80	1	80	1	80
	132 kV	9	512	10	538	11	578	11	578	11	641
	66 kV	0	0	0	0	0	0	0	0	0	0
Total No. of Grid Stations		**74**	**9211**	**79**	**10296**	**82**	**11610**	**83**	**11794**	**83**	**12124**
Length of Transmission Lines in KE System (km)											
Overhead Lines	220 kV	323		322		323		323		321	
	132 kV	614		640		650		651		652	
	66 kV	149		149		152		152		152	
Underground Lines	220 kV	15		14		42		42		43	
	132 kV	153		158		151		182		186	
	66 kV	1		1		1		1		1	
Total Length		**1255**		**1284**		**1319**		**1351**		**1354**	

Source: KE

TABLE 50
Investment Details in Transmission System of K-Electric

A. Amount Injected to Reinforce/Expand 220 kV and 132 kV Transmission System of K-Electric Limited (Million Rs.)						
Description	During FY 2020-21 [1]&[3]			During FY 2021-22 [2] & [3]		
	FC	LC	Total	FC	LC	Total
Grid Stations	2,070.00	2,309.00	4,379	1,560.00	1,706.00	3266
Transmission	244	286	529	2756	2477	5233
SCADA	61	41	102	80	122	202
Reinforcement	942	1,036.00	1,978.00	351	3,234.00	3,584.00
Total	**3,317.00**	**3,671.00**	**6,988.00**	**4,746.00**	**7,538.00**	**12,284.00**
B. Investment Plan in Transmission Line (500 kV, 220 kV and 132 kV) of K-Electric Limited (Million US$)*						
Description	2022-23			2023-24		
	FC	LC	Total	FC	LC	Total
Grid Stations	37	32	70	65	50	115
Transmission	7	10	17	40	19	59
SCADA	0	1	1	1	2	3
Reinforcement	1	5	5	17	21	38
Total	**45**	**48**	**93**	**123**	**92**	**215**

[1] Restated as per Financial Statements 2021. [2] Provisional and unaudited. [3] Includes investment for 500 kV Grid Station.

** These are estimates and are subject to change.*

FC: Foreign Currency LC: Local Currency (Local Currency converted into equivalent US$ with exchange rates of US$ to Rupees as 195.08 (FY 2022-23) and as 221.87 (FY 2023-24).

Source: KE

TABLE 51
Surplus/Deficit in Demand and Supply during NTDC's System Peak Hours

A: Actual Figures			
Financial Year ending 30th June	Generation Capability (MW)	Demand During NTDC's System Peak Hours (MW)	Surplus/ (Deficit) (MW)
2018	23,766	26,741	-2,975
2019	24,565*	25,627*	-1,062
2020	27,780*	26,252*	1,528
2021	27,819*	28,253*	-434
2022	27,748*	30,231	-2,483
B: Projected Figures			
Financial Year ending 30th June	Planned Generation Capability as per NTDC ** (MW)	NTDC Projected Demand Growth *** Rate (%)	NTDC's Projected Demand during Peak Hours (MW)	Surplus/ (Deficit) (MW)
2023	34729	4.9	25779	8950
2024	37226	8.7	28027	9199
2025	40213	4.9	29389	10824
2026	43380	4.8	30814	12566
2027	44,950	4.7	32276	12,674

*Generation Capability is the maximum Generation Capability recorded during any day of the year (23-Aug-21) and Demand is the maximum Demand recorded during any day of the year (29-Jun-22)

** Planned Generation capability as per IGCEP 2021.

*** Projected Peak Demand (MW) starting from served demand based on Assumption Set approved by CCI, as per IGCEP 2021-30.

Source: NTDC

TABLE 52
Surplus/Deficit in Demand and Supply during K-Electric's System Peak Hours

A: Actual Figures				
B: Projected Figures				
Financial Year ending 30th June	Planned Generation Capability as per KE (MW) [1] & [2]	KE's Projected Demand Growth Rate (%)	KE's Projected Demand during Peak hours (MW) [3]	Surplus/ (Deficit) (MW)
2022-23	4,056	4.3%	4,011	45
2023-24	4,656		4,168	488
2024-25	4,405		4,290	115
2025-26	4,710		4,404	306
2026-27	4,825		4,522	303

** Based on maximum supply achieved in KE's system.*

**** Deficit based on peak demand and maximum supply achieved during the year.*

[1] Including own generation/import from all sources.

[2] This is subject to timely Government & regulatory approval/confirmation.

[3] Demand projections are based on Management's best estimates which may be subject to revisions due to changes in macroeconomic factors or any other factor beyond KE's control, hence timelines for planned additions may be adjusted accordingly.

Source: KE

Table 53

Overloading (above 80% load) of 500 kV and 220 kV Power Transformers installed at 500 kV Grid Stations (2021-22)

Region	Name of Grid Station	Transformer	Voltage Level kV	Capacity MVA	Capacity A	Load A	% Loading
Islamabad	500kV Sheikh Muhammadi Peshawar	T-1	500/220	450	1180	1080	91.53
		T-2	500/220	450	1180	1080	91.53
		T-3	500/220	450	1180	1080	91.53
		T-5	220/132	250	1093	920	84.17
		T-6	220/132	250	1093	920	84.17
		T-7	220/132	250	1093	920	84.17
		T-8	220/132	250	1093	920	84.17
	500kV Rawat	T-1	500/220	450	1125	1060	94.22
		T-2	500/220	450	1125	1060	94.22
		T-3	500/220	450	1125	1060	94.22
		T-4	500/220	750	1971	1810	91.83
		T-5	220/132	250	1093	1030	94.24
		T-6	220/132	250	1093	1030	94.24
		T-7	220/132	250	1093	1030	94.24
		T-8	220/132	250	1093	980	89.66
Lahore	500kV New Gakkhar (Nokhar)	T-1	500/220	600	1575	1560	99.05
		T-2	500/220	600	1575	1560	99.05
		T-4	220/132	160	700	680	97.14
		T-5	220/132	160	700	680	97.14
		T-6	220/132	160	700	680	97.14
	500kV Yousafwala	T-1	500/220	600	1575	1420	90.16
		T-2	500/220	600	1575	1420	90.16
		T-3	500/220	600	1575	1420	90.16
		T-3	220/132	160	700	686	98.00
		T-4	220/132	160	700	686	98.00
		T-5	220/132	160	700	686	98.00
		T-6	220/132	160	700	686	98.00
	500kV Sheikhupura	T-1	500/220	600	1575	1550	98.41
		T-2	500/220	600	1575	1550	98.41
		T-3	500/220	600	1575	1550	98.41
		T-4	500/220	600	1575	1550	98.41
		T-5	220/132	160	700	595	85.00
		T-6	220/132	160	700	660	94.29
		T-7	220/132	160	700	740	105.71
		T-8	220/132	160	700	705	100.71
	500kV Gatti	T-1	500/220	450	1181	1100	93.14
		T-2	500/220	450	1181	1104	93.48
		T-3	500/220	450	1181	1077	91.19
		T-4	500/220	450	1181	1077	91.19
	500kV West Faisalabad	T-8	220/132	250	1095	980	89.50
Multan	500kV Muzaffargarh	T-1	525/231	600	1499	1500	100.07
		T-2	525/231	600	1499	1500	100.07
	500kV Multan	T-1	525/231	450	1125	1140	101.16
		T-2	525/231	450	1125	1140	101.16
		T-3	220/132	160	700	674	96.00
		T-4	220/132	160	700	674	96.00
		T-5	220/132	160	700	674	96.00
Hyderabad	500kV Jamshoro	T-1	500/220	450	1125	1035	92.00
		T-2	500/220	450	1125	1035	92.00
		T-8	500/220	450	1125	1035	92.00
	500kV Dadu	T-2	500/220	450	1125	1010	89.78
		T-4	500/220	450	1125	1065	94.67
	500kV NKI	T-1	500/220	600	1500	1295	86.33
		T-2	500/220	600	1500	1295	86.33

Source: NTDC

Table 54
Overloading (above 80% load) of 220 kV Power Transformers installed at 220 kV Grid Stations (2021-22)

Region	Name of Grid	Transformer	Voltage kV	Capacity MVA	Capacity A	Load A	Loading (%)
Islamabad	220kV Mardan	T-1	220/132	250	1093	980	89.66
		T-2	220/132	250	1093	980	89.66
		T-3	220/132	250	1093	950	86.92
	220kV Burhan	T-1	220/132	250	1093	970	88.75
		T-2	220/132	250	1093	970	88.75
		T-3	220/132	250	1093	970	88.75
		T-4	220/132	250	1093	970	88.75
	220kV Daudkhel	T-1	220/132	160	700	698	99.71
		T-2	220/132	160	700	698	99.71
	220kV Bannu	T-1	220/132	160	700	640	91.43
		T-2	220/132	160	700	640	91.43
		T-5	220/132	250	1093	1055	96.52
	220kV Sangjani	T-1	220/132	160	700	640	91.43
		T-2	220/132	160	700	640	91.43
		T-3	220/132	160	700	680	97.14
		T-4	220/132	160	700	680	97.14
		T-7	220/132	160	700	670	95.71
	220kV University Islamabad	T-1	220/132	250	1093	1100	100.64
		T-2	220/132	250	1093	1080	98.81
	220kV Mansehra	T-2	220/132	250	1093	940	86.00
Lahore	220kV Band Road, Lahore.	T-1	220/132	250	1093	965	88.29
		T-2	220/132	250	1093	940	86.00
		T-3	220/132	250	1093	965	88.29
		T-4	220/132	250	1093	940	86.00
	220kV Gakkhar	T-1	220/132	160	700	670	95.71
		T-2	220/132	160	700	640	91.43
		T-3	220/132	160	700	680	97.14
		T-4	220/132	160	700	670	95.71
	220kV Kala Shah Kaku	T-1	220/132	160	700	690	98.57
		T-2	220/132	160	700	690	98.57
		T-3	220/132	160	700	690	98.57
		T-4	220/132	160	700	690	98.57
	220kV New Kot Lakhpat, Lahore.	T-1	220/132	250	1093	1080	98.81
		T-2	220/132	250	1093	1080	98.81
		T-3	220/132	250	1093	1080	98.81
	220kV Sarfraz Nagar	T-1	220/132	160	700	700	100.00
		T-2	220/132	160	700	700	100.00
		T-3	220/132	160	700	700	100.00
		T-6	220/132	160	700	700	100.00
	220kV Sialkot	T-1	220/132	160	700	610	87.14
		T-2	220/132	160	700	610	87.14
		T-3	220/132	160	700	590	84.29
	220kV Wapda Town, Lahore.	T-1	220/132	250	1093	1025	93.78
		T-2	220/132	160	700	700	100.00
		T-3	220/132	160	700	700	100.00
	220kV Ghazi Road, Lahore.	T-1	220/132	250	1093	1060	96.98
		T-2	220/132	250	1093	1030	94.24
		T-3	220/132	250	1093	1030	94.24
	220kV Kassowal	T-1	220/132	160	700	710	101.43
		T-2	220/132	160	700	710	101.43
		T-4	220/132	250	1093	878	80.33
	220kV Okara New	T-1	220/132	250	1093	1070	97.90
		T-2	220/132	250	1093	1070	97.90
	220kV Nishatabad	T-2	220/132	160	700	590	84.29
		T-3	220/132	160	700	655	93.57
	220kV Jaranwala	T-1	220/132	160	700	637	91.00
		T-2	220/132	160	700	632	90.29
		T-3	220/132	160	700	614	87.71
		T-4	220/132	160	700	672	96.00
	220kV Samundri Road	T-1	220/132	250	1095	1035	94.52
		T-2	220/132	160	700	640	91.43
		T-3	220/132	160	700	710	101.43
	220kV Ludewala	T-1	220/132	160	700	700	100.00
		T-2	220/132	250	1095	1090	99.54
		T-3	220/132	250	1095	1090	99.54
	220kV Bandala	T-1	220/132	250	1095	980	89.50
		T-2	220/132	160	700	675	96.43
		T-3	220/132	160	700	675	96.43

Region	Name of Grid	Transformer	Voltage kV	Capacity MVA	Capacity A	Load A	Loading (%)
	220kV T. T Singh	T-1	220/132	250	1095	935	85.39
		T-2	220/132	250	1095	935	85.39
		T-3	220/132	160	700	580	82.86
		T-4	220/132	250	1095	940	85.84
	220kV Lalian	T-1	220/132	250	1095	960	87.67
Multan	220kV Muzaffargarh	T-1	220/132	160	700	605	86.43
		T-2	220/132	160	700	605	86.43
	220kV Bahawal Pur	T-1	220/132	160	700	670	95.71
		T-2	220/132	250	1093	975	89.20
		T-3	220/132	250	1093	975	89.20
	220kV Chishtian	T-1	220/132	160	700	690	98.57
		T-2	220/132	160	700	690	98.57
		T-4	220/132	160	700	621	88.71
	220kV Vehari	T-1	220/132	160	700	690	98.57
		T-2	220/132	160	700	690	98.57
		T-3	220/132	250	1093	1050	96.07
	220kV NGPS Multan	T-1	220/132	160	700	700	100.00
		T-5	220/132	160	700	700	100.00
Hyderabad	500kV Jamshoro	T-3	220/132	160	700	630	90.00
		T-7	220/132	160	700	630	90.00
	500kV Dadu	T-1	220/132	160	700	670	95.71
		T-3	220/132	160	700	620	88.57
		T-5	220/132	250	1094	930	85.01
	220kV Hala Road	T-1	220/132	160	700	661	94.43
		T-2	220/132	160	700	651	93.00
		T-3	220/132	250	1093.5	916	83.77
	220kV T.M.Khan	T-1	220/132	160	700	626	89.43
		T-2	220/132	160	700	628	89.71
	220kV Jhampir-I	T-1	220/132	250	1093	1019	93.23
		T-2	220/132	250	1093	1019	93.23
		T-3	220/132	250	1093	1019	93.23
		T-4	220/132	250	1093	880	80.51
	220kV Jhampir- II	T-1	220/132	250	1200	1090	90.83
		T-2	220/132	250	1200	1090	90.83
	220kVShikarpur	T-1	220/132	160	700	720	102.86
		T-2	220/132	250	1100	1020	92.73
		T-3	220/132	160	700	660	94.29
Quetta	220kV Quetta	T-1	220/132	160	700	600	86.00
		T-2	220/132	160	700	600	86.00
		T-3	220/132	250	1095	990	90.00
	220kV Sibbi	T-1	220/132	160	700	570	81.00
		T-2	220/132	160	700	567	81.00
	220kV Khuzdar	T-2	220/132	160	700	630	86.00
		T-3	220/132	160	700	590	90.00
	220kV Loralai	T-1	220/132	250	1095	900	82.19
		T-2	220/132	250	1095	950	86.36

Source: NTDC

TABLE 55

Outages of NTDC's 500 kV and 220 kV Network

Sr. #	NAME OF CIRCUIT	VOLTAGE	June 2022	Jan – June 2022	Sr. #	NAME OF CIRCUIT	VOLTAGE	June 2022	Jan – June 2022
500kV Transmission Lines									
1	Tarbela- Sheikh Muhammadi Peshawar	500kV	1	2	19	Guddu 747MW - Guddu Old	500kV	-	1
2	Tarbela-Rawat	500kV	1	3	20	CPHGC-Jamshoro	500kV	2	3
3	Brotha-Rawat-I	500kV	-	3	21	Dadu - Jamshoro -I	500kV	-	3
4	Brotha-Rawat-II	500kV	-	1	22	Dadu-Moro	500kV	-	1
5	Rawat - Nokhar-I	500kV	-	2	23	Guddu - Shikarpur -I (in & out)	500kV	1	2
6	Rawat - Nokhar-II	500kV	-	8	24	Shikarpur-Dadu-I (in & out)	500kV	-	1
7	500KV Tarbela-Barotha # 1	500kV	-	1	25	Guddu - Shikarpur -II (in & out)	500kV	-	2
8	500KV Barotha-Gatti # 1	500kV	-	2	26	Shikarpur-Dadu-II (in & out)	500kV	-	1
9	500KV Barotha - Gatti # 2	500kV	-	2	27	NKI-Jamshoro	500kV	-	4
10	500KV H.B.Shah-Gatti #2	500kV	-	1	28	Dadu-Matiari	500kV	-	1
11	500KV H.B.Shah-Multan.	500kV	-	1	29	Jamshoro-K2/K3-I	500kV	7	11
12	500KV Gatti - Rousch	500kV	-	1	30	Thar- Matiari-II	500kV	-	4
13	500KV Multan-Yousafwala	500kV	-	2	31	Moro-Matiari	500kV	-	6
14	Multan - Muzaffar Garh - I	500kV	-	4	32	Moro-R.Y.Khan	500kV	-	3
15	Multan - Muzaffar Garh - II	500kV	-	6	33	Lucky-Matiari	500kV	1	5
16	Multan - Rahim Yar Khan	500kV	-	2	34	Lucky-Port Qasim	500kV	1	1
17	Muzaffar Garh - Guddu Old	500kV	-	2	35	Hub-K2/K3	500kV	-	2
18	Muzaffar Garh - Guddu 747MW	500kV	1	3	**Total 500 kV Trippings**			**15**	**97**

Sr. #	NAME OF CIRCUIT	VOLTAGE	June 2022	Jan – June 2022	Sr. #	NAME OF CIRCUIT	VOLTAGE	June 2022	Jan – June 2022
220kV Transmission Lines									
1	220KV KSK - Bandala # 1	220kV	-	2	47	Mansehra - Allai Khawar-I	220kV	-	2
2	220KV KSK - Bandala # 2	220kV	2	4	48	Mansehra - Allai Khawar-II	220kV	-	2
3	220KV Gatti-Nishatabad # 1	220kV	3	3	49	Tarbela - Burhan-I	220kV	-	1
4	220KV Gatti-Nishatabad # 2	220kV	-	1	50	Tarbela - Burhan-II	220kV	-	2
5	220KV Gatti - JWR # 1	220kV	-	2	51	Tarbela - Burhan-III	220kV	-	2
6	220KV Gatti - JWR # 2	220kV	-	5	52	Tarbela - ISPR	220kV	-	1
7	220KV Gatti - Y/Wala # 1	220kV	1	1	53	Rawat - ISPR	220kV	-	1
8	220KV Gatti - Y/Wala # 2	220kV	1	1	54	Rawat - University-I	220kV	-	1
9	220KV Gatti-L/Wala # 1	220kV	-	1	55	Rawat - University-II	220kV	-	1
10	220KV Gatti-L/Wala # 2	220kV	-	1	56	Mangla - Rawat-I	220kV	-	1
11	220KV Multan -T.T.Sing # 1	220kV	-	2	57	Mangla - Rawat-II	220kV	2	3
12	220KV Multan - T.T.Singh # 2	220kV	-	1	58	Peshawar-Nowsehra	220kV	-	2
13	220KV T.T.Singh - SRD # 1	220kV	-	2	59	Multan - NGPS CCT - 2	220kV		1
14	220KV T.T.Singh-SRD # 2	220kV	-	2	60	Multan - Toba Tek Singh (up to Head Sidhnai) CCT - 1	220kV	-	2
15	220KV SRD - Nishatabad # 1	220kV	2	3	61	Multan - Toba Tek Singh (up to Head Sidhnai) CCT - 2	220kV	-	2
16	220KV SRD - Nishatabad # 2	220kV	2	4	62	TPS Muzaffargarh (Ph-1) - Bahawal Pur CCT - 1	220kV	-	1
17	220KV PTPL- T.T.Singh #2	220kV	-	1	63	TPS Muzaffargarh (Ph-1) - Bahawal Pur CCT - 2	220kV	-	1
18	220 KV GKR - Mangla	220kV	1	1	64	TPS Muzaffargarh (Ph-1) - Multan CCT - 1	220kV	-	1
19	220 KV Kala Shah Kaku - Mangla-2	220kV	1	2	65	TPS Muzaffargarh (Ph-1) - Multan CCT - 4	220kV	1	2
20	220 KV Kala Shah Kaku - Mangla-3	220kV	3	3	66	220KV Muzaffargarh - Multan CCT - 2	220kV	-	2
21	220 KV GKR - SKT	220kV		1	67	Kapco - Multan CCT - 3	220kV	-	1
22	220KV KSK - SKT	220kV	1	3	68	Kapco - TPS Muzaffargarh (Ph-1) CCT - 1	220kV	1	1
23	220 KV Kala Shah Kaku - Bund Road-1	220kV	-	3	69	Vehari - Chishtian CCT - 1	220kV	1	1
24	220KV New Kot Lakhpat - Bund Road-2	220kV	1	1	70	Vehari - Chishtian CCT - 2	220kV	1	1
25	220KV New Kot Lakhpat - Sarfraz Nagar	220kV	1	1	71	Interconnector TPS M/Garh Phase-I - Phase-II -	220kV	1	1
26	New Kot Lakhpat-New LHR(South)-II	220kV	-	1	72	Jamshoro - Hala Road -II	220kV	-	1
27	220KV SNR -Okara 1	220kV	-	1	73	Jamshoro - T.M.Khan Road-II	220kV	-	1
28	220KV Bund Road - Sheikhupura-1	220kV	-	2	74	Jhampir - T.M.Khan - I	220kV	1	2
29	220KV Bund Road - Sheikhupura-2	220kV	-	1	75	Jhampir - T.M.Khan - II	220kV	1	2
30	220KV Bund Road - Sheikhupura-3	220kV	-	1	76	Jamshoro- Jhampir I	220kV	-	1
31	220KV New Kot Lakhpat - Sheikhupura	220kV	-	1	77	Guddu-Sibbi (Direct Ckt)	220kv	2	5
32	220KV Wapda Town - Sheikhupura	220kV	-	1	78	Guddu-Shikarpur-II	220kV	1	5
33	220KV Ravi - Sheikhupura	220kV		2	79	Shikarpur-Uch-II	220kV	-	1
34	220KV Altas P/H - Ravi	220kV		1	80	Uch-Sibbi-I	220kV	-	3
35	220KV Kala Shah Kaku - Ravi	220kV	1	2	81	D.M.Jamalli-Sibbi	220kV	2	8
36	220KV Kala Shah Kaku - Ghazi	220kV	1	1	82	Sibbi - Quetta Industrial-I	220kV	-	3
37	220KV SMR - Ghazi	220kV	-	1	83	Sibbi - Quetta Industrial-II	220kV	-	4
38	220KV Ravi - Shalamar	220kV	-	1	84	Rohri-Engro-I	220kV	-	1
39	220KV Yousafwala - Kassowal -2	220kV	-	1	85	Rohri-Engro-II	220kV	-	2
40	220KV FSD West- T.T.Singh CCT:	220KV	1	1	86	Shikarpur-Rohri-I	220kV	-	1
41	Tarbela - Mardan-II	220kV	-	3	87	Shikarpur-Rohri-II	220kV	-	1
42	Daudkhel-Sheikh Muhammadi Peshawar-I	220kV	-	-	88	Dadu-Khuzdar-I	220kv	-	1
43	Daudkhel-Sheikh Muhammadi Peshawar-II	220kV	-	1	89	D.G.Khan-Loralai-I	220kV	1	1
44	Mardan-Chakdara	220kV	2	6	90	D.G.Khan-Loralai-II	220kV	1	1
45	Chakdara- Shahibagh	220kV	1	2	**Total 220 kV Trippings**			**41**	**162**
46	ISPR - Mansehra-II	220kV	-	1					

Source: NTDC

TABLE 56

Main Electricity Statistics of the Country

	2017-18	2018-19	2019-20	2020-21	2021-22
1: Maximum Energy Demand (MW)					
CPPA-G System*	25,303	24,839	24,790	26,349	28,754
KE System	3,527	3,530	3,604	3,604	3,670
2: Auxiliary Consumption and System Losses (in percentage)					
CPPA-G System					
Auxiliary Consumption	n.p.	n.p.	0.05	0.05	n.p
Transmission Losses	2.43	2.83	2.76	2.78	2.62
Distribution Losses	18.32	17.61	18.86	17.95	17.13
KE System					
Auxiliary Consumption (KE Own)	7.55	7.45	7.04	6.88	7.14
T&D Losses (excluding Auxiliary Consumption)	20.28	19.17	19.79	17.54	15.35
3: Average Sales Price (Rs./kWh)					
CPPA-G System	13.06	15.54	-	-	22.5
KE System [1]	15.9	15.88	18.13	19.64	23.34
4: Per Capita Electricity Consumption					
CPPA-G System					
Population (Million) **	186.05	188.71	191.5	191.63	191.63
Energy Sale (GWh)	97,030.39	98,824.06	97,793.89	105,136.95	116,902.24
Per Capita Electricity Consumption (kWh)	527	528	516	548.65	610.04
Average Sale/ Consumer (kWh)	3,404.22	3,297.41	3,097.43	3,147.73	3,522.24
KE System					
Population (Million) **	16.39	16.85	17.35	16.05	16.05
Energy Sale (GWh)	13,860.32	14,318.11	14,276.96	16,068.85	16,763.22
Per Capita Electricity Consumption (kWh)	863	892	889	1,001.00	1,044.00
Average Sale/ Consumer (kWh)	5,365.07	5,098.92	4,824.77	5,044.64	4,923

** Based on non-coincidental power demand indicated by DISCOs in Table 62.*

*** Population is in line with census 2017*

[1] This includes amount billed to consumers including taxes, fuel cost adjustments, quarterly tariff adjustments and other government surcharges/packages.

Source: NTDC/DISCOs/KE

TABLE 57

Hourly System Demand (MW) (January - December, 2021)

Hours of the day	Maximum Demand (MW)		System Demand for a Typical day in Summer		System Demand for a Typical Day in Winter	
	Summer (01-07-2021)	Winter (22-12-2021)	Working day (30-06-2021)	Non-working day (04-07-2021)	Working day (23-07-2021)	Non-working day (26-12-2021)
1	26,817	12,624	25,828	23,903	12,834	12,391
2	26,239	12,209	25,388	23,608	12,291	11,792
3	25,345	11,788	24,602	22,527	12,125	11,486
4	25,107	11,649	24,380	22,456	12,048	11,296
5	25,076	12,079	24,328	22,550	12,341	11,143
6	25,238	13,659	24,367	22,580	13,563	12,350
7	25,097	14,700	24,532	22,643	14,860	12,546
8	25,572	15,463	25,033	23,002	15,796	13,119
9	25,810	16,379	25,528	22,976	16,565	14,253
10	26,709	15,656	25,434	23,763	15,987	14,760
11	26,730	15,494	26,072	23,974	15,635	14,957
12	26,744	15,359	26,534	24,027	15,469	15,374
13	27,605	15,044	26,500	24,653	15,077	15,200
14	27,453	15,183	27,046	24,377	14,852	15,216
15	28,120	15,949	27,890	25,161	15,767	15,390
16	28,650	16,569	27,994	25,301	16,298	15,373
17	27,959	17,452	27,616	24,726	16,741	15,725
18	27,601	17,575	26,995	23,232	17,195	16,275
19	25,364	16,620	25,497	21,893	16,830	16,091
20	25,556	16,490	26,179	22,224	15,754	15,578
21	25,715	15,534	26,579	22,390	15,632	15,122
22	25,708	14,911	26,921	22,190	14,730	14,051
23	24,978	14,181	27,151	21,986	13,792	13,368
24	24,685	13,623	26,965	22,438	13,228	12,622

Source: National Power Control Centre, Islamabad

TABLE 58
Monthly System Peak Load Demand (MW)

Month	2017-18	2018-19	2019-20	2020-21	2021-22
July	24,128	25,575	24,927	26,085	27,286
August	25,810	25,627	25,198	26,781	28,179
September	22,001	24,838	25,753	23,931	24,582
October	20,592	20,395	19,328	20,857	20,951
November	16,410	15,760	16,704	15,962	15,962
December	16,081	15,859	15,973	17,177	17,177
January	16,022	17,320	15,938	17,012	17,012
February	15,567	15,230	15,489	16,433	16,433
March	18,246	16,480	14,746	17,617	17,617
April	21,019	19,885	18,516	21,322	22,212
May	25,315	24,233	21,191	23,847	25,249
June	26,741	24,827	24,349	26,682	28,253

Source: National Power Control Centre, Islamabad

TABLE 59
Number of Circles, Divisions, Sub-Divisions, 11 kV Feeders and their Loading Position

DISCO	As on 30th June	Circles	Divisions	Sub-Divisions	11 kV Feeders	Loading Position of 11 kV Feeders (Nos.)				%age
						80-90%	91-100%	Above 100%	Total	
PESCO	2018	8	39	187	1,012	155	139	118	412	40.71
	2019	8	39	187	1,056	82	110	147	339	32.10
	2020	8	39	187	1,089	99	118	124	341	31.31
	2021	8	39	187	1,138	110	145	180	435	38.22
	2022	8	39	190	1,193	118	119	149	386	32.36
TESCO	2018	1	7	20	207	17	190	0	207	100.00
	2019	1	9	18	215	21	128	0	149	69.30
	2020	1	9	18	245	193	0	0	193	78.78
	2021	1	5	15	266	40	70	34	144	54.14
	2022	1	5	15	302	23	28	90	141	46.69
IESCO	2018	5	19	109	1,068	17	8	0	25	2.34
	2019	5	19	109	1,112	5	13	9	27	2.43
	2020	5	19	109	1,166	28	20	17	65	5.57
	2021	6	20	109	1,221	6	9	11	26	2.13
	2022	6	20	110	1,293	31	18	0	49	3.79
GEPCO	2018	5	24	118	835	32	23	4	59	7.07
	2019	5	24	118	864	29	13	2	44	5.09
	2020	5	24	118	876	37	20	0	57	6.51
	2021	5	24	118	910	64	42	0	106	11.65
	2022	5	24	119	949	87	56	13	156	16.44
LESCO	2018	8	36	196	1,741	197	259	85	541	31.07
	2019	8	39	199	1,821	226	206	69	501	27.51
	2020	8	39	199	1,923	205	195	58	458	23.82
	2021	8	42	201	2,011	141	104	40	285	14.17
	2022	8	42	201	2,058	170	136	145	451	21.91
FESCO	2018	4	25	138	1023	105	43	1	149	14.57
	2019	4	26	140	1,054	74	48	6	128	12.14
	2020	5	26	140	1,150	40	14	2	56	4.87
	2021	5	26	140	1,185	54	19	2	75	6.33
	2022	5	26	140	1,265	80	45	4	129	10.20
MEPCO	2018	9	37	174	1,324	156	157	60	373	28.17
	2019	9	37	179	1,392	139	105	13	257	18.46
	2020	9	37	181	1,508	91	127	11	229	15.19
	2021	9	37	181	1,652	207	104	12	323	19.55
	2022	9	38	181	1,726	180	119	19	318	18.42
HESCO	2018	4	15	68	502	18	38	13	69	13.75
	2019	4	15	69	533	26	32	10	68	12.76
	2020	4	15	69	556	45	23	1	69	12.41
	2021	4	15	69	570	58	19	0	77	13.51
	2022	4	15	69	583	60	33	0	93	15.95
SEPCO	2018	7	29	96	490	56	45	56	157	32.04
	2019	7	29	96	531	52	28	38	118	22.22
	2020	7	29	96	541	47	28	28	103	19.04
	2021	7	29	97	548	24	39	20	83	15.15
	2022	7	29	97	562	36	55	2	93	16.55
QESCO	2018	6	14	55	641	56	74	81	211	32.92
	2019	6	14	55	642	56	74	70	200	31.15
	2020	6	14	55	652	455	130	67	652	100.00
	2021	6	14	55	688	494	131	63	688	100.00
	2022	6	14	55	735	94	185	23	302	41.09
Total in CPPA-G System	2018	57	245	1,161	8,843	809	976	418	2,203	24.91
	2019	57	251	1,170	9,220	710	757	364	1,831	19.86
	2020	58	251	1,172	9,706	1,240	675	308	2,223	22.90
	2021	59	251	1,172	10,189	1,198	682	328	2,208	21.67
	2022	59	252	1,177	10,666	879	794	445	2,118	19.86
KE	As on 30th June	IBCs		11 kV Feeders		Loading Position of 11 kV Feeders (Nos.)				%age
						80-90%	91-100%	Above 100%	Total	
	2018	29		1,729		22	6	1	29	1.68
	2019	30		1,807		28	10	10	48	2.66
	2020	30		1,890		43	7	2	52	2.75
	2021	30		1,937		17	5	2	24	1.24
	2022	30		2,001		38	13	5	56	2.80

Source: Distribution Companies / KE

TABLE 60

Status of Distribution Lines (km)

DISCO	As on 30th June	132 kV	66 kV	33 kV	11 kV	Total HT Lines	Total LT Lines (0.4 kV)
PESCO	2018	2,318	802	312	36,227	39,659	44,954
	2019	2,661	714	312	36,679	40,365	45,120
	2020	2,764	494	75	36,935	40,269	45,204
	2021	2,967	494	75	37,177	40,713	45,371
	2022	3,000	494	75	37,695	41,264	45,627
TESCO	2018	359	402	0	8,023	8,784	6,590
	2019	382	442	0	9,705	10,529	6,590
	2020	408	384	123	10,316	11,231	6,285
	2021	441	384	123	10,434	11,382	6,285
	2022	441	384	132	10,543	11,500	6,290
IESCO	2018	2,897	581	69	25,156	28,703	26,775
	2019	2,897	581	69	25,457	29,004	27,041
	2020	3,030	528	69	25,804	29,431	27,299
	2021	3,482	312	44	26,237	30,075	27,624
	2022	3,512	312	44	26,932	30,801	28,160
GEPCO	2018	2,425	179	0	23,458	26,062	18,410
	2019	2,425	179	0	23,743	26,347	18,410
	2020	2,611	179	0	24,231	27,021	18,381
	2021	2,611	179	0	24,659	27,449	18,456
	2022	2,682	123	0	24,996	27,801	18,494
LESCO	2018	2,864	410	0	28,775	32,049	14,952
	2019	2,879	410	0	29,309	32,598	15,000
	2020	3,012	410	0	30,005	33,427	15,000
	2021	3,051	15	0	30,055	33,121	15,000
	2022	3,110	15	0	31,562	34,687	15,533
FESCO	2018	2,402	1,174	0	42,773	46,349	30,203
	2019	2,402	1,174	0	43,896	47,472	30,583
	2020	2,288	1,130	0	44,397	47,815	30,695
	2021	2,337	1,124	0	45,690	49,151	31,979
	2022	2,322	881	0	46,281	49,484	32,054
MEPCO	2018	3,749	935	0	74,061	78,745	48,560
	2019	3,929	872	0	76,057	80,858	49,992
	2020	4,031	702	0	78,309	83,042	50,110
	2021	4,072	635	0	79,837	84,544	50,332
	2022	4,110	635	0	80,962	85,707	50,451
HESCO	2018	2,496	687	0	28,154	31,337	14,959
	2019	2,709	687	0	28,306	31,702	15,005
	2020	2,771	687	0	28,413	31,871	15,049
	2021	2,771	687	0	28,471	31,929	15,057
	2022	2,778	687	0	28,502	31,967	15,058
SEPCO	2018	2,137	733	0	25,140	28,010	13,492
	2019	2,232	637	0	25,400	28,269	13,341
	2020	2,241	687	0	25,571	28,499	13,350
	2021	2,262	687	0	24,722	27,671	13,349
	2022	2,308	687	0	24,824	27,819	13,351
QESCO	2018	5,200	260	1,981	37,779	45,220	16,155
	2019	5,420	106	1,981	38,686	46,193	16,404
	2020	5,420	106	1,981	39,745	47,252	16,681
	2021	5,500	106	1,981	40,822	48,409	17,476
	2022	6,258	106	1,981	41,606	49,951	17,908
Total in CPPA-G System	2018	26,847	6,163	2,362	329,546	364,918	235,050
	2019	27,936	5,802	2,362	337,238	373,337	237,486
	2020	28,577	5,307	2,248	343,726	379,859	238,053
	2021	29,495	4,623	2,223	348,104	384,445	240,928
	2022	30,521	4,325	2,232	353,903	390,981	242,925
KE	2018	767	149	0	9,549	10,465	19,098
	2019	798	149	0	9,876	10,823	9,751
	2020	801	153	0	10,204	11,158	8,367
	2021	833	153	0	10,283	11,269	18,509
	2022	838	153	0	10,520	11,511	18,936

Source: Distribution Companies / KE

TABLE 61

Status of Grid Stations (Nos.)

DISCO	As on 30th June	132 kV			66 kV			33 kV			Total
		DISCO Owned	Cons. Owned	Sub-Total	DISCO Owned	Cons. Owned	Sub-Total	DISCO Owned	Cons. Owned	Sub-Total	
PESCO	2018	73	9	82	16	0	16	6	0	6	104
	2019	78	10	88	14	0	14	6	0	6	108
	2020	81	12	93	11	0	11	2	0	2	106
	2021	83	12	95	11	0	11	2	0	2	108
	2022	85	12	97	11	0	11	2	0	2	110
TESCO	2018	9	0	9	9	0	9	0	0	0	18
	2019	10	0	10	9	0	9	0	0	0	19
	2020	10	0	10	9	1	10	0	0	0	20
	2021	11	0	11	9	1	10	0	0	0	21
	2022	13	0	13	6	1	7	0	0	0	20
IESCO	2018	78	25	103	4	1	5	2	0	2	110
	2019	78	26	104	3	1	4	2	0	2	110
	2020	82	26	108	1	1	2	2	0	2	112
	2021	85	26	111	0	1	1	2	0	2	114
	2022	89	25	114	0	1	1	2	0	2	117
GEPCO	2018	59	0	59	1	0	1	0	0	0	60
	2019	59	0	59	1	0	1	0	0	0	60
	2020	59	0	59	1	0	1	0	0	0	60
	2021	59	0	59	1	0	1	0	0	0	60
	2022	59	0	59	1	0	1	0	0	0	60
LESCO	2018	108	42	150	0	0	0	0	0	0	150
	2019	110	44	154	0	0	0	0	0	0	154
	2020	116	46	162	0	0	0	0	0	0	162
	2021	117	50	167	0	0	0	0	0	0	167
	2022	120	52	172	0	0	0	0	0	0	172
FESCO	2018	74	19	93	14	0	14	0	0	0	107
	2019	77	19	96	14	0	14	0	0	0	110
	2020	78	20	98	15	0	15	0	0	0	113
	2021	81	21	102	14	0	14	0	0	0	116
	2022	86	22	108	16	0	16	0	0	0	124
MEPCO	2018	104	9	113	16	0	16	0	0	0	129
	2019	114	9	123	10	0	10	0	0	0	133
	2020	120	10	130	7	0	7	0	0	0	137
	2021	123	11	134	6	0	6	0	0	0	140
	2022	123	12	135	6	0	6	0	0	0	141
HESCO	2018	61	7	68	15	0	15	0	0	0	83
	2019	61	8	69	15	0	15	0	0	0	84
	2020	61	9	70	15	0	15	0	0	0	85
	2021	61	9	70	15	0	15	0	0	0	85
	2022	62	10	72	15	0	15	0	0	0	87
SEPCO	2018	55	1	56	9	1	10	0	0	0	66
	2019	55	1	56	9	1	10	0	0	0	66
	2020	57	1	58	9	1	10	0	0	0	68
	2021	58	2	60	9	1	10	0	0	0	70
	2022	60	2	62	8	1	9	0	0	0	71
QESCO	2018	69	0	69	5	0	5	32	0	32	106
	2019	71	1	72	3	0	3	32	0	32	107
	2020	71	1	72	3	0	3	32	0	32	107
	2021	73	0	73	3	0	3	32	0	32	108
	2022	75	0	75	3	0	3	32	0	32	110
Total in CPPA-G System	2018	690	112	802	89	2	91	40	0	40	933
	2019	713	118	831	78	2	80	40	0	40	951
	2020	735	125	860	71	3	74	36	0	36	970
	2021	751	131	882	68	3	71	36	0	36	989
	2022	772	135	907	66	3	69	36	0	36	1012
KE	2018	54	9	63	3	0	3	0	0	0	66
	2019	56	10	66	3	0	3	0	0	0	69
	2020	57	11	68	3	0	3	0	0	0	71
	2021	58	11	69	3	0	3	0	0	0	72
	2022	58	11	69	3	0	3	0	0	0	72

Source: Distribution Companies / KE

TABLE 62

Category-wise Number of Consumers

DISCO	As on 30th June	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others/ General	Total
PESCO	2018	2908414	337386	29872	23083	1096	925	30131	3330907
	2019	3029784	349985	26582	22896	1083	887	41228	3472445
	2020	3193810	362183	26919	22968	1119	886	42245	3650130
	2021	3374867	377986	27591	23049	1163	890	43405	3848951
	2022	3546157	393995	28205	23121	1203	897	44735	4038313
TESCO	2018	402209	28625	4268	6118	5	57	1119	442401
	2019	402027	28688	4243	6187	5	65	1367	442582
	2020	402004	28790	4271	6194	5	67	1434	442765
	2021	402072	29061	4276	6234	5	68	1464	443180
	2022	402084	29763	4362	6252	5	72	1608	444146
IESCO	2018	2405253	394381	16053	7182	1761	886	11722	2837238
	2019	2528865	411219	16272	7087	1829	960	13758	2979990
	2020	2649394	426132	16359	7068	1914	845	18477	3120189
	2021	2783354	437335	17016	7242	2039	848	28330	3276164
	2022	2972324	464632	17664	7391	2240	854	20512	3485617
GEPCO	2018	2860915	349789	70063	44749	578	164	16	3326274
	2019	3021760	366047	73133	46887	580	152	20393	3528952
	2020	3192199	379270	74244	50460	590	150	20930	3717843
	2021	3387411	394245	76337	52960	620	148	21365	3933086
	2022	3591198	410372	80524	54982	673	148	21815	4159712
LESCO	2018	3848417	602268	84183	60621	2547	499	249	4598784
	2019	4108067	623529	84703	61547	2554	494	8968	4889862
	2020	4374998	643245	86138	63671	2564	488	16090	5187194
	2021	4688342	664548	87918	66101	2613	469	17863	5527854
	2022	5018720	687951	89934	68250	2726	459	19208	5887248
FESCO	2018	3457159	383451	49314	40772	1719	232	20485	3953132
	2019	3651710	399688	50027	42763	1782	223	25216	4171409
	2020	3861027	413352	50911	45978	1860	226	28110	4401464
	2021	4081137	427149	52253	49738	1882	229	29414	4641802
	2022	4291224	440006	53475	51922	1913	231	30371	4869142
MEPCO	2018	5398111	536876	54772	80944	1494	460	126	6072783
	2019	5748493	559213	56121	85977	1501	454	33673	6485432
	2020	6090985	579011	57541	93884	1592	457	37840	6861310
	2021	6415415	600662	59514	99127	1666	458	40835	7217677
	2022	6788616	618271	60717	102709	1742	464	42434	7614953
HESCO	2018	877263	159627	14924	13730	540	337	14293	1080714
	2019	907377	163791	15250	14434	540	342	13926	1115660
	2020	933377	166213	14852	15522	572	344	13800	1144680
	2021	958338	169007	15193	15660	572	345	13875	1172990
	2022	978572	171843	15490	15729	573	346	13941	1196494
SEPCO	2018	589884	119384	12674	9221	421	519	13205	745308
	2019	603885	121776	12930	9270	425	527	13319	762132
	2020	628208	123808	13133	9346	442	532	13347	788816
	2021	643103	125388	13382	9370	535	445	13494	805717
	2022	650565	126818	13533	9377	540	449	13496	814778
QESCO	2018	453232	116267	3730	29580	265	261	5669	609004
	2019	463332	120311	3688	29608	268	266	7128	624601
	2020	477757	123504	3719	29599	274	271	7852	642976
	2021	491006	127814	3802	29639	279	282	9346	662168
	2022	503579	131817	3832	29623	283	299	9958	679391
Total in CPPA-G System	2018	23200857	3028054	339853	316000	10426	4340	97015	26996545
	2019	24465300	3144247	342949	326656	10567	4370	178976	28473065
	2020	25803759	3245508	348087	344690	10932	4266	200125	29957367
	2021	27225045	3353195	357282	359120	11374	4182	219391	31529589
	2022	28743039	3475468	367736	369356	11898	4219	218078	33189794
KE	2018	2096451	463670	20647	2398	74	194	1	2583435
	2019	2298616	474626	20842	2329	93	188	11375	2808069
	2020	2447129	470777	22553	2271	90	175	16104	2959099
	2021	2651527	490652	23244	2164	88	170	17487	3185332
	2022	2851946	509334	23706	2093	180	176	17897	3405332

Source: Distribution Companies / KE

TABLE 63

Category-wise Sanctioned Load (MW)

DISCO	As on 30th June	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Total
PESCO	2018	4015.16	766.87	1510.76	166.92	53.12	282.78	208.33	7003.94
	2019	4228.14	782.35	1563.31	163.48	50.59	282.84	402.83	7473.54
	2020	4563.34	825.96	1691.51	164.81	50.88	282.76	416.04	7995.30
	2021	4930.64	871.10	1764.04	166.15	50.69	293.52	455.33	8531.47
	2022	5291.421	925.503	1871.989	167.397	50.776	301.657	477.759	9086.502
TESCO	2018	801.00	65.00	156.00	200.00	0.00	8.00	0.00	1230.00
	2019	768.00	37.00	181.00	70.00	1.00	5.00	15.00	1077.00
	2020	768.15	37.62	227.11	70.51	1.00	7.00	16.00	1127.40
	2021	770.00	40.00	260.00	70.00	1.00	7.00	16.00	1164.00
	2022	768.00	40.00	295.00	71.00	0.00	7.00	19.00	1200.00
IESCO	2018	4258.00	1170.00	1065.00	69.00	100.00	543.00	481.00	7686.00
	2019	4471.20	1200.23	1089.78	63.45	100.69	825.27	340.37	8090.99
	2020	4698.09	1250.58	1105.28	59.31	101.33	541.48	730.75	8486.82
	2021	4970.00	1267.00	1152.00	62.00	103.00	557.00	829.00	8940.00
	2022	5408.00	1396.00	1195.00	65.00	106.00	575.00	804.00	9549.00
GEPCO	2018	4215.95	774.77	1769.90	317.48	32.73	98.99	93.04	7302.86
	2019	4531.07	827.30	1860.78	336.79	22.22	77.08	153.97	7809.21
	2020	4863.10	871.38	1923.47	369.14	22.33	75.65	177.58	8302.65
	2021	5241.09	920.91	2033.03	397.76	22.54	75.44	192.08	8882.85
	2022	5653.50	974.04	2168.16	419.08	22.83	75.44	200.34	9513.39
LESCO	2018	6074.75	1735.78	4521.90	637.46	115.45	253.24	42.36	13380.95
	2019	6456.77	1766.64	4691.43	612.69	113.45	259.37	366.92	14267.26
	2020	6914.42	1850.13	4930.40	614.73	111.57	343.05	488.85	15253.15
	2021	7471.08	1931.16	5226.09	644.81	109.22	333.87	600.73	16316.97
	2022	8121.774	2042.684	5526.338	673.622	110.571	346.067	645.108	17466.164
FESCO	2018	8492.00	916.00	2221.00	459.00	11.00	216.00	149.00	12464.00
	2019	9041.00	988.00	2290.00	487.00	11.00	218.00	224.00	13259.00
	2020	9655.00	1046.00	2394.00	533.00	11.00	222.00	253.00	14114.00
	2021	10315.00	1109.00	2525.00	587.00	12.00	231.00	269.00	15048.00
	2022	10947	1172	2660	631	12	231	282	15935.00
MEPCO	2018	7895.99	1095.65	2494.57	1253.41	14.99	136.42	24.38	12915.41
	2019	8343.12	1162.52	2585.25	1372.99	15.08	140.19	302.33	13921.48
	2020	9049.00	1235.28	2657.97	1543.54	15.76	150.21	337.64	14989.40
	2021	9729.66	1314.19	2776.20	1656.29	16.24	152.43	359.11	16004.12
	2022	10469.45	1378.99	2903.89	1729.59	16.67	160.95	380.82	17040.34
HESCO	2018	1151.18	302.40	863.55	182.26	24.02	57.50	154.50	2735.41
	2019	1201.10	318.95	902.73	194.71	24.08	61.37	157.41	2860.35
	2020	1247.80	329.99	945.76	210.20	24.05	77.49	173.11	3008.40
	2021	1291.52	344.43	983.02	214.02	24.05	78.44	178.63	3114.11
	2022	1331.64	357.31	1046.88	216.29	24.06	80.72	184.70	3241.60
SEPCO	2018	625.26	206.91	426.26	109.72	12.67	68.67	119.68	1569.17
	2019	644.62	213.97	446.66	109.65	12.72	74.21	119.37	1621.20
	2020	678.66	222.57	462.47	111.51	13.04	75.31	120.18	1683.75
	2021	700.75	231.71	481.85	111.81	13.14	84.58	121.78	1745.62
	2022	715.430	238.563	496.455	111.473	13.152	86.776	122.50	1784.349
QESCO	2018	657.65	191.68	176.26	826.34	5.72	60.59	87.27	2005.52
	2019	674.34	198.78	180.43	957.54	5.76	69.46	103.54	2189.86
	2020	687.06	205.48	194.90	996.27	5.68	70.94	116.89	2277.21
	2021	693.43	214.01	215.15	996.52	5.77	79.50	138.15	2342.52
	2022	710.54	220.21	219.98	996.23	5.81	89.86	148.99	2391.62
Total in CPPA-G System	2018	38186.95	7225.06	15205.21	4221.59	369.70	1725.19	1359.56	68293.25
	2019	40359.36	7495.73	15791.37	4368.31	356.59	2012.80	2185.73	72569.89
	2020	43124.62	7874.99	16532.88	4673.03	356.64	1845.89	2830.04	77238.08
	2021	46113.17	8243.51	17416.38	4906.36	357.65	1892.78	3159.81	82089.66
	2022	40108.45	7665.11	16333.95	3587.94	369.22	1840.81	2892.85	72798.33
KE	2018	5659.16	1831.01	2035.40	44.00	1.43	190.10	0.00	9761.10
	2019	6297.76	1888.21	2169.88	44.06	1.60	191.20	135.73	10728.44
	2020	6457.89	1938.25	2378.36	42.09	1.63	183.45	247.04	11248.71
	2021	6948.36	2039.96	2675.16	42.35	1.41	191.66	281.56	12180.46
	2022	9508.00	2165.00	3005.00	43.00	2.00	205.00	313.00	15241.00

Source: Distribution Companies / KE

TABLE 64

Peak Demand of Distribution Companies (MW)

DISCO	2017-18	2018-19	2019-20	2020-21	2021-22
PESCO	3,242	3,296	2,967	3,307	3,622
Peak Demand Growth Rate over Last Year	4.24	1.67	(9.98)	11.46	9.53
TESCO	772	799	805	857	983
Peak Demand Growth Rate over Last Year	26.77	3.50	0.75	6.46	14.70
IESCO	2,452	2,512	2,671	2,406	2,718
Peak Demand Growth Rate over Last Year	5.96	2.45	6.33	(9.92)	12.97
GEPCO	2,429	2,309	2,429	2,948	2,985
Peak Demand Growth Rate over Last Year	0.66	(4.94)	5.20	21.37	1.26
LESCO	4,980	4,616	5,004	4,835	5,960
Peak Demand Growth Rate over Last Year	4.51	(7.31)	8.41	(3.38)	23.27
FESCO	3,036	2,904	2,925	3,342	3,711
Peak Demand Growth Rate over Last Year	(0.56)	(4.35)	0.72	14.26	11.04
MEPCO	4,018	4,115	4,115	4,635	4,735
Peak Demand Growth Rate over Last Year	9.69	2.41	0.00	12.64	2.16
HESCO	1,256	1,209	1,228	1,399	1,365
Peak Demand Growth Rate over Last Year	1.78	(3.74)	1.57	13.93	(2.43)
SEPCO	1,318	1,279	1,124	1,191	1,175
Peak Demand Growth Rate over Last Year	(3.02)	(2.96)	(12.12)	5.96	(1.34)
QESCO	1,800	1,800	1,522	1,429	1,500
Peak Demand Growth Rate over Last Year	1.69	0.00	(15.44)	(6.11)	4.97
Peak Demand in CPPA-G System	**25,303**	**24,839**	**24,790**	**26,349**	**28,754**
Peak Demand Growth Rate over Last Year	**4.17**	**(1.83)**	**(0.20)**	**6.29**	**9.13**
KE	3,527	3,530	3,604	3,604	3,670
Peak Demand Growth Rate over Last Year	7.86	0.09	2.10	0.00	1.83

Source: Distribution Companies / KE

TABLE 65

Energy Volume Consumed by Demand

S. No.	DISCO	FY 2017-18		FY 2018-19		FY 2019-20		FY 2020-21		FY 2021-22	
		Energy Delivered at 132 kV (GWh)	Consumption %	Energy Delivered at 132 kV (GWh)	Consumption (%)	Energy Delivered at 132 kV (GWh)	Consumption (%)	Energy Delivered at 132 kV (GWh)	Consumption (%)	Energy Delivered at 132 kV (GWh)	Consumption (%)
1	PESCO	14,209.00	12.06	14,427.00	12.1	14,792.33	12.48	15,542.00	12.28	16,562	11.90
2	TESCO	1,696.00	1.44	1,821.00	1.53	2,001.22	1.69	2,227.00	1.76	2,284	1.64
3	IESCO	11,672.00	9.91	11,838.00	9.93	11,435.47	9.65	11,965.00	9.45	13,027	9.36
4	GEPCO	10,987.00	9.33	11,100.00	9.31	10,991.33	9.27	12,032.00	9.5	12,678	9.11
5	LESCO	23,731.00	20.14	24,338.00	20.41	23,528.33	19.85	25,388.00	20.05	28,334	20.36
6	FESCO	14,446.00	12.26	14,970.00	12.55	14,510.32	12.24	15,985.00	12.63	17,512	12.59
7	MEPCO	19,006.00	16.13	19,367.00	16.24	19,324.88	16.3	20,541.00	16.23	22,512	16.18
8	HESCO	5,743.00	4.88	5,557.00	4.66	5,470.78	4.62	5,591.00	4.42	5,610	4.03
9	SEPCO	4,679.00	3.97	4,412.00	3.7	4,252.76	3.59	4,291.00	3.39	4,490	3.23
10	QESCO	6,339.00	5.38	6,257.00	5.25	6,603.99	5.57	6,629.00	5.24	6,716	4.83
11	KE	5,128.00	4.35	4,957.00	4.16	5,426.00	4.58	6,118.00	4.83	9,036	6.49
12	IPPs	167.09	0.14	201.54	0.17	193	0.16	289	0.23	375	0.27
	Total	**117,803.09**	**100**	**119,245.54**	**100**	**118,530.41**	**100**	**126,598.00**	**100**	**139,136.00**	**100.00**

Source: CPPA-G

Table 66

Maximum Demand and Energy Data of all DISCOs (FY 2021-22)

	FESCO		GEPCO		HESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2021	1,889,674,336.00	3,994,311.00	1456156617	2589522	620792688	1576126
August, 2021	1,995,111,493.00	3,858,071.00	1601906211	3138652	590339704	1447513
September, 2021	1,728,967,372.00	3,683,396.00	1328310397	2897499	571568665	1568062
October, 2021	1,421,008,008.00	3,709,389.00	1004006243	2403697	492091641	1584487
November, 2021	998,994,607.00	3,012,458.00	677641898	2100522	335671750	1316709
December, 2021	1,009,146,517.00	3,245,154.00	684856463	2010131	293975753	1267360
January, 2022	978,152,055.00	2,849,594.00	663457910	1852164	295426875	1054834
February, 2022	933,854,652.00	2,935,812.00	589081137	1904313	269125009	1203595
March, 2022	1,341,485,655.00	3,190,428.00	882022245	2528993	405661902	1716194
April, 2022	1,640,054,945.00	3,833,143.00	1147530015	2828020	551163666	1590701
May, 2022	1,860,093,990.00	3,890,784.00	1332125581	2593677	617839234	1683163
June, 2022	1,714,976,952.00	3,788,986.00	1311100459	2958085	566673923	1679115

	SEPCO		IESCO		LESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2021	560539941	1281118	1492575962	2734150	3011769710	5986572
August, 2021	558928145	1265072	1499031371	2888418	3141202927	5879563
September, 2021	504574075	1027103	1344084111	2555481	2657294155	5759719
October, 2021	360514492	845999	970483509	2254651	2238380194	5201549
November, 2021	225821813	531753	737767168	1966646	1601866555	5005666
December, 2021	209072210	597488	826645075	2016160	1715561089	4968577
January, 2022	195084302	755434	856701753	1893653	1781696510	4080586
February, 2022	180891872	589901	721451511	1905618	1553723408	4904210
March, 2022	268444735	746981	840638540	1904071	2128447254	5582951
April, 2022	415218976	1270963	1109999258	2229579	2618228303	5699824
May, 2022	527323926	1093958	1309304827	2591033	2949321905	6140855
June, 2022	483354237	999927	1318072506	2795151	2936854659	6072356

	MEPCO		PESCO		TESCO	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2021	2710092266	5248267	1831260370	3765053	174910103	274092
August, 2021	2801971912	4970475	1765882050	3884839	187321654	276086
September, 2021	2334570761	5204627	1644021866	3434810.295	184541216	618850.7048
October, 2021	1788465898	4405735	1216551731	2733456	192332686	717179
November, 2021	1153490953	3974652	1055975733	2621937	207002968	704662
December, 2021	1107977208	3739152	1236039481	3282751	206323453	730289
January, 2022	1066624154	3457597	1242799897	2870043	185661834	716727
February, 2022	1089772434	3832516	1079592002	2814383	195063867	746370
March, 2022	1568256402	4573072	1110196770	2526581	207398675	741268
April, 2022	2194332374	5108590	1356561777	2967370	187620113	647551
May, 2022	2599399561	5346150	1517679712	3083532	166953080	618987
June, 2022	2096554351	4932084	1504984322	3212764	189316592	677812

	QESCO		KE Settlement Summary from NTDC	
Month	**Energy (kWh)**	**MDI (kW)**	**Energy (kWh)**	**MDI (kW)**
July, 2021	638822375	1312225	832676750	1427850
August, 2021	642764765	1360774	806410598	1389000
September, 2021	579370479	1388900	752604456	1463110
October, 2021	525851052	1274981	773176000	1280000
November, 2021	513000424	1452372	735165000	1240000
December, 2021	530561211	1358170	709747000	1171000
January, 2022	461229596	1529156	693899000	1130000
February, 2022	472011519	1258090	689565000	1230000
March, 2022	549621655	1388153	776560000	1240000
April, 2022	589989262	1204955	745668000	1270000
May, 2022	626751213	1238439	758153000	1262000
June, 2022	586443356	1313626	762717000	1346000

TABLE 67

Details of Units Purchased, Sold and Losses in all DISCOs

DISCO	Year	Unit Purchased (GWh)			Unit Sold (GWh)	Losses	
		Through NTDC	Through CPPs, SPPs etc.	Total Unit Purchased		GWh	%age
PESCO	2017-18	14220.30	0.00	14220.30	8795.53	5424.77	38.15
	2018-19	14301.80	0.00	14301.80	9073.56	5228.24	36.56
	2019-20	14750.30	0.00	14750.30	9043.05	5707.25	38.69
	2020-21	15540.90	0.00	15540.90	9607.54	5933.36	38.18
	2021-22	16560.19	0.00	16560.19	10355.16	6205.03	37.47
TESCO	2017-18	1692.82	0.00	1692.82	1481.85	210.97	12.46
	2018-19	1821.00	0.00	1821.00	1603.06	217.94	11.97
	2019-20	2151.00	0.00	2151.00	1802.76	348.24	16.19
	2020-21	2226.00	0.00	2226.00	2012.65	213.35	9.58
	2021-22	2284.44	0.00	2284.44	2071.59	212.85	9.32
IESCO	2017-18	11672.97	0.00	11672.97	10605.94	1067.03	9.14
	2018-19	11837.79	0.00	11837.79	10789.05	1048.74	8.86
	2019-20	11435.52	0.00	11435.52	10442.03	993.49	8.69
	2020-21	11966.00	0.00	11966.00	10944.00	1022.00	8.54
	2021-22	13027.00	0.00	13027.00	11961.92	1065.08	8.18
GEPCO	2017-18	10986.45	0.00	10986.45	9886.84	1099.61	10.01
	2018-19	11099.96	0.00	11099.96	10004.34	1095.62	9.87
	2019-20	10991.19	0.00	10991.19	9945.63	1045.56	9.51
	2020-21	12032.48	0.00	12032.48	10922.10	1110.38	9.23
	2021-22	12678.20	0.00	12678.20	11528.75	1149.45	9.07
LESCO	2017-18	23731.24	0.00	23731.24	20448.50	3282.74	13.83
	2018-19	24338.45	0.00	24338.45	21132.00	3206.45	13.17
	2019-20	23528.33	0.00	23528.33	20610.00	2918.33	12.40
	2020-21	25387.87	0.00	25387.87	22352.15	3035.72	11.96
	2021-22	28334.00	0.00	28334.00	25070.75	3263.25	11.52
FESCO	2017-18	12548.87	1897.54	14446.41	12924.57	1521.84	10.53
	2018-19	13889.66	1079.09	14968.75	13499.68	1469.07	9.81
	2019-20	13870.33	640.00	14510.33	13123.24	1387.09	9.56
	2020-21	14874.48	1110.00	15984.48	14501.20	1483.28	9.28
	2021-22	16112.53	1400.00	17512.53	15918.79	1593.74	9.10
MEPCO	2017-18	14928.56	4077.41	19005.97	15853.22	3152.75	16.59
	2018-19	13494.60	5872.05	19366.65	16309.61	3057.04	15.79
	2019-20	14972.84	4351.84	19324.68	16381.93	2942.75	15.23
	2020-21	16065.16	4467.05	20532.21	17466.10	3066.11	14.93
	2021-22	18518.35	4030.36	22548.71	19202.42	3346.28	14.84
HESCO	2017-18	3815.59	1927.43	5743.02	4026.96	1716.06	29.88
	2018-19	3567.80	1987.35	5555.15	3916.68	1638.47	29.49
	2019-20	3853.27	2958.37	6811.64	3890.00	2921.64	42.89
	2020-21	4419.93	2112.65	6532.58	4014.18	2518.40	38.55
	2021-22	4836.97	1173.95	6010.92	4034.54	1976.38	32.88
SEPCO	2017-18	4653.40	25.33	4678.73	2962.81	1715.92	36.67
	2018-19	4386.30	25.33	4411.63	2780.61	1631.02	36.97
	2019-20	4252.20	0.28	4252.48	2710.10	1542.38	36.27
	2020-21	4290.96	0.00	4290.96	2777.63	1513.33	35.27
	2021-22	4489.77	0	4489.77	2890.17	1599.6	35.63
QESCO	2017-18	6338.40	0.00	6338.40	4915.97	1422.43	22.44
	2018-19	6251.40	0.00	6251.40	4778.76	1472.64	23.56
	2019-20	6604.01	0.00	6604.01	4842.01	1762.00	26.68
	2020-21	6624.56	0.00	6624.56	4775.00	1849.56	27.92
	2021-22	6716.3	0	6716.3	4831.60	1884.70	28.06
Total in CPPA-G System	2017-18	104588.60	7927.71	112516.31	91902.19	20614.12	18.32
	2018-19	104988.76	8963.82	113952.58	93887.35	20065.23	17.61
	2019-20	106408.99	7950.49	114359.48	92790.75	21568.72	18.86
	2020-21	113428.34	7689.70	121118.04	99372.55	21745.49	17.95
	2021-22	123557.75	6604.31	130162.05	107865.70	22296.36	17.13

KE	As on 30th June	Unit Purchased (GWh)				Unit Sold (GWh)	Losses	
		KE Own*	Through NTDC	Through CPPs + Others	Total Unit Purchased		GWh	%age
	2017-18	10337.75	5128.20	2700.12	18166.07	13860.32	4305.75	23.70
	2018-19	10727.67	4956.71	2829.04	18513.42	14318.11	4195.31	22.66
	2019-20	10358.00	5426.14	2743.36	18527.50	14276.96	4250.54	22.94
	2020-21	10938.00	6118.04	3182.03	20238.07	16068.85	4169.22	20.60
	2021-22	8496.69	9036.54	2875.09	20408.32	16763.22	3645.09	17.86

** Gross Generation considered for KE own power plants*

Source: Distribution Companies / KE

TABLE 68

Units Billed, Amount of Units Billed and Amount Realized in DISCOs (2021-22)

DISCO		Unit	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Total
PESCO	Units Billed	GWh	5688.78	874.45	2527.90	77.18	12.37	698.14	476.35	10355.16
	Amount of Units Billed	Rs. Mln.	97401.51	30682.52	69379.01	1469.51	415.15	19539.02	14704.58	233591.29
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	82227.99	30307.29	67833.12	1365.23	362.62	18235.95	14087.48	214419.68
		%	84.42	98.78	97.77	92.90	87.35	93.33	95.80	91.79
TESCO	Units Billed	GWh	1468.63	5.45	547.31	26.27	0.00	12.98	10.95	2071.59
	Amount of Units Billed	Rs. Mln.	25603.59	167.12	16276.66	606.50	0.02	421.08	311.10	43386.07
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	18080.39	116.05	9586.99	376.90	0.02	314.79	253.52	28728.66
		%	70.62	69.44	58.90	62.14	100.00	74.76	81.49	66.22
IESCO	Units Billed	GWh	5757.32	1305.56	1685.74	35.67	83.47	1034.07	2060.09	11961.92
	Amount of Units Billed	Rs. Mln.	105594.39	48091.05	46453.80	722.72	2856.42	30988.84	55270.21	289977.42
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	105519.21	47892.73	46285.34	714.71	3103.23	30094.28	43675.21	277284.70
		%	99.93	99.59	99.64	98.89	108.64	97.11	79.02	95.62
GEPCO	Units Billed	GWh	6816.68	757.73	2797.44	535.09	9.92	177.32	434.57	11528.75
	Amount of Units Billed	Rs. Mln.	118118.82	27774.59	79580.94	9544.16	295.60	5496.03	12176.67	252986.81
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	116408.40	27506.94	77534.66	9177.44	267.82	5385.17	12126.72	248407.15
		%	98.55	99.04	97.43	96.16	90.60	97.98	99.59	98.19
LESCO	Units Billed	GWh	10353.55	1867.70	9775.38	1332.18	138.82	720.49	882.63	25070.75
	Amount of Units Billed	Rs. Mln.	198325.79	69354.44	251708.57	17570.49	3509.72	21955.81	24881.12	587305.94
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	193565.25	67731.25	241257.28	15664.24	3478.00	21322.51	24868.08	567886.61
		%	97.60	97.66	95.85	89.15	99.10	97.12	99.95	96.69
FESCO	Units Billed	GWh	7390.64	847.89	5821.99	1367.22	17.72	213.72	259.61	15918.79
	Amount of Units Billed	Rs. Mln.	134258.69	31258.46	163410.88	22495.55	632.22	6583.83	8067.61	366707.24
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	124485.53	30291.90	159295.39	18958.70	540.46	6061.08	8144.17	347777.23
		%	92.72	96.91	97.48	84.28	85.49	92.06	100.95	94.84
MEPCO	Units Billed	GWh	10243.68	1077.49	3460.11	3736.51	23.35	294.09	367.19	19202.42
	Amount of Units Billed	Rs. Mln.	180426.00	39658.94	99408.89	60255.85	793.88	8945.76	11222.16	400711.47
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	165592.39	38672.91	95187.48	49332.18	810.91	8587.24	10789.09	368972.19
		%	91.78	97.51	95.75	81.87	102.15	95.99	96.14	92.08
HESCO	Units Billed	GWh	2298.57	263.63	914.65	208.11	8.09	113.39	228.10	4034.54
	Amount of Units Billed	Rs. Mln.	38294.96	9801.64	26284.78	4125.96	248.14	3467.36	6669.70	88892.54
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	19272.02	9396.24	26004.05	2964.20	45.30	3174.09	4674.96	65530.86
		%	50.33	95.86	98.93	71.84	18.26	91.54	70.09	73.72
SEPCO	Units Billed	GWh	1794.92	235.94	412.22	87.03	40.06	206.06	113.94	2890.17
	Amount of Units Billed	Rs. Mln.	29371.75	8490.67	12502.21	1737.31	1182.32	6381.35	3544.09	63209.71
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	10408.93	8327.49	12184.29	1156.80	983.87	5068.55	2184.66	40314.58
		%	35.44	98.08	97.46	66.59	83.22	79.43	61.64	63.78
QESCO	Units Billed	GWh	591.97	151.15	172.46	3516.63	10.97	140.79	247.63	4831.60
	Amount of Units Billed	Rs. Mln.	10498.16	5591.20	5278.31	62347.60	378.38	4506.54	7923.49	96523.68
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	6726.76	5249.40	5292.16	9409.06	-3.32	4254.51	3125.33	34053.90
		%	64.08	93.89	100.26	15.09	-0.88	94.41	39.44	35.28
Total in CPPA-G System	Units Billed	GWh	52404.73	7386.99	28115.20	10921.90	344.76	3611.05	5081.06	107865.70
	Amount of Units Billed	Rs. Mln.	937893.65	270870.62	770284.05	180875.65	10311.86	108285.62	144770.73	2423292.17
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	842286.86	265492.20	740460.75	109119.46	9588.91	102498.16	123929.21	2193375.57
		%	89.81	98.01	96.13	60.33	92.99	94.66	85.60	90.51
KE	Units Billed	GWh	8004.68	1846.46	5842.80	110.72	63.82	467.84	426.91	16763.22
	Amount of Units Billed	Rs. Mln.	147442.31	63112.62	149916.74	1387.48	2132.98	13332.26	12910.63	390235.04
	Amount Realized and %age Recovery to Billed Amount	Rs. Mln.	133011.50	61922.26	151546.96	282.57	4009.15	13243.31	13318.83	377334.58
		%	90.21	98.11	101.09	20.37	187.96	99.33	103.16	96.69

Source: Distribution Companies / KE

TABLE 69

Category-wise Electricity Sold (GWh)

DISCO	Year	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Total
PESCO	2017-18	4928.26	769.93	2321.87	78.90	13.47	642.50	40.60	8795.53
	2018-19	4828.51	791.78	2342.93	66.66	13.03	667.90	362.75	9073.56
	2019-20	5099.18	774.96	2008.00	69.27	12.93	651.58	427.13	9043.05
	2020-21	5372.61	801.62	2274.06	78.97	46.37	641.42	392.49	9607.54
	2021-22	5,688.78	874.45	2,527.90	77.18	12.37	698.14	476.35	10355.16
TESCO	2017-18	1195.16	5.93	227.68	42.01	0.00	8.59	2.48	1481.85
	2018-19	1212.94	5.13	326.86	36.49	0.00	9.30	12.34	1603.06
	2019-20	1415.14	4.90	329.71	32.50	0.00	10.30	10.23	1802.76
	2020-21	1401.58	5.01	553.82	30.99	0.00	12.48	8.77	2012.65
	2021-22	1468.63	5.45	547.31	26.27	0.00	12.98	10.95	2071.59
IESCO	2017-18	5035.44	1200.07	1861.61	96.35	72.58	2283.58	56.31	10605.94
	2018-19	4990.63	1202.07	1811.16	46.82	74.37	988.54	1675.46	10789.05
	2019-20	5028.18	1098.90	1487.49	26.92	77.35	919.43	1803.76	10442.03
	2020-21	5325.00	1166.00	1521.00	35.00	81.00	918.00	1898.00	10944.00
	2021-22	5757.32	1305.56	1685.74	35.67	83.47	1034.07	2060.09	11961.92
GEPCO	2017-18	5757.44	615.06	2696.34	400.60	7.91	381.88	27.61	9886.84
	2018-19	5804.60	602.68	2596.87	449.10	6.45	399.33	145.31	10004.34
	2019-20	5944.20	593.84	2397.03	474.66	7.29	156.82	371.79	9945.63
	2020-21	6372.55	671.74	2775.92	542.03	9.71	160.05	390.10	10922.10
	2021-22	6816.68	757.73	2797.44	535.09	9.92	177.32	434.57	11528.75
LESCO	2017-18	9021.27	1792.33	7587.38	1259.50	119.05	660.91	8.06	20448.50
	2018-19	9043.00	1685.00	8153.00	1147.00	110.00	667.00	327.00	21132.00
	2019-20	9259.00	1563.00	7381.00	1116.00	117.00	627.00	547.00	20610.00
	2020-21	9663.64	1662.38	8351.36	1187.71	139.70	654.33	693.03	22352.15
	2021-22	10353.55	1867.70	9775.38	1332.18	138.82	720.49	882.63	25070.75
FESCO	2017-18	6506.58	737.86	4220.72	1066.69	12.39	338.75	41.58	12924.57
	2018-19	6486.18	737.08	4697.54	1107.98	10.35	268.36	192.19	13499.68
	2019-20	6656.34	712.71	4133.46	1138.95	10.47	255.43	215.88	13123.24
	2020-21	7061.51	769.75	4937.35	1267.71	13.42	237.80	213.66	14501.20
	2021-22	7390.64	847.89	5821.99	1367.22	17.72	213.72	259.61	15918.79
MEPCO	2017-18	8945.73	967.10	2960.58	2659.32	20.37	293.19	6.93	15853.22
	2018-19	8914.59	945.93	3011.39	2879.97	18.20	294.95	244.58	16309.61
	2019-20	9469.57	903.24	2509.25	2916.57	18.04	275.93	289.33	16381.93
	2020-21	9825.38	980.72	2860.58	3201.47	20.20	275.51	302.24	17466.10
	2021-22	10243.68	1077.49	3460.11	3736.51	23.35	294.09	367.19	19202.42
HESCO	2017-18	2342.17	315.19	759.07	372.78	37.64	104.59	95.52	4026.96
	2018-19	2155.74	294.88	753.18	264.20	27.70	112.58	308.40	3916.68
	2019-20	2394.05	261.82	717.34	214.13	3.49	106.62	192.55	3890.00
	2020-21	2408.50	265.05	823.94	200.58	4.96	105.86	205.29	4014.18
	2021-22	2298.57	263.63	914.65	208.11	8.09	113.39	228.10	4034.54
SEPCO	2017-18	1759.45	218.81	465.88	245.18	27.29	177.99	68.21	2962.81
	2018-19	1596.67	209.51	419.90	109.89	20.20	177.07	247.37	2780.61
	2019-20	1765.85	209.33	365.13	81.11	16.41	159.78	112.49	2710.10
	2020-21	1795.88	227.32	375.13	84.90	165.92	22.85	105.63	2777.63
	2021-22	1794.92	235.94	412.22	87.03	40.06	206.06	113.94	2890.17
QESCO	2017-18	672.30	131.05	173.04	3762.35	8.25	122.16	46.82	4915.97
	2018-19	557.48	127.44	171.74	3567.40	9.08	126.72	218.90	4778.76
	2019-20	611.92	136.78	160.63	3572.06	9.60	126.94	224.08	4842.01
	2020-21	587.89	138.38	191.79	3485.96	10.57	130.47	229.94	4775.00
	2021-22	591.97	151.15	172.46	3516.63	10.97	140.79	247.63	4831.60
Total in CPPA-G System	2017-18	46163.80	6753.33	23274.17	9983.68	318.95	5014.14	394.12	91902.19
	2018-19	45590.34	6601.50	24284.57	9675.51	289.38	3711.75	3734.30	93887.35
	2019-20	47643.43	6259.48	21489.04	9642.17	272.58	3289.83	4194.24	92790.75
	2020-21	49814.54	6687.97	24664.95	10115.32	491.85	3158.77	4439.15	99372.55
	2021-22	52404.73	7386.99	28115.20	10921.90	344.76	3611.05	5081.06	107865.70
KE	2017-18	7169.68	1758.22	4123.85	151.49	156.54	471.10	29.44	13860.32
	2018-19	7298.83	1780.58	4402.12	134.30	160.48	477.22	64.58	14318.11
	2019-20	7489.18	1615.20	4158.29	116.11	112.03	467.74	318.41	14276.96
	2020-21	8041.32	1708.58	5220.99	121.70	98.04	454.31	423.91	16068.85
	2021-22	8,004.68	1,846.46	5,842.80	110.72	63.82	467.84	426.91	16763.22

Source: Distribution Companies / KE

TABLE 70

Category-wise Energy Sales in CPPA-G and K-Electric System

		2017-18	2018-19	2019-20	2020-21	2021-22
CPPA-G System						
Domestic	GWh	46,163.80	45,590.34	47,643.43	49,814.54	52404.73
Percentage share	%	47.58	46.12	48.51	47.22	44.83
Commercial	GWh	6,753.33	6,601.50	6,259.48	6,687.97	7,386.99
Percentage share	%	6.96	6.68	6.37	6.34	6.32
Industrial	GWh	23,274.17	24,284.57	21,489.04	24,664.95	28,115.20
Percentage share	%	23.99	24.57	21.88	23.38	24.05
Agricultural	GWh	9,983.68	9,675.51	9,642.17	10,115.32	10,921.90
Percentage share	%	10.29	9.79	9.82	9.59	9.34
Public Lighting	GWh	318.95	289.38	272.58	491.85	344.76
Percentage share	%	0.33	0.29	0.28	0.47	0.29
Bulk Supply	GWh	5,014.14	3,711.75	3,289.83	3,158.77	3,611.05
Percentage share	%	5.17	3.76	3.35	2.99	3.09
Others	GWh	394.12	3,734.30	4,194.24	4,439.15	5,081.06
Percentage share	%	0.41	3.78	4.27	4.21	4.35
Supplied to KE	GWh	5,128.20	4,956.71	5,426.14	6,118.04	9036.54
Percentage share	%	5.29	5.01	5.52	5.80	7.73
Total in CPPA-G area	**GWh**	**97,030.39**	**98,844.06**	**98,216.89**	**105,490.59**	**116,902.24**
Percentage share	**%**	**87.50**	**87.35**	**87.31**	**86.78**	**87.46**
KE System						
Domestic	GWh	7,169.68	7,298.83	7,489.18	8,041.32	8,004.68
Percentage share	%	51.73	50.98	52.46	50.04	47.75
Commercial	GWh	1,758.22	1,780.58	1,615.20	1,708.58	1,846.46
Percentage share	%	12.69	12.44	11.31	10.63	11.01
Industrial	GWh	4,123.85	4,402.12	4,158.29	5,220.99	5,842.80
Percentage share	%	29.75	30.75	29.13	32.49	34.85
Agricultural	GWh	151.49	134.30	116.11	121.70	110.72
Percentage share	%	1.09	0.94	0.81	0.76	0.66
Public Lighting	GWh	156.54	160.48	112.03	98.04	63.82
Percentage share	%	1.13	1.12	0.78	0.61	0.38
Bulk Supply	GWh	471.10	477.22	467.74	454.31	467.84
Percentage share	%	3.40	3.33	3.28	2.83	2.79
Others	GWh	29.44	64.58	318.41	423.91	426.91
Percentage share	%	0.21	0.45	2.23	2.64	2.55
Total in KE area	**GWh**	**13,860.32**	**14,318.11**	**14,276.96**	**16,068.85**	**16,763.22**
Percentage share	**%**	**12.50**	**12.65**	**12.69**	**13.22**	**12.54**
Country						
Domestic	GWh	53,333.48	52,889.17	55,132.61	57,855.86	60,409.41
Percentage share	%	48.10	46.74	49.01	47.59	45.19
Commercial	GWh	8,511.55	8,382.08	7,874.68	8,396.55	9,233.45
Percentage share	%	7.68	7.41	7.00	6.91	6.91
Industrial	GWh	27,398.02	28,686.69	25,647.33	29,885.94	33,958.00
Percentage share	%	24.71	25.35	22.80	24.59	25.41
Agricultural	GWh	10,135.17	9,809.81	9,758.28	10,237.02	11,032.62
Percentage share	%	9.14	8.67	8.67	8.42	8.25
Public Lighting	GWh	475.49	449.86	384.61	589.89	408.58
Percentage share	%	0.43	0.40	0.34	0.49	0.31
Bulk Supply	GWh	5,485.24	4,188.97	3,757.57	3,613.08	4,078.90
Percentage share	%	4.95	3.70	3.34	2.97	3.05
Others	GWh	423.56	3,798.88	4,512.65	4,863.06	5,507.97
Percentage share	%	0.38	3.36	4.01	4.00	4.12
Supplied to KE by CPPA-G	GWh	5,128.20	4,956.71	5,426.14	6,118.04	9,036.54
Percentage share	%	4.62	4.38	4.82	5.03	6.76
Total in the Country	**GWh**	**110,890.71**	**113,162.17**	**112,493.85**	**121,559.44**	**133,665.46**
Percentage share	**%**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**

Source: Distribution Companies / KE

TABLE 71

Category-wise Consumers and their Electricity Consumption (%)

		2017-18	2018-19	2019-20	2020-21	2021-22
CPPA-G Area (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	85.95	87.18	86.13	86.36	86.86
	Consumption	47.58	46.12	48.51	47.22	44.83
Commercial	Consumers	10.88	9.74	10.83	10.62	10.28
	Consumption	6.96	6.68	6.37	6.34	6.32
Industrial	Consumers	1.40	1.22	1.16	1.13	1.12
	Consumption	23.99	24.57	21.88	23.38	24.05
Agricultural	Consumers	1.31	1.16	1.15	1.14	1.04
	Consumption	10.29	9.79	9.82	9.59	9.34
Public Lighting	Consumers	0.04	0.04	0.04	0.04	0.04
	Consumption	0.33	0.29	0.28	0.47	0.29
Bulk Supply	Consumers	0.02	0.02	0.01	0.01	0.01
	Consumption	5.17	3.76	3.35	2.99	3.09
Others	Consumers	0.401	0.638	0.668	0.695	0.640
	Consumption	0.41	3.78	4.27	4.21	4.35
Supplied to KE	Consumption	5.29	5.01	5.52	5.80	7.73
KE Area (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	81.15	81.86	82.70	83.24	83.75
	Consumption	51.73	50.98	52.46	50.04	47.75
Commercial	Consumers	17.95	16.90	15.91	15.40	14.96
	Consumption	12.69	12.44	11.31	10.63	11.01
Industrial	Consumers	0.80	0.74	0.76	0.73	0.70
	Consumption	29.75	30.75	29.13	32.49	34.85
Agricultural	Consumers	0.09	0.08	0.08	0.07	0.06
	Consumption	1.09	0.94	0.81	0.76	0.66
Public Lighting	Consumers	0.003	0.003	0.003	0.003	0.005
	Consumption	1.13	1.12	0.78	0.61	0.38
Bulk Supply	Consumers	0.008	0.007	0.006	0.005	0.005
	Consumption	3.40	3.33	3.28	2.83	2.79
Others	Consumers	0	0.405	0.544	0.549	0.526
	Consumption	0.21	0.45	2.23	2.64	2.55
Country (Consumers and Consumption in percentage to the total)						
Domestic	Consumers	85.48	86.70	85.83	86.08	86.57
	Consumption	48.10	46.74	49.01	47.59	45.19
Commercial	Consumers	11.56	10.39	11.29	11.06	10.73
	Consumption	7.68	7.41	7.00	6.91	6.91
Industrial	Consumers	1.35	1.18	1.13	1.09	1.08
	Consumption	24.71	25.35	22.80	24.59	25.41
Agricultural	Consumers	1.19	1.07	1.05	1.04	0.95
	Consumption	9.14	8.67	8.67	8.42	8.25
Public Lighting	Consumers	0.04	0.03	0.03	0.03	0.03
	Consumption	0.43	0.40	0.34	0.49	0.31
Bulk Supply	Consumers	0.02	0.01	0.01	0.01	0.01
	Consumption	4.95	3.70	3.34	2.97	3.05
Others	Consumers	0.36	0.62	0.66	0.68	0.63
	Consumption	0.38	3.36	4.01	4.00	4.12
Supplied to KE by CPPA-G	Consumption	4.62	4.38	4.82	5.03	6.76

Source: Distribution Companies / KE

TABLE 72

Annual Growth Rate of Electricity Consumption

		2017-18	2018-19	2019-20	2020-21	2021-22
CPPA-G Area						
Domestic	GWh	46,163.80	45,590.34	47,643.43	49,814.54	52,404.73
	%	11.46	-1.24	4.50	4.56	5.20
Commercial	GWh	6,753.33	6,601.50	6,259.48	6,687.97	7,386.99
	%	10.45	-2.25	-5.18	6.85	10.45
Industrial	GWh	23,274.17	24,284.57	21,489.04	24,664.95	28,115.20
	%	15.98	4.34	-11.51	14.78	13.99
Agricultural	GWh	9,983.68	9,675.51	9,642.17	10,115.32	10,921.90
	%	10.16	-3.09	-0.34	4.91	7.97
Public Lighting	GWh	318.95	289.38	272.58	491.85	344.76
	%	6.92	-9.27	-5.81	80.44	-29.90
Bulk Supply	GWh	5,014.14	3,711.75	3,289.83	3,158.77	3,611.05
	%	45.51	-25.97	-11.37	-3.98	14.32
Others	GWh	394.12	3,734.30	4,194.24	4,439.15	5,081.06
	%	-65.75	847.50	12.32	5.84	14.46
Supplied to KE	GWh	5,128.20	4,956.71	5,426.14	6,118.04	9,036.54
	%	1.01	-3.34	9.47	12.75	47.70
Total	**GWh**	**97,030.39**	**98,844.06**	**98,216.89**	**105,490.59**	**116,902.24**
Percentage change	**%**	12.00	1.87	-0.63	7.41	10.82
KE Area						
Domestic	GWh	7,169.68	7,298.83	7,489.18	8,041.32	8,004.68
	%	7.93	1.80	2.61	7.37	-0.46
Commercial	GWh	1,758.22	1,780.58	1,615.20	1,708.58	1,846.46
	%	6.24	1.27	-9.29	5.78	8.07
Industrial	GWh	4,123.85	4,402.12	4,158.29	5,220.99	5,842.80
	%	6.15	6.75	-5.54	25.56	11.91
Agricultural	GWh	151.49	134.30	116.11	121.70	110.72
	%	-4.72	-11.35	-13.54	4.81	-9.02
Public Lighting	GWh	156.54	160.48	112.03	98.04	63.82
	%	-16.29	2.52	-30.19	-12.49	-34.91
Bulk Supply	GWh	471.10	477.22	467.74	454.31	467.84
	%	8.80	1.30	-1.99	-2.87	2.98
Others	GWh	29.44	64.58	318.41	423.91	426.91
	%	54.95	119.36	393.05	33.13	0.71
Total	**GWh**	**13,860.32**	**14,318.11**	**14,276.96**	**16,068.85**	**16,763.22**
Percentage change	**%**	6.77	3.30	-0.29	12.55	4.32
Country						
Domestic	GWh	53,333.48	52,889.17	55,132.61	57,855.86	60,409.41
	%	10.97	-0.83	4.24	4.94	4.41
Commercial	GWh	8,511.55	8,382.08	7,874.68	8,396.55	9,233.45
	%	9.55	-1.52	-6.05	6.63	9.97
Industrial	GWh	27,398.02	28,686.69	25,647.33	29,885.94	33,958.00
	%	14.39	4.70	-10.60	16.53	13.63
Agricultural	GWh	10,135.17	9,809.81	9,758.28	10,237.02	11,032.62
	%	9.90	-3.21	-0.53	4.91	7.77
Public Lighting	GWh	475.49	449.86	384.61	589.89	408.58
	%	-2.02	-5.39	-14.50	53.37	-30.74
Bulk Supply	GWh	5,485.24	4,188.97	3,757.57	3,613.08	4,078.90
	%	41.42	-23.63	-10.30	-3.85	12.89
Others	GWh	423.56	3,798.88	4,512.65	4,863.06	5,507.97
	%	-63.79	796.89	18.79	7.76	13.26
Supplied to KE by CPPA-G	GWh	5,128.20	4,956.71	5,426.14	6,118.04	9,036.54
	%	1.01	-3.34	9.47	12.75	47.70
Total	**GWh**	**110,890.71**	**113,162.17**	**112,493.85**	**121,559.44**	**133,665.46**
Percentage change	**%**	11.32	2.05	-0.59	8.06	9.96

Source: Distribution Companies /KE

TABLE 73

Average Annual Electricity Consumption per Connection (kWh)

DISCO	Year	Domestic	Commercial	Industrial	Agricultural	Public Lighting	Bulk Supply	Others	Overall
PESCO	2017-18	1694.48	2282.04	77727.30	3418.10	12290.15	694594.59	1347.45	2640.58
	2018-19	1593.68	2262.33	88139.72	2911.43	12031.39	752987.60	8798.63	2613.02
	2019-20	1596.58	2139.69	74594.15	3015.94	11554.96	735417.61	10110.78	2477.46
	2020-21	1591.95	2120.77	82420.35	3426.18	39871.02	720696.63	9042.51	2496.15
	2021-22	1604.21	2219.44	89626.01	3338.17	10280.07	778302.81	10648.26	2564.23
TESCO	2017-18	2971.49	207.16	53345.83	6866.62	0.00	150701.75	2216.26	3349.56
	2018-19	3017.06	178.82	77035.12	5897.85	0.00	143076.92	9027.07	3622.06
	2019-20	3520.20	170.09	77196.68	5246.37	0.00	153671.64	7135.98	4071.60
	2020-21	3485.89	172.40	129518.24	4971.13	0.00	183529.41	5990.44	4541.38
	2021-22	3652.55	183.11	125472.26	4201.86	0.00	180277.78	6809.70	4664.21
IESCO	2017-18	2093.52	3042.92	115966.49	13415.48	41215.22	2577404.06	4803.79	3738.12
	2018-19	1973.47	2923.19	111305.31	6606.46	40661.56	1029729.17	121780.78	3620.50
	2019-20	1897.86	2578.78	90927.93	3808.72	40412.75	1088082.84	97621.91	3346.60
	2020-21	1913.16	2666.15	89386.46	4832.92	39725.36	1082547.17	66996.12	3340.49
	2021-22	1936.98	2809.88	95433.65	4826.14	37263.39	1210854.80	100433.40	3431.79
GEPCO	2017-18	2012.45	1758.37	38484.51	8952.16	13685.12	2328536.59	1725625.00	2972.35
	2018-19	1920.93	1646.46	35508.87	9578.35	11120.69	2627171.05	7125.48	2834.93
	2019-20	1862.10	1565.74	32285.84	9406.66	12355.93	1045466.67	17763.50	2675.11
	2020-21	1881.24	1703.86	36364.02	10234.71	15661.29	1081418.92	18258.83	2776.98
	2021-22	1898.16	1846.45	34740.45	9732.09	14739.97	1198108.11	19920.70	2771.53
LESCO	2017-18	2344.15	2975.97	90129.60	20776.63	46741.26	1324468.94	32369.48	4446.50
	2018-19	2201.28	2702.36	96253.97	18636.16	43069.69	1350202.43	36462.98	4321.59
	2019-20	2116.34	2429.87	85688.08	17527.60	45631.83	1284836.07	33996.27	3973.25
	2020-21	2061.21	2501.52	94990.33	17968.11	53463.45	1395159.91	38796.95	4043.55
	2021-22	2062.99	2714.88	108695.00	19519.19	50922.62	1569700.32	45951.32	4258.48
FESCO	2017-18	1882.06	1924.26	85588.68	26162.32	7207.68	1460129.31	2029.78	3269.45
	2018-19	1776.20	1844.14	93900.09	25909.78	5808.08	1203408.07	7621.75	3236.24
	2019-20	1723.98	1724.22	81189.92	24771.63	5629.03	1130221.24	7679.83	2981.56
	2020-21	1730.28	1802.06	94489.31	25487.76	7130.71	1038427.95	7263.89	3124.05
	2021-22	1722.27	1927.00	108873.12	26332.19	9262.94	925194.81	8547.96	3269.32
MEPCO	2017-18	1657.20	1801.35	54052.80	32853.82	13634.54	637369.57	55000.00	2610.54
	2018-19	1550.77	1691.54	53658.88	33496.98	12125.25	649669.60	7263.39	2514.81
	2019-20	1554.69	1559.97	43608.04	31065.68	11331.66	603785.56	7646.14	2387.58
	2020-21	1531.53	1632.73	48065.67	32296.65	12124.85	601550.22	7401.49	2419.91
	2021-22	1508.95	1742.75	56987.54	36379.57	13404.60	633817.07	8653.20	2521.67
HESCO	2017-18	2669.86	1974.54	50862.37	27150.76	69703.70	310356.08	6682.99	3726.20
	2018-19	2375.79	1800.34	49388.85	18304.00	51296.30	329181.29	22145.63	3510.64
	2019-20	2564.93	1575.21	48299.22	13795.26	6101.40	309941.86	13952.90	3398.33
	2020-21	2513.21	1568.28	54231.55	12808.43	8671.33	306840.58	14795.68	3422.18
	2021-22	2348.90	1534.13	59047.77	13230.97	14118.67	327716.76	16361.81	3371.97
SEPCO	2017-18	2982.71	1832.83	36758.72	26589.31	64821.85	342947.98	5165.47	3975.28
	2018-19	2644.00	1720.45	32474.86	11854.37	47529.41	335996.20	18572.72	3648.46
	2019-20	2810.93	1690.76	27802.48	8678.58	37126.70	300338.35	8428.11	3435.66
	2020-21	2792.52	1812.93	28032.43	9060.83	310130.84	51348.31	7827.92	3447.40
	2021-22	2759.02	1860.46	30460.36	9281.22	74185.19	458930.96	8442.50	3547.19
QESCO	2017-18	1483.35	1127.15	46391.42	127192.36	31132.08	468045.98	8258.95	8072.15
	2018-19	1203.20	1059.25	46567.25	120487.71	33880.60	476390.98	30709.88	7650.90
	2019-20	1280.82	1107.49	43191.72	120681.78	35036.50	468413.28	28537.95	7530.62
	2020-21	1197.32	1082.67	50444.50	117613.95	37885.30	462659.57	24603.04	7211.16
	2021-22	1175.53	1146.67	45005.22	118712.82	38763.25	470869.57	24867.44	7111.66
Total in CPPA-G System	2017-18	1989.75	2230.25	68483.05	31593.92	30591.79	1155331.80	4062.46	3404.22
	2018-19	1863.47	2099.55	70811.02	29619.88	27385.26	849370.71	20864.81	3297.41
	2019-20	1846.38	1928.66	61734.67	27973.44	24934.14	771173.46	20958.12	3097.43
	2020-21	1829.73	1994.51	69034.96	28166.96	43243.36	755325.20	20233.97	3151.72
	2021-22	1823.21	2125.47	76454.85	29570.10	28976.53	855902.15	23299.29	3249.97
KE	2017-18	3419.91	3791.96	199731.20	63173.48	2115405.41	2428350.52	29440000.00	5365.07
	2018-19	3175.32	3751.54	211213.90	57664.23	1725591.40	2538404.26	5677.36	5098.92
	2019-20	3060.39	3430.92	184378.57	51127.26	1244777.78	2672800.00	19772.11	4824.77
	2020-21	3032.71	3482.26	224616.68	56238.45	1114090.91	2672411.76	24241.44	5044.64
	2021-22	2806.74	3625.24	246469.15	52900.43	354541.54	2658210.10	23853.72	4922.64

Source: Distribution Companies / KE

TABLE 74

Distribution Losses (voltage category-wise)

DISCO	Losses of	2017-18		2018-19		2019-20		2020-21		2021-22	
		GWh	%	GWh	%	GWh	%	GWh	%	GWh	%
PESCO	132 kV system (including 66 & 33 kV)	393.00	2.80	221.80	1.60	273.70	1.90	235.60	1.50	322.67	1.90
	11 kV and below system	5031.80	36.40	5006.40	35.60	5433.50	37.50	5697.60	37.20	5882.36	35.52
	Overall system	5424.77	38.15	5228.24	36.56	5707.25	38.69	5933.36	38.18	6205.03	37.47
TESCO	132 kV system (including 66 & 33 kV)	45.00	2.66	40.79	2.24	87.76	4.08	39.85	1.79	-	1.20
	11 kV and below system	166.03	10.07	177.21	9.96	260.24	12.61	173.50	7.94	-	7.97
	Overall system	210.97	12.46	217.94	11.97	348.24	16.19	213.35	9.58	212.00	9.32
IESCO	132 kV system (including 66 & 33 kV)	215.00	1.84	212.00	1.79	199.00	1.74	137.00	1.15	128	0.99
	11 kV and below system	850.00	7.42	837.00	7.20	795.00	7.07	885.00	7.48	937	7.26
	Overall system	1067.03	9.14	1048.74	8.86	993.49	8.69	1022.00	8.54	1065	8.18
GEPCO	132 kV system (including 66 & 33 kV)	142.10	1.29	138.17	1.24	120.87	1.10	115.16	0.96	115.00	0.90
	11 kV and below system	957.50	8.83	957.50	8.73	924.71	8.51	995.21	8.35	1033.75	8.23
	Overall system	1099.61	10.01	1095.62	9.87	1045.56	9.51	1110.38	9.23	1149.00	9.07
LESCO	132 kV system (including 66 & 33 kV)	236.66	1.00	228.67	0.90	114.91	0.50	74.91	0.30	138.54	0.5
	11 kV and below system	3046.04	13.00	2977.77	12.40	2802.65	12.00	2960.83	11.70	3125.06	11.1
	Overall system	3282.74	13.83	3206.45	13.17	2918.33	12.40	3035.72	11.96	3263.6	11.5
FESCO	132 kV system (including 66 & 33 kV)	285.83	1.98	254.47	1.70	218.42	1.50	225.36	1.40	247.83	1.40
	11 kV and below system	1235.87	8.73	1214.76	8.26	1168.66	8.20	1257.81	8.00	1345.91	7.80
	Overall system	1521.84	10.53	1469.07	9.81	1387.09	9.56	1483.28	9.28	1593.74	9.10
MEPCO	132 kV system (including 66 & 33 kV)	443.91	2.30	352.88	1.80	292.07	1.51	321.38	1.57	383.87	1.69
	11 kV and below system	2708.85	14.60	2704.17	14.20	2650.66	13.90	2744.74	13.60	2962.42	13.25
	Overall system	3152.75	16.59	3057.04	15.79	2942.75	15.23	3066.11	14.93	3346.28	14.72
HESCO	132 kV system (including 66 & 33 kV)	213.00	3.71	212.90	3.83	157.64	2.88	145.60	2.61	102.20	1.84
	11 kV and below system	1502.90	27.18	1425.90	25.67	1423.22	26.04	1414.70	26.06	1874.38	31.18
	Overall system	1716.06	29.88	1638.47	29.49	2921.64	42.89	2518.40	38.55	1976.58	35.55
SEPCO	132 kV system (including 66 & 33 kV)	115.21	2.46	104.89	2.38	76.03	1.79	75.32	1.76	87.49	1.95
	11 kV and below system	1518.95	35.27	1485.99	34.83	1423.40	34.44	1412.9	33.73	1454.27	33.73
	Overall system	1715.92	36.67	1631.02	36.97	1542.38	36.27	1513.33	35.27	1599.59	36.63
QESCO	132 kV system (including 66 & 33 kV)	117.09	1.85	99.54	1.60	127.10	1.90	114.91	1.70	126.71	1.90
	11 kV and below system	1301.21	20.90	1373.18	22.30	1634.91	25.20	1734.4	26.60	1758.01	26.70
	Overall system	1422.43	22.44	1472.64	23.56	1762.00	26.68	1849.56	27.92	1884.7	28.10
Total Distribution Losses in CPPA-G System		**20614.12**	**18.32**	**20065.23**	**17.61**	**21568.72**	**18.86**	**21745.49**	**17.95**	**22295.54**	**17.13**
KE	220 kV & 132 kV system (including 66 kV)	159.48	0.92	214.93	1.21	198.16	1.11	208.00	1.07	164.00	0.83
	11 kV and below system	3398.88	19.69	3163.78	18.10	3311.38	18.83	3210.00	16.65	2875.00	14.64
	Overall system	4305.75	23.70	4195.31	22.66	4250.54	22.94	4169.22	20.60	3645.09	17.86

Note: Gross generation of KE own power plants considered
Source: Distribution Companies / KE

TABLE 75

DISCOs' Billing, Collection and Percentage of Recovery against Computed Billing

DISCO	FY 2020-21									FY 2021-22								
	Billing (Rs. in Million)			Collection (Rs. in Million)			%age of Collection			Billing (Rs. in Million)			Collection (Rs. in Million)			%age of Collection		
	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total
PESCO	26085.99	149987.73	176073.72	39300.85	141973.17	181274.02	150.6	94.66	102.95	33716.79	199874.34	233591.13	31700.19	182719.49	214419.68	94.02	91.42	91.79
TESCO	715.43	29468.12	30183.55	652.17	8475.67	9127.84	91.16	28.76	30.24	1302.23	41107.73	42409.96	1098.63	9628.82	10727.45	84.37	23.42	25.29
IESCO	62450	155904	218354	97902	159841	257743	156.7	102.52	118.04	79036.63	211166.14	290202.77	66812.50	210472.16	277284.66	84.53	99.67	95.55
GEPCO	12638.14	177724.79	190362.93	19149.48	183045.64	202195.12	151.52	102.99	106.22	16134.85	233013.74	249148.59	15989.04	232418.32	248407.36	99.10	99.74	99.70
LESCO	29356.2	397310.87	426667.07	26575.26	399496.97	426072.23	90.53	100.55	99.86	34683.72	536879.9	571563.62	34867.9	533011.94	567879.84	100.53	99.28	99.36
FESCO	12506.79	229123.46	241630.25	11446.92	234916.46	246363.38	91.53	102.53	101.96	15642.26	313287.77	328930.03	15294.9	312076.57	327371.47	97.78	99.61	99.53
MEPCO	16415.69	256160.34	272576.03	15465.82	266938.3	282404.12	94.21	104.2	103.61	21753.732	342325.1	364078.83	21062.27828	342032.9541	363095.23	96.82	99.91	99.73
HESCO	9719.55	62307.38	72026.93	8097.82	46377.55	54475.37	83.31	74.43	75.63	11924.19	76968.38	88892.57	8258.76	57272.08	65530.84	69.26	74.41	73.72
SEPCO	9105.61	40992	50097.61	6847.01	25388	32235.01	75.2	62.42	64.74	12550.67	49771.01	62321.68	9338.77	30975.67	40314.44	74.41	62.24	64.69
QESCO	10525.65	57714.92	68240.57	9482.33	15537.55	25019.88	90.09	26.92	36.66	12861.8	62123.34	74985.14	7452.83	18534.61	25987.44	57.95	29.84	34.66
Total in CPPA-G System	189013.52	1544866.4	1733879.9	234716.56	1451988.27	1686704.83	124.18	93.99	97.28	239606.87	2066517.45	2306124.32	211875.80	1929142.62	2141018.41	88.43	93.35	92.84
KE	28154	287719	315873	27617	272056	299673	98.09	94.56	94.87	32989.01	357246.72	390235.72	36407.91	340926.67	377334.58	110.36	95.43	96.69

Source: Distribution Companies / KE

TABLE 76

DISCOs' Technical and Commercial Losses

DISCO	FY 2020-21							FY 2021-22						
	T&D Losses			Commercial Losses			Combined Technical & Commercial Losses (%)	T&D Losses			Commercial Losses			Combined Technical & Commercial Losses (%)
	Units Purchased (MWh)	Units Billed (MWh)	Losses (%)	Billing (Computed) (Rs. in Million)	Collection (Rs. in Million)	losses (%)		Units Purchased (MWh)	Units Billed (MWh)	Losses (%)	Billing (Computed) (Rs. in Million)	Collection (Rs. in Million)	losses (%)	
PESCO	15540.95	9607.69	38.18	176816.03	181273.88	-2.52	36.62	16560.19	10394.15	37.23	233591.13	214419.68	8.21	42.39
TESCO	2226.2	2012.67	9.59	27499.78	25501.88	7.27	23.6	2227.42	2012.67	9.64	30625.54	25501.88	16.73	23.61
IESCO	11966	10943	8.55	218353	257742	-18.04	-7.95	13026.93	11961.96	8.18	290202.77	277284.66	4.45	12.26
GEPCO	12032.48	10922.11	9.23	190363.93	202195.12	-6.22	3.01	12678.20	11528.75	9.07	249148.59	248407.36	0.30	9.34
LESCO	25387.87	22352.13	11.96	426667.07	426072.23	0.14	12.12	28334.33	25070.73	11.5	571563.62	567879.84	0.64	12.07
FESCO	15984.48	14501.28	9.28	258995.51	251754.57	2.8	11.82	17512.51	15918.79	9.10	328930.18	327371.47	0.47	9.53
MEPCO	20605.46	17466.09	14.93	272576.03	282404.12	-3.61	11.87	22733.91	19202.42	14.72	364078.83	363095.23	0.27	14.95
HESCO	5574.4	4014.1	27.99	70839.9	54302.4	23.34	44.79	5559.80	4034.50	27.43	86037.60	64650.00	24.86	45.47
SEPCO	4290.96	2775.76	35.31	50097.61	32434.25	35.26	58.1	4489.77	2890.18	35.63	62321.68	40314.44	35.31	58.36
QESCO	6615.8	4775.37	27.82	68240.57	25019.88	63.34	74	6716.30	4831.57	28.06	74985.14	25987.44	65.34	75.07
Total in CPPA-G System	120224.6	99370.2	17.35	1760449.43	1738700.33	1.24	18.37	129839.3652	107845.7226	16.94	2291485.078	2154912.004	5.96	21.89
KE	19487.42	16068.83	17.54	315873	299672	5.13	21.8	19802207.00	16763223.00	15.35	390235.72	377334.58	3.31	18.15

Note: Based on net generation of KE own power plants
Source: Distribution Companies / KE

TABLE 77

Receivables of Distribution Companies

DISCO	Category	June 2021 (Rs. in Million)				June 2022 (Rs. in Million)			
		Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month	Opening Balance of Receivables at begin of Month	Billing during Month	Collection during Month	Closing Balance of Receivables at end of Month
PESCO	Federal Govt.	21372.2	1160.55	6511.55	16021.2	16614.65	1712.84	943.64	17374.25
	Provincial Govt.	1743.24	868.26	1392.61	1218.88	1843.73	1291.13	1228.05	1916.70
	Private	127942	14804.7	13374.3	129372	143602.31	19883.32	16994.79	146490.58
	Total	**151057**	**16834**	**21279**	**146612**	**162060.70**	**22887.29**	**19166.49**	**165781.53**
TESCO	Federal Govt.	1297.40	74.70	112.55	1259.55	1000.28	55.04	105.71	949.61
	Provincial Govt.	1031.25	19.00	44.27	1005.98	1565.98	65.64	84.35	1547.27
	Private	72039.07	2495.93	15480.02	59054.98	72657.93	4042.9	3218.74	73482.09
	Total	**74367.72**	**2589.63**	**15636.84**	**63224.75**	**75224.19**	**4163.58**	**3408.8**	**75978.97**
IESCO	Federal Govt.	87098	5802	24438	68485	79797.77	6827.85	4882.22	81743.71
	Provincial Govt.	733	330	386	679	836.71	153.90	1357.40	-366.30
	Private	11557	19282	17907	12934	18383.41	24038.48	23050.44	19371.42
	Total	**99388**	**25415**	**42731**	**82098**	**99017.89**	**31020.24**	**29290.06**	**100748.83**
GEPCO	Federal Govt.	14179.8	907	3937	11149.8	9652.40	1090.21	716.51	10026.10
	Provincial Govt.	1641.3	339	494	1486.3	2362.34	325.70	728.42	1959.62
	Private	18651.9	20404	18786	20269.9	30663.16	27454.94	24710.88	33407.22
	Total	**34473**	**21650**	**23217**	**32906**	**42677.90**	**28870.85**	**26155.81**	**45392.94**
LESCO	Federal Govt.	3344	9345	9833	2856	2855.81	10970.36	10511.17	3315.00
	Provincial Govt.	8712	20551	21659	7603	7603.19	24065.59	24294.78	7374.00
	Private	114834	401707	397438	119102	119101.77	585816.12	552476.89	152441.00
	Total	**126890**	**431602**	**428931**	**129561**	**129560.77**	**620852.07**	**587282.84**	**163130.00**
FESCO	Federal Govt.	421.87	519.35	485.31	455.92	810.55	610.86	477.97	943.66
	Provincial Govt.	2359.56	680.17	1273.29	1767.96	2393.04	835.57	1380.22	1849.28
	Private	53107.9	26763.2	27874.1	51998.6	69507.62	37353.15	36495.31	70364.63
	Total	**55889**	**27963**	**29633**	**54223**	**72711.21**	**38799.58**	**38353.50**	**73157.57**
MEPCO	Federal Govt.	611.8	612.52	796.05	428.62	774.57	706.47	752.42	728.95
	Provincial Govt.	2882.54	1060.46	1440.69	2503.26	4686.83	1221.64	2508.34	3400.77
	Private	66140.2	28919.3	28650	66411.6	95531.41	40046.42	38599.44	96623.73
	Total	**69634.5**	**30592**	**30887**	**69343**	100992.81	**41974.53**	**41860.20**	**100753.44**
HESCO	Federal Govt.	4534.47	348.04	444.33	4438.17	4968.35	285.92	445.07	4809.20
	Provincial Govt.	9979.89	693.92	537.43	10082.4	12798.36	594.57	13.85	13379.08
	Private	99802.9	7108.73	4864.85	102047	119414.67	8408.59	6078.73	121744.53
	Total	**114317**	**8096.7**	**5846.6**	**116568**	**137181.38**	**9289.08**	**6537.65**	**139932.81**
SEPCO	Federal Govt.	1911.84	220.76	587.97	1534	2707.67	595.03	533.39	2787.31
	Provincial Govt.	13035.5	318.96	234.57	13609	15417.24	718.93	279.34	15991.78
	Private	128718	5104.33	2749.38	132916	150867.89	5696.23	3429.53	153456.58
	Total	**143666**	**5644.1**	**3571.9**	**148058**	**168992.80**	**7010.19**	**4242.26**	**172235.67**
QESCO	Federal Govt.	1893.05	261.98	842.64	1312.39	1752.15	451.80	524.88	1679.07
	Provincial Govt.	21664.5	586.75	622.97	21628.3	27743.20	780.83	751.45	27772.58
	Private	321784	7203.49	5023.08	323965	430781.46	8084.10	7361.50	431504.06
	Total	**345342**	**8052.2**	**6488.7**	**346905**	**460276.81**	**9316.73**	**8637.83**	**460955.71**
KE	Federal Govt.	4401.42	14456.53	-14646.02	4637.673359	4637.67	16481.06	-17637.05	3727.430318
	Provincial Govt.	44780.51	13697.22	-12970.83	46340.18137	46340.18	16507.94	-18770.86	44581.53008
	Private	150915.09	287719.09	-272055.53	147667.8048	147667.80	357246.72	-340926.67	146804.1981
	Total	**200097.01**	**315872.84**	**-299672.38**	**198645.66**	**198645.66**	**390235.72**	**-377334.58**	**195113.16**

Source: Distribution Companies

TABLE 78

Province-wise Electricity Consumption by Economic Groups of the Country (GWh)

Category	Year	Punjab*	Sindh**	Khyber Pakhtunkhwa#	Balochistan##	K-Electric Limited	Total
Domestic	2017-18	35266.46	4101.62	6123.42	672.30	7169.68	53333.48
	2018-19	35239.00	3752.41	6041.45	557.48	7298.83	52889.17
	2019-20	36357.29	4159.90	6514.32	611.92	7489.18	55132.61
	2020-21	38248.08	4204.38	6774.19	587.89	8041.32	57855.86
	2021-22	40561.86	4093.49	7157.41	591.97	8004.68	60409.41
Commercial	2017-18	5312.42	534.00	775.86	131.05	1758.22	8511.55
	2018-19	5172.76	504.39	796.91	127.44	1780.58	8382.08
	2019-20	4871.69	471.15	779.86	136.78	1615.20	7874.68
	2020-21	5250.59	492.37	806.63	138.38	1708.58	8396.55
	2021-22	5856.38	499.57	879.90	151.15	1846.46	9233.45
Industrial	2017-18	19326.63	1224.95	2549.55	173.04	4123.85	27398.02
	2018-19	20269.96	1173.08	2669.79	171.74	4402.12	28686.69
	2019-20	17908.23	1082.47	2337.71	160.63	4158.29	25647.33
	2020-21	20446.21	1199.07	2827.88	191.79	5220.99	29885.94
	2021-22	23540.66	1326.87	3075.21	172.46	5842.80	33958.00
Agricultural	2017-18	5482.46	617.96	120.91	3762.35	151.49	10135.17
	2018-19	5630.87	374.09	103.15	3567.40	134.30	9809.81
	2019-20	5673.10	295.24	101.77	3572.06	116.11	9758.28
	2020-21	6233.92	285.48	109.96	3485.96	121.70	10237.02
	2021-22	7006.67	295.14	103.45	3516.63	110.72	11032.62
Public Lighting	2017-18	232.30	64.93	13.47	8.25	156.54	475.49
	2018-19	219.37	47.90	13.03	9.08	160.48	449.86
	2019-20	230.15	19.90	12.93	9.60	112.03	384.61
	2020-21	264.03	170.88	46.37	10.57	98.04	589.89
	2021-22	273.28	48.15	12.37	10.97	63.82	408.58
Bulk Supply	2017-18	3958.31	282.58	651.09	122.16	471.10	5485.24
	2018-19	2618.18	289.65	677.20	126.72	477.22	4188.97
	2019-20	2234.61	266.40	661.88	126.94	467.74	3757.57
	2020-21	2245.69	128.71	653.90	130.47	454.31	3613.08
	2021-22	2439.69	319.45	711.12	140.79	467.84	4078.90
Others	2017-18	140.49	163.73	43.08	46.82	29.44	423.56
	2018-19	2584.54	555.77	375.09	218.90	64.58	3798.88
	2019-20	3227.76	305.04	437.36	224.08	318.41	4512.65
	2020-21	3497.03	310.92	401.26	229.94	423.91	4863.06
	2021-22	4004.09	342.04	487.30	247.63	426.91	5507.97
Total	2017-18	69719.07	6989.77	10277.38	4915.97	13860.32	105762.51
	2018-19	71734.68	6697.29	10676.62	4778.76	14318.11	108205.46
	2019-20	70502.83	6600.10	10845.81	4842.01	14276.96	107067.71
	2020-21	76185.55	6791.81	11620.19	4775.00	16068.85	115441.40
	2021-22	83682.64	6924.71	12426.75	4831.60	16763.22	124628.92

** Islamabad Capital Territory is included*

*** Consumption in KE Area is not included*

 # FATA is included

Area served by KE is excluded

Source: Distribution Companies / KE

TABLE 79

Province-wise Electricity Consumption by Economic Groups of the Country (%)

Category	Year	Punjab*	Sindh**	Khyber Pakh-tunkhwa#	Balochistan##	K-Electric Limited	Total
Domestic	2017-18	50.58	58.68	59.58	13.68	51.73	50.43
	2018-19	49.12	56.03	56.59	11.67	50.98	48.88
	2019-20	51.57	63.03	60.06	12.64	52.46	51.49
	2020-21	50.20	61.90	58.30	12.31	50.04	50.12
	2021-22	48.47	59.11	57.60	12.25	47.75	48.47
Commercial	2017-18	7.62	7.64	7.55	2.67	12.69	8.05
	2018-19	7.21	7.53	7.46	2.67	12.44	7.75
	2019-20	6.91	7.14	7.19	2.82	11.31	7.35
	2020-21	6.89	7.25	6.94	2.90	10.63	7.27
	2021-22	7.00	7.21	7.08	3.13	11.01	7.41
Industrial	2017-18	27.72	17.52	24.81	3.52	29.75	25.91
	2018-19	28.26	17.52	25.01	3.59	30.75	26.51
	2019-20	25.40	16.40	21.55	3.32	29.13	23.95
	2020-21	26.84	17.65	24.34	4.02	32.49	25.89
	2021-22	28.13	19.16	24.75	3.57	34.85	27.25
Agricultural	2017-18	7.86	8.84	1.18	76.53	1.09	9.58
	2018-19	7.85	5.59	0.97	74.65	0.94	9.07
	2019-20	8.05	4.47	0.94	73.77	0.81	9.11
	2020-21	8.18	4.20	0.95	73.00	0.76	8.87
	2021-22	8.37	4.26	0.83	72.78	0.66	8.85
Public Lighting	2017-18	0.33	0.93	0.13	0.17	1.13	0.45
	2018-19	0.31	0.72	0.12	0.19	1.12	0.42
	2019-20	0.33	0.30	0.12	0.20	0.78	0.36
	2020-21	0.35	2.52	0.40	0.22	0.61	0.51
	2021-22	0.33	0.70	0.10	0.23	0.38	0.33
Bulk Supply	2017-18	5.68	4.04	6.34	2.48	3.40	5.19
	2018-19	3.65	4.32	6.34	2.65	3.33	3.87
	2019-20	3.17	4.04	6.10	2.62	3.28	3.51
	2020-21	2.95	1.90	5.63	2.73	2.83	3.13
	2021-22	2.92	4.61	5.72	2.91	2.79	3.27
Others	2017-18	0.20	2.34	0.42	0.95	0.21	0.40
	2018-19	3.60	8.30	3.51	4.58	0.45	3.51
	2019-20	4.58	4.62	4.03	4.63	2.23	4.21
	2020-21	4.59	4.58	3.45	4.82	2.64	4.21
	2021-22	4.78	4.94	3.92	5.13	2.55	4.42
Total	2017-18	100.00	100.00	100.00	100.00	100.00	100.00
	2018-19	100.00	100.00	100.00	100.00	100.00	100.00
	2019-20	100.00	100.00	100.00	100.00	100.00	100.00
	2020-21	100.00	100.00	100.00	100.00	100.00	100.00
	2021-22	100.00	100.00	100.00	100.00	100.00	100.00

** Islamabad Capital Territory is included*
*** Consumption in KE Area is not included*
 # FATA is included
Area served by KE is excluded
Source: Distribution Companies / KE

Table 80

Safety (No of Fatal Accidents for both Employees and Public)

DISCO	2017-18	2018-19	2019-20	2020-21	2021-22
PESCO	10	16	31	23	39
TESCO	0	0	6	8	2
IESCO	20	29	18	22	27
GEPCO	29	12	8	7	10
LESCO	21	9	7	9	16
FESCO	7	8	13	9	5
MEPCO	17	14	15	13	8
HESCO	15	12	8	32	35
SEPCO	17	12	13	14	13
QESCO	6	9	6	6	8
Total DISCOs	**142**	**121**	**125**	**143**	**163**
K-Electric	10	54	43	46	33
Non KE Infrastructure	-	-	-	-	107

Source: KE/DISCOs

TABLE 81
Details of Subsidies to Electricity Consumers (Rs. in Million)

		TDS	ISP	AQTA	ZRIR	Others	Total
PESCO							
2017-18	Accrued	32,265.10	2,419.66				**34,684.76**
	Paid	18,595.27	7,642.00				**26,237.27**
2018-19	Accrued	51,590.89	6,785.36		257.00		**58,633.25**
	Paid	46,048.05					**46,048.05**
2019-20	Accrued	57,814.37	1,003.67	14,283.00	440.33		**73,541.37**
	Paid	40,055.32	816.06				**40,871.38**
2020-21	Accrued	36,877.96	2,125.74	17,087.72	420.10		**56,511.52**
	Paid	46,917.08	25,878		554.55		**47,471.63**
2021-22	Claimed	17,295.83	2,156.33	13,345.13		7532.94	**40,330.23**
	Received	36,015.88	1,340.94	16,706.13		1,098.62	**55,161.58**
IESCO							
2017-18	Accrued	(10,418.09)	1,864.50				**(8,553.59)**
	Paid	(8,219.71)	5,908.00				**(2,311.71)**
2018-19	Accrued	(2,577.77)	5,098.60		489.03		**3,009.86**
	Paid	(3,125.00)					**(3,125.00)**
2019-20	Accrued	(7,659.10)	616.96	1,143.92	636.00		**(5,262.22)**
	Paid	(5,243.70)	501.92				**(4,741.78)**
2020-21	Accrued	(16,945.88)	1,193.86	(2,131.38)	635.34		**(17,248.06)**
	Paid	(18,184.85)			890.93		**(17,293.92)**
2021-22	Claimed	17,738.78	1471.85	(1,259.24)	1,458.97	41,495.71	**60,906.07**
	Received	13395.23	1335.3	(547.24)	772.62	0	**14,955.91**
GEPCO							
2017-18	Accrued	21,424.37	2,995.01				**24,419.38**
	Paid	17,709.39	8,868.00				**26,577.39**
2018-19	Accrued	7,577.45	7,534.46		279.24		**15,391.15**
	Paid	2,555.94					**2,555.94**
2019-20	Accrued	19,438.47	740.10	2,761.96	513.96		**23,454.49**
	Paid	12,068.06	560.92				**12,628.98**
2020-21	Accrued	15,309.98	3,018.19	(287.50)	655.54		**18,696.21**
	Paid	13,028.34			801.86		**13,830.20**
2021-22	Claimed	7,641	2,250	(1,872)	1,457	8,411	**17,887**
	Received	6,956	2,053	(1,259)	805		**8,556**
LESCO							
2017-18	Accrued	(19,716.64)	8,790.85				**(10,925.79)**
	Paid	(13,334.09)	25,329.00				**11,994.91**
2018-19	Accrued	5,917.36	21,054.59		4,769.85		**31,741.80**
	Paid	(2,464.48)					**(2,464.48)**
2019-20	Accrued	16,953.34	1,968.21	3,427.37	6,940.22		**29,289.14**
	Paid	13,832.84	1,375.40				**15,208.24**
2020-21	Accrued	(1,549.08)	9,395.55	(9,139.83)	5,790.69		**4,497.33**
	Paid	(10,699.31)			7,837.75		**(2,861.56)**
2021-22	Claimed	(1,684)	8,576	(9,444)	19681	11660	**28,790**
	Received	9,254	4,971	0	12,305	752	**27,282**
FESCO							
2017-18	Accrued	(19,716.64)	8,790.85				**(10,925.79)**
	Paid	(13,334.09)	25,329.00				**11,994.91**
2018-19	Accrued	5,917.36	21,054.59		4,769.85		**31,741.80**
	Paid	(2,464.48)					**(2,464.48)**
2019-20	Accrued	16,953.34	1,968.21	3,427.37	6,940.22		**29,289.14**
	Paid	13,832.84	1,375.40				**15,208.24**
2020-21	Accrued	(1,549.08)	9,395.55	(9,139.83)	5,790.69		**4,497.33**
	Paid	(10,699.31)			7,837.75		**(2,861.56)**
2021-22	Claimed	(1,684)	8,576	(9,444)	19681	11660	**28,790**
	Received	9,254	4,971	0	12,305	752	**27,282**
MEPCO							
2017-18	Accrued	30,711.83	3,956.99				**34,668.82**
	Paid	16,134.29	10,043.00				**26,177.29**
2018-19	Accrued	62,405.43	7,914.87		1,971.45		**72,291.75**
	Paid	50,625.69					**50,625.69**
2019-20	Accrued	79,583.46	807.43	13,542.35	1,671.95		**95,605.19**
	Paid	53,108.07	547.71				**53,655.78**
2020-21	Accrued	63,029.14	3,348.62	5,291.92	1,846.16		**73,515.84**
	Paid	55,690.49			2,876.54		**58,567.03**
2021-22	**Claimed**	**66,370.84**	**3,029.12**	**883.99**		**21,100.51**	**91,384.45**
	Received	**99,809.59**	**5,842.86**	**11,036.07**		**5,257.52**	**121,946.04**

		TDS	ISP	AQTA	ZRIR	Others	Total
HESCO							
2017-18	Accrued	6,254.79	953.89				**7,208.68**
	Paid	2,053.96	2,671.00				**4,724.96**
2018-19	Accrued	22,369.08	2,162.48		156.80		**24,688.36**
	Paid	21,026.01					**21,026.01**
2019-20	Accrued	20,363.71	266.71	3,866.67	309.90		**24,806.99**
	Paid	14,232.24	173.09				**14,405.33**
2020-21	Accrued	15,622.79	880.34	3,182.28	365.60		**20,051.01**
	Paid	14,913.81			447.55		**15,361.36**
2021-22	Claimed	25,878	820	1,297		2824	**30,818**
	Received	27,445	570	2,019		2065	**32,099**
SEPCO							
2017-18	Accrued	6,208.19	661.28				**6,869.47**
	Paid	2,899.12	1,594.00				**4,493.12**
2018-19	Accrued	10,077.43	1,238.80				**11,316.23**
	Paid	10,070.71					**10,070.71**
2019-20	Accrued	8,208.06	218.80	2,342.71			**10,769.57**
	Paid	5,796.46	179.83				**5,976.29**
2020-21	Accrued	8,585.96	333.08	2,118.86			**11,037.90**
	Paid	8,080.03					**8,080.03**
2021-22	Claimed	18,693	310	2,539		1,282	**22,824**
	Received	n.p	n.p	n.p	n.p	n.p	**13,146**
TESCO						**FATA (Receivables)**	
2017-18	Accrued	6,506.53	258.23			12,308.49	**19,073.25**
	Paid	4,577.12	977.00			8,123.70	**13,677.82**
2018-19	Accrued	3,344.12	951.45			16,144.67	**20,440.24**
	Paid	3,602.39				10,961.27	**14,563.66**
2019-20	Accrued	3,430.93	107.82	(4,316.32)			**(777.57)**
	Paid	1,536.71	94.14				**1,630.85**
2020-21	Accrued	2,312.75	533.32	(4,482.80)			**(1,636.73)**
	Paid	(1,910.07)					**(1,910.07)**
2021-22	Claimed	(2,510)	251	(5,381)		28,398	**20,758**
	Received					18,040	**18,040**
QESCO						**QESCO (40%)**	
2017-18	Accrued	11,535.14	177.49			7,293.99	**19,006.62**
	Paid	8,419.66	567.00				**8,986.66**
2018-19	Accrued	3,993.51	507.72			6,931.00	**11,432.23**
	Paid	1,655.56				4,860.00	**6,515.56**
2019-20	Accrued	11,950.71	84.96	471.70			**12,507.37**
	Paid	7,807.61	67.98				**7,875.59**
2020-21	Accrued	20,486.02	156.23	43.73			**20,685.98**
	Paid	13,542.24					**13,542.24**
2021-22	Claimed	38,233.02	171.11	(3,842.23)		8,462.23	**43,024.13**
	Received	-	133.76	42097.57		5000	**47231.33**
		TDS	**ISP**	**AQTA**	**ZRIR**	**Others**	**Total**
KE						**KE (40%)**	
2017-18	Accrued	12,096.92	12,369.58			191.86	**24,658.36**
	Paid	10,980.77	2,084.00			292.56	**13,357.33**
2018-19	Accrued	11,377.59	12,410.34			514.00	**24,301.93**
	Paid	10,849.52				493.38	**11,342.90**
2019-20	Accrued	(3,493.32)					**(3,493.32)**
	Paid	25,000.00					**25,000.00**
2020-21	Accrued	11,342.97					**11,342.97**
	Paid	10,000.00					**10,000.00**
2021-22	Claimed	137,619	4,753	4,617	334	**8,504**	**155,495**
	Received	56,001	6,949		-	**10,276**	**73,225**
		Total TDS	**Total ISP**	**Total AQTA**	**Total ZRIR**	**Total Others (FATA Receivable, QESCO 40% and KE 40%)**	**Grand Total**
2017-18	**Accrued**	**100,083.85**	**39,161.84**	**-**	**-**	**19,794.34**	**159,040.03**
	Paid	**59,727.78**	**79,094.00**	**-**	**-**	**8,416.26**	**147,238.04**
2018-19	**Accrued**	**204,816.71**	**76,563.12**	**-**	**13,360.84**	**23,589.67**	**318,330.34**
	Paid	**160,442.03**	**-**	**-**	**-**	**16,314.65**	**176,756.68**
2019-20	**Accrued**	**247,587.19**	**6,889.56**	**41,818.80**	**18,111.32**	**-**	**314,406.87**
	Paid	**195,957.11**	**5,112.49**	**-**	**-**	**-**	**201,069.60**
2020-21	**Accrued**	**179,127.61**	**26,410.15**	**11,860.32**	**19,242.96**	**-**	**236,641.04**
	Paid	**150,592.50**	**-**	**-**	**25,836.82**	**-**	**176,429.32**
2021-22	**Claimed**	**346,705.47**	**29,129.41**	**-5,462.35**	**22,930.97**	**171,038.39**	**564,009.88**
	Received	**289,705.70**	**32,429.86**	**66,783.53**	**13,882.62**	**64,663.14**	**480,610.86**

Note: Paid amount is inclusive of previous year(s) dues.
Source: Ministry of Energy (Power Division), Islamabad/DISCOs&KE

TABLE 82

Applications of New Connections Energized and Pending

DISCO	Year	Connection		Applications Pending (Nos.)
		Sanctioned (Nos.)	Load (kW)	
PESCO	2017-18	136,322	322,728	9,029
	2018-19	154,946	362,637	22,611
	2019-20	180,789	454,197	17,667
	2020-21	173,012	637,325	4,664
	2021-22	171,607	632,149	7,134
TESCO	2017-18	685	7,520	0
	2018-19	601	8,025	100
	2019-20	112	23,340	0
	2020-21	280	31,446	55
	2021-22	393	31,430	57
IESCO	2017-18	158,303	379,853	12,219
	2018-19	146,873	814,407	27,754
	2019-20	134,510	784,476	24,623
	2020-21	163,575	454,310	44,225
	2021-22	204,951	607,246	38,201
GEPCO	2017-18	178,431	471,122	18,624
	2018-19	186,313	441,455	53,732
	2019-20	183,495	434,495	50,467
	2020-21	216,378	510,388	51,030
	2021-22	232,001	615,489	35,030
LESCO	2017-18	315,557	961,958	58,377
	2018-19	301,210	886,319	78,918
	2019-20	287,736	985,887	92,115
	2020-21	345,825	16,316,971	107,866
	2021-22	357,818	17,466,164	48,602
FESCO	2017-18	261,795	714,631	68,900
	2018-19	231,178	695,740	37,839
	2019-20	208,040	727,937	23,495
	2020-21	254,965	848,446	54,278
	2021-22	191,387	693,825	96,880
MEPCO	2017-18	372,907	1,129,124	60,024
	2018-19	355,023	1,006,082	70,660
	2019-20	359,506	1,067,923	67,065
	2020-21	352,712	1,018,929	218,012
	2021-22	384,812	1,658,540	117,684
HESCO	2017-18	28,377	104,687	35
	2018-19	34,946	124,898	-3,180
	2019-20	29,020	148,070	4,707
	2020-21	28,310	105,713	3,069
	2021-22	23,504	127,480	2,448
SEPCO	2017-18	8,440	47,439	378
	2018-19	16,824	52,030	1,152
	2019-20	26,684	62,547	2,397
	2020-21	16,901	61,864	524
	2021-22	9,061	38,738	394
QESCO	2017-18	17,452	26,198	965
	2018-19	15,597	32,124	1,183
	2019-20	18,051	87,351	3,888
	2020-21	18,171	65,350	470
	2021-22	14,826	49,100	713
KE	2017-18	237,779	667,475	-75,121
	2018-19	252,483	881,408	-59,358
	2019-20	209,747	800,119	-47,635
	2020-21	200,835	837,708	17,705
	2021-22	253,716	1,176,156	14,167

Source: Distribution Companies / KE

TABLE 83

DISCOs' Number of Power Transformers, Capacities and their Loading Positions

DISCO	As on 30th June	No. of Power Transformers				Capacity of Power Transformers (MVA)				No. of Over-Loaded Power Transformers (above 80%)				
		132 kV	66 kV	33 kV	Total	132 kV	66 kV	33 kV	Total	132 kV	66 kV	33 kV	Total	% age
PESCO	2018	198	30	8	236	5,768.50	286.25	32.00	6,086.75	107	12	6	125	52.97
	2019	206	29	8	243	6,029.50	265.75	32.00	6,327.25	93	12	5	110	45.27
	2020	210	24	5	239	6,148.50	217.95	23.00	6,389.45	80	6	0	86	35.98
	2021	221	26	5	252	6,658.50	243.95	23.00	6,925.45	81	11	3	95	37.70
	2022	230	24	5	259	7,103.90	238.35	23.00	7,365.25	79	12	4	95	36.68
TESCO	2018	25	20	0	45	501.30	242.80	0.00	744.10	8	8	0	16	35.56
	2019	27	21	0	48	540.30	242.30	0.00	782.60	8	9	0	17	35.42
	2020	31	24	0	55	592.30	242.80	0.00	835.10	8	1	0	9	16.36
	2021	34	21	0	55	711.30	263.30	0.00	974.60	13	1	0	14	25.45
	2022	40	17	0	57	1,066.36	176.70	0.00	1,243.06	8	0	0	8	14.04
IESCO	2018	232	11	5	248	5,832.00	150.00	20.00	6,002.00	14	0	2	16	6.45
	2019	243	8	6	257	6,213.00	125.00	24.00	6,362.00	7	0	1	8	3.11
	2020	253	4	6	263	6,425.00	73.00	24.00	6,522.00	8	0	1	9	3.42
	2021	260	1	6	267	6,651.00	46.00	24.00	6,721.00	8	0	1	9	3.37
	2022	266	1	6	273	6,868.00	46.00	25.00	6,939.00	23	0	0	23	8.42
GEPCO	2018	172	2	0	174	4,820.80	26.00	0.00	4,846.80	50	1	0	51	29.31
	2019	174	2	0	176	4,925.80	26.00	0.00	4,951.80	24	1	0	25	14.20
	2020	171	2	0	173	4,939.30	26.00	0.00	4,965.30	15	0	0	15	8.67
	2021	172	2	0	174	5,084.80	26.00	0.00	5,110.80	34	0	0	34	19.54
	2022	179	2	0	181	5,229.30	26.00	0.00	5,255.30	50	1	0	51	28.18
LESCO	2018	370	3	0	373	11,053.50	39.00	0.00	11,092.50	60	0	0	60	16.09
	2019	388	3	0	391	11,674.50	39.00	0.00	11,713.50	78	0	0	78	19.95
	2020	403	1	0	404	12,128.00	37.50	0.00	12,165.50	66	0	0	66	16.34
	2021	427	1	0	428	12,916.00	37.50	0.00	12,953.50	74	0	0	74	17.29
	2022	441	0	0	441	13,443.50	0.00	0.00	13,443.50	70	0	0	70	15.87
FESCO	2018	200	25	0	225	5,318.00	278.70	0.00	5,596.70	35	7	0	42	18.67
	2019	210	25	0	235	5,648.00	282.50	0.00	5,930.50	36	6	0	42	17.87
	2020	212	24	0	236	5,673.00	272.00	0.00	5,945.00	18	7	0	25	10.59
	2021	217	23	0	240	5,778.00	261.00	0.00	6,039.00	39	6	0	45	18.75
	2022	223	26	0	249	5,961.00	300.00	0.00	6,261.00	38	7	0	45	18.07
MEPCO	2018	262	30	0	292	7,514.91	322.91	0.00	7,837.82	64	1	0	65	22.26
	2019	274	19	0	293	7,969.00	219.00	0.00	8,188.00	33	1	0	34	11.60
	2020	294	8	0	302	8,245.00	118.80	0.00	8,363.80	16	21	0	37	12.25
	2021	301	11	0	312	8,602.00	118.80	0.00	8,720.80	30	0	0	30	9.62
	2022	308	9	0	317	8,897.00	93.00	0.00	8,990.00	45	1	0	46	14.51
HESCO	2018	105	16	0	121	2,430.40	133.10	0.00	2,563.50	45	4	0	49	40.50
	2019	105	16	0	121	2,561.40	133.10	0.00	2,694.50	31	3	0	34	28.10
	2020	106	16	0	122	2,628.40	136.90	0.00	2,765.30	25	1	0	26	21.31
	2021	106	16	0	122	2,654.40	136.90	0.00	2,791.30	14	0	0	14	11.48
	2022	124	4	0	128	2,831.30	103.50	0.00	2,934.80	24	1	0	25	19.53

DISCO	As on 30th June	No. of Power Transformers				Capacity of Power Transformers (MVA)				No. of Over-Loaded Power Transformers (above 80%)				
		132 kV	66 kV	33 kV	Total	132 kV	66 kV	33 kV	Total	132 kV	66 kV	33 kV	Total	% age
SEPCO	2018	106	19	1	126	2,534.30	215.40	6.30	2,756.00	42	7	0	49	38.89
	2019	107	22	1	130	2,558.80	228.40	6.30	2,793.50	17	7	0	24	18.46
	2020	110	22	0	132	2,687.10	228.40	0.00	2,915.50	9	7	0	16	12.12
	2021	111	22	0	133	2,782.10	228.40	0.00	3,010.50	14	6	0	20	15.04
	2022	112	22	0	134	2,873.10	228.40	0.00	3,101.50	24	8	0	32	23.88
QESCO	2018	126	9	40	175	3,092.00	78.00	160.00	3,330.00	50	5	0	55	31.43
	2019	130	4	40	174	3,183.00	33.10	160.00	3,376.10	63	3	0	66	37.93
	2020	133	4	40	177	3,221.00	33.10	160.00	3,414.10	49	2	0	51	28.81
	2021	135	4	40	179	3,267.00	38.60	160.00	3,465.60	47	2	0	49	27.37
	2022	137	3	40	180	3,437.60	38.80	160.00	3,636.40	45	2	0	47	26.11
Total in CPPA-G System	2018	1,796	165	54	2,015	48,865.71	1,772.16	218.30	50,856.17	475	45	8	528	26.20
	2019	1,864	149	55	2,068	51,303.30	1,594.15	222.30	53,119.75	390	42	6	438	21.18
	2020	1,923	129	51	2,103	52,687.60	1,386.45	207.00	54,281.05	294	45	1	340	16.17
	2021	1,984	127	51	2,162	55,105.10	1,400.45	207.00	56,712.55	354	26	4	384	17.76
	2022	2,060	108	51	2,219	57,711.06	1,250.75	208.00	59,169.81	406	32	4	442	19.92
KE	2018	144	3	0	147	5,449.50	69.00	0.00	5,518.50	47	1	0	48	32.65
	2019	157	3	0	160	6,008.50	69.00	0.00	6,077.50	45	0	0	45	28.13
	2020	163	4	0	167	6,273.00	79.00	0.00	6,352.00	39	1	0	40	23.95
	2021	168	4	0	172	6,457.00	79.00	0.00	6,536.00	49	1	0	50	29.07
	2022	175	4	0	179	6,724.00	79.00	0.00	6,803.00	46	2	0	48	26.82

Source: Distribution Companies / KE

TABLE 84

DISCOs' Number of Distribution Transformers, Capacities and their Loading Positions

DISCO	As on 30th June	No. of Distribution Transformers	Capacity of Distribution Transformers (kVA)	Loading Position of Distribution Transformers (Nos.)				
				80-90%	91-100%	Above 100%	Total	%age
PESCO	2017	72,078	5,594,115	11,235	5,321	4,477	21,033	29.18
	2018	74,104	5,741,775	3,183	924	2,076	6,183	8.34
	2019	76,126	5,998,755	1,732	1,175	1,163	4,070	5.35
	2020	77,307	6,091,795	1,474	968	1,035	3,477	4.50
	2021	79,437	6,264,345	892	738	811	2,441	3.07
	2022	81,149	6,424,565	1,108	540	794	2,442	3.01
TESCO	2017	18,198	1,214,960	0	0	0	0	0.00
	2018	18,475	1,259,110	2,738	1,643	103	4,484	24.27
	2019	18,730	1,439,000	2,333	1,431	213	3,977	21.23
	2020	18,903	1,441,000	2,335	4,133	214	6,682	35.35
	2021	18,827	1,378,100	3,491	890	1,850	751	3.99
	2022	19,194	1,440,705	893	1,910	699	3,502	18.25
IESCO	2017	46,359	3,832,000	1,830	990	48	2,868	6.19
	2018	47,830	3,934,000	2,516	996	258	3,770	7.88
	2019	49,109	4,032,000	181	188	417	786	1.60
	2020	50,210	4,121,000	1,248	174	241	1,663	3.31
	2021	51,988	4,279,000	529	215	206	950	1.83
	2022	53,616	4,395,000	215	393	895	1,503	2.80
GEPCO	2017	61,661	3,828,990	863	410	202	1,475	2.39
	2018	64,344	4,087,000	908	606	227	1,741	2.71
	2019	67,587	4,219,000	1,037	690	232	1,959	2.90
	2020	72,007	4,538,000	1,080	720	142	1,942	2.70
	2021	76,125	4,745,000	1,065	685	133	1,883	2.47
	2022	80,085	4,798,000	1,170	501	301	1,972	2.46
LESCO	2017	100,718	7,796,585	14,649	9,448	6,253	30,350	30.13
	2018	105,185	8,230,625	13,674	9,471	5,259	28,404	27.00
	2019	110,092	8,516,090	13,211	9,358	3,963	26,532	24.10
	2020	116,030	8,885,600	12,991	9,250	3,502	25,743	22.19
	2021	122,124	9,245,095	10,393	7,330	2,724	20,447	16.74
	2022	126,758	9,479,195	10,167	7,216	2,757	20,140	15.89
FESCO	2017	100,276	6,626,000	1,176	540	127	1,843	1.84
	2018	104,058	6,874,000	199	165	28	392	0.38
	2019	108,652	7,084,000	497	99	18	614	0.57
	2020	113,079	7,291,000	473	133	46	652	0.58
	2021	120,446	7,628,000	1,055	110	33	1,198	0.99
	2022	124,801	7,934,000	1,230	130	23	1,383	1.11
MEPCO	2017	156,460	7,799,800	3,540	2,530	2,058	8,128	5.19
	2018	161,197	8,034,290	2,337	1,630	1,877	5,844	3.63
	2019	169,938	8,383,000	2,269	1,588	1,816	5,673	3.34
	2020	179,577	8,769,045	3,499	1,750	583	5,832	3.25
	2021	187,791	9,102,165	2,270	1,787	0	4,057	2.16
	2022	223,922	12,960,060	5,711	1,021	0	6,732	3.01
HESCO	2017	35,996	1,761,620	2,004	1,336	0	3,340	9.28
	2018	36,670	1,807,275	711	447	224	1,382	3.77
	2019	37,305	1,854,070	594	355	131	1,080	2.90
	2020	37,896	1,881,556	682	408	121	1,211	3.20
	2021	43,873	2,680,585	635	405	74	1,114	2.54
	2022	44,317	2,720,455	637	420	76	1,133	2.56
SEPCO	2017	35,875	2,004,370	3,885	1,942	1,597	7,424	20.69
	2018	37,562	2,097,125	1,980	993	763	3,736	9.95
	2019	38,196	2,151,140	1,351	696	541	2,588	6.78
	2020	38,616	2,163,805	1,365	735	576	2,676	6.93
	2021	39,076	2,178,305	1,378	718	581	2,677	6.85
	2022	39,437	2,253,220	1,253	763	420	2,436	6.18
QESCO	2017	55,770	2,752,000	4,191	2,735	1,947	8,873	15.91
	2018	59,336	3,049,830	4,042	2,193	859	7,094	11.96
	2019	60,870	3,132,630	3,974	2,104	971	7,049	11.58
	2020	62,337	3,213,540	3,828	1,869	1,117	6,814	10.93
	2021	64,119	3,339,400	3,088	1,301	954	5,343	8.33
	2022	66,119	3,466,225	3,024	1,214	788	5,026	7.60
Total in CPPA-G System	2017	683,391	43,210,440	43,373	25,252	16,709	85,334	12.49
	2018	708,761	45,115,030	32,288	19,068	11,674	63,030	8.89
	2019	736,605	46,809,685	27,179	17,684	9,465	54,328	7.38
	2020	765,962	48,396,341	28,975	20,140	7,577	56,692	7.40
	2021	803,806	50,839,995	24,796	14,179	7,366	46,341	5.77
	2022	859,398	55,871,425	25,408	14,108	6,753	46,269	5.38
KE	2017	25,667	7,230,425	354	140	57	551	2.15
	2018	27,388	7,463,855	318	126	34	478	1.75
	2019	28,183	7,702,245	432	203	173	808	2.87
	2020	28,842	7,915,705	987	591	672	2,250	7.80
	2021	29,702	8,153,340	1,018	649	900	2,567	8.64
	2022	30,771	8,685,305	1,639	1,103	1,622	4,364	14.18

Source: Distribution Companies / KE

TABLE 85

Feeders Outages Statistics of DISCOs (2021-22)

DISCO	Nature of Tripping	132 kV Feeders		66 kV Feeders		33 kV Feeders		11 kV Feeders		All Feeders	
		No. of Tripping	Duration (Min.)	No. of Tripping	Duration (Min.)	No. of Tripping	Duration (Min.)	No. of Tripping	Duration (Min.)	No. of Tripping	Duration (Min.)
PESCO	Planned	552	160218	73	19115	4	1755	18608	3742680	19237	3923768
	Forced	611	66888	172	20923	0	0	34514	2272740	35297	2360551
	Total	1163	227106	245	40038	4	1755	53122	6015420	54534	6284319
TESCO	Planned	8	3700	19	2645	0	0	5716	343932	5743	350277
	Forced	275	69238	90	19396	0	0	9586	1738684	9951	1827318
	Total	283	72938	109	22041	0	0	15302	2082616	15694	2177595
IESCO	Planned	629	324090	10	4680	1	480	168565	12489005	169205	12818255
	Forced	0	0	0	0	0	0	1334	92254	1334	92254
	Total	629	324090	10	4680	1	480	169899	12581259	170539	12910509
GEPCO	Planned	38	10627	6	2160	0	0	6419	621480	6463	634267
	Forced	166	93014	7	133	0	0	11823	247800	11996	340947
	Total	204	103641	13	2293	0	0	18242	869280	18459	975214
LESCO	Planned	400	123925	0	0	0	0	27479	6559021	27879	6682946
	Forced	5141	163186	0	0	0	0	21683	649868	26824	813054
	Total	5541	287111	0	0	0	0	49162	7208889	54703	7496000
FESCO	Planned	234	55855	106	27627	0	0	9837	1706827	10177	1790309
	Forced	37	2598	12	1682	0	0	53951	668829	54000	673109
	Total	271	58453	118	29309	0	0	63788	2375656	64177	2463418
MEPCO	Planned	1219	363370	51	9501	0	0	14696	881786	15966	1254657
	Forced	1278	99187	76	4126	0	0	375640	2964840	376994	3068153
	Total	2497	462557	127	13627	0	0	390336	3846626	392960	4322810
HESCO	Planned	132	47605	39	13236	0	0	0	0	171	60841
	Forced	652	141043	36	11299	0	0	63500	673357	64188	825699
	Total	784	188648	75	24535	0	0	63500	673357	64359	886540
SEPCO	Planned	1139	403380	140	801	0	0	9408	2522794	10687	2926975
	Forced	28	28080	18	16080	0	0	40728	17744828	40774	17788988
	Total	1167	431460	158	16881	0	0	50136	20267622	51461	20715963
QESCO	Planned	119	42840	12	2880	122	10980	1224	183600	1477	240300
	Forced	159	17013	16	1440	745	108025	42178	432325	43098	558803
	Total	278	59853	28	4320	867	119005	43402	615925	44575	799103
KE	Planned	5	1169	0	0	0	0	80786	2986529	80791	2987698
	Forced	15	965	0	0	0	0	39339	3063222	39354	3064187
	Total	20	2134	0	0	0	0	120125	6049751	120145	6051885

Source: Distribution Companies / KE

TABLE 86

Village Electrification in all Distribution Companies

DISCO	As on 30th June	Total Number of Villages in DISCO	Total Villages Electrified in DISCO	Remaining Villages in DISCO	Percentage of Total Electrified Villages in DISCO
PESCO	2018	31,559	24,688	6,871	78.23
	2019	31,689	25,789	5,900	81.38
	2020	32,940	26,492	6,448	80.43
	2021	33,761	27,301	6,460	80.87
	2022	34,344	28,371	5,973	82.61
TESCO	2018	452	250	202	55.31
	2019	463	257	206	55.51
	2020	483	277	206	57.35
	2021	4,196	2,421	1,775	57.70
	2022	4,196	2,521	1,675	60.08
IESCO	2018	1,863	941	922	50.51
	2019	922	387	535	41.97
	2020	816	260	556	31.86
	2021	913	633	280	69.33
	2022	690	272	418	39.42
GEPCO	2018	7,550	7,508	42	99.44
	2019	7,578	7,322	256	96.62
	2020	7,854	7,608	246	96.87
	2021	7,854	7,744	110	98.60
	2022		7,919		
LESCO	2018	246	195	51	79.27
	2019	246	207	39	84.15
	2020	246	212	34	86.18
	2021	246	215	31	87.40
	2022	246	220	26	89.43
FESCO	2018	26,213	25,465	748	97.15
	2019	26,830	25,770	1,060	96.05
	2020	27,916	26,661	1,255	95.50
	2021	29,282	27,589	1,693	94.22
	2022	31,929	28,544	3,385	89.40
MEPCO	2018	37,400	30,364	7,036	81.19
	2019	39,518	30,660	8,858	77.58
	2020	41,579	31,858	9,721	76.62
	2021	44,603	34,703	9,900	77.80
	2022	48,761	35,806	12,955	73.43
HESCO	2018	23,803	18,634	5,169	78.28
	2019	23,803	18,940	4,863	79.57
	2020	23,803	19,181	4,622	80.58
	2021	23,803	19,315	4,488	81.15
	2022	23,803	19,435	4,368	81.65
SEPCO	2018	23,263	17,961	5,302	77.21
	2019	23,263	18,280	4,983	78.58
	2020	23,263	18,423	4,840	79.19
	2021	23,263	18,475	4,788	79.42
	2022	23,263	18,600	4,663	79.96
QESCO	2018	26,243	24,806	1,437	94.52
	2019	27,932	25,812	2,120	92.41
	2020	29,692	26,231	3,461	88.34
	2021	29,692	26,434	3,258	89.03
	2022	29,692	27,568	2,124	93
Total in CPPA-G System	2018	178,592	150,812	27,780	84.44
	2019	182,244	153,424	28,820	84.19
	2020	188,592	157,203	31,389	83.36
	2021	197,613	164,830	32,783	83.41
	2022	196,924	169,256	27,668	85.95
KE	2018	889	883	6	99.33
	2019	913	912	1	99.89
	2020	954	913	41	95.70
	2021	954	938	16	98.32
	2022	976	958	18	98.16

Source: Distribution Companies / KE

TABLE 87
WAPDA Hydroelectric Tariff (2021-22)

S. No.	Power Stations	Province	Capacity (MW)	NEO (GWh)	Variable Rate (Rs./kWh)	Fixed Charges (Rs./kW/M)			Hydel Levies			
						Fixed Rate	Revenue Gap	Interest on Loans for NHP	NHP Regular (Rs./kWh)	WUC (Rs./kWh)	NHP Arrears (Rs./kW/M)	IRSA (Rs./kWh)
1	Tarbela	KPK	3,478	4933.47	0.0430	421.9400	(425.917)	63.8370	1.1000		-	0.005
2	Warsak	KPK	243	305.50	0.1070	748.1980	64.3320	63.8370	1.1000		-	0.005
3	Duber Khwar	KPK	130	173.98	0.2150	1,768.2840	369.3290	63.8370	1.1000		-	0.005
4	Allai Khwar	KPK	121	125.05	0.2150	1,508.8710	523.7890	63.8370	1.1000		-	0.005
5	Khan Khwar	KPK	72	31.78	0.2110	1,592.3050	213.2540	63.8370	1.1000		-	0.005
6	Jabban	KPK	22	38.94	0.2750	2,881.4670	3,505.1650	63.8370	1.1000		-	0.005
7	Dargai	KPK	20	28.10	0.0880	826.7720	(587.876)	63.8370	1.1000		-	0.005
8	Kuram Garhi	KPK	4	4.59	0.2550	1,924.9610	343.3300	63.8370	1.1000		-	0.005
9	Chitral	KPK	1	0.53	0.3430	2,164.9410	(4,020.787)	63.8370	1.1000		-	0.005
10	Tarbela 4th Ext.	KPK	1,410	2259.96	0.1340	781.9920	876.992	0.0000	1.1000		-	0.005
11	Golen Gol	KPK	108	50.65	0.3440	2,446.5390	3225.457	0.0000	1.1000		-	0.005
12	Gomal Zam	KPK	17	17.03	0.6340	3,092.3000	(470.671)	0.0000	1.1000		454.646	0.005
13	Ghazi Barotha	Pujnab	1,450	2105.09	0.0790	777.8990	434.0900	366.4990	1.1000		-	0.005
14	Chashma	Punjab	184	216.29	0.191	1,524.435	1,403.294	366.4990	1.1000		-	0.005
15	Jinnah HPP	Punjab	96	63.34	0.2670	1,521.2800	1,113.6030	366.4990	1.1000		-	0.005
16	Rasul	Punjab	22	18.04	0.1570	895.5500	(34.025)	366.4990	1.1000		-	0.005
17	Nandipur	Punjab	14	11.57	0.1320	833.8580	(1,222.819)	366.4990	1.1000		-	0.005
18	Shadiwal	Punjab	14	7.93	0.1780	833.8300	(790.848)	366.4900	1.1000		-	0.005
19	Chichoki	Punjab	13	9.11	0.1760	866.5510	(870.662)	366.4990	1.1000		-	0.005
20	Renala Khurd	Punjab	1	0.53	0.3420	1,831.9180	(3,455.565)	366.4990	1.1000		-	0.005
21	Mangla	AJK	1,000	1,342.19	0.0670	715.0900	41.6110	0.0000	-	0.150	-	0.005

Source: NEPRA

TABLE 88 (A)

Indexed/Adjusted Tariff of GENCOs on Quarterly Basis (Rs./kWh) As on 1st of

Power Plant	Year	Fuel	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
GENCO-I														
Jamshoro Block-1 Unit-1	2020-21	RFO							17.0397					
	2021-22		21.5113			26.8620			30.7336			30.7326		
Jamshoro Block-2 Unit-2	2018-19	RLNG	20.1809			19.9122								
	2018-19	RFO				20.3806						19.1019		
	2019-20		22.5502											
	2020-21								19.1363					
	2021-22		24.1581			30.1671			34.5151			34.5140		
	2019-20	Gas	10.9179											
Jamshoro Block-2 Unit-3	2018-19	RLNG	19.6445			19.3915								
	2018-19	RFO				22.8882						21.4523		
	2019-20		25.3248											
	2020-21								18.6206			19.1363		
	2021-22		23.5071			29.3542			33.5850					
	2019-20	Gas	10.6325											
Jamshoro Block-2 Unit-4	2018-19	RLNG	19.2227			18.9887								
	2018-19	RFO				22.2715						20.8742		
	2019-20		24.6423											
	2020-21								18.2286					
	2021-22		23.0121			28.7361			32.8778			32.8768		
	2019-20	Gas	10.4117											
Kotri (Unit 3-7)	2018-19	RLNG	16.9458											
	2018-19	RFO				21.8025						20.4347		
	2019-20		24.1234											
	2019-20	Gas	9.459* 14.1885**											
GENCO-II														
Guddu Block-I	2018-19	Gas	4.7479	1.0188		6.2347	1.0446			1.1658			1.3269	
	2019-20		7.8844	1.5141			1.4580			1.4580			1.5402	
	2020-21			1.5540			1.5397			0.8529			0.8445	
Guddu Block-II	2018-19	Gas	5.2752			6.9272								
	2019-20		8.7602											
	2021-22			0.5424	0.8574		0.5953	1.2018		0.6296	1.2448		0.6616	1.2798
Guddu Block-III	2018-19	Gas	6.3302			8.3125								
	2019-20		10.512											
Guddu Block-IV	2018-19	Gas	6.7822			8.9060								
	2019-20		11.2627											
GENCO-III														
Nandipur	2018-19	RLNG	10.0843	0.442	0.2453		0.4510	0.2506		0.5044	0.2711		0.5117	0.2748
	2019-20		11.2043	0.6062	0.3106		0.5785	0.3053		0.5750	0.3073	11.1630	0.6207	0.3239
	2020-21		7.5440	0.6226	0.3256	8.8430	0.6224	0.3259		0.602 1	0.3190	10.8743	0.5813	0.3119
	2021-22		14.9801	0.6131	0.3228	19.5648	0.6729	0.3431	16.2147	0.7117	0.3564	20.8334	0.7479	0.3687
Muzaffargarh Units 1	2018-19	RFO/ RLNG	17.2427						14.2669			19.3678		
	2019-20		10.4415											
	2020-21													
	2021-22		22.4558			28.2383			31.5184			31.5184		
Muzaffargarh Units 2	2018-19	RFO/ RLNG	17.4765						14.4602			19.6301		
	2019-20		10.5791											
	2020-21													
	2021-22		22.7600			28.6209			31.9454			31.9454		
Muzaffargarh Units 3	2018-19	RFO/ RLNG	16.8721						13.9602			18.9514		
	2019-20		10.2236											
	2020-21													
	2021-22		21.9730			27.6312			30.8408			30.8408		
Muzaffargarh Units 4	2018-19	RFO/ RLNG	16.8469						13.9394			18.9232		
	2019-20		10.2092											
	2020-21													
	2021-22		21.9403			27.5901			30.7949			30.7949		
Muzaffargarh Units 5	2018-19	RFO/ RLNG	17.9385						14.8427			20.1494		
	2019-20		10.8504											
	2020-21													
	2021-22		23.3620			29.3779			32.7904			32.7904		
Muzaffargarh Units 6	2018-19	RFO/ RLNG	18.4292						15.2486			20.7005		
	2019-20		11.1374											
	2020-21													
	2021-22		24.0010			30.1814			33.6873			33.6873		
GTPS Faisalabad Units 5-9	2019-20	RFO/ RLNG	8.3764											
	2020-21													
	2021-22		18.6839			24.4116			20.2248			20.2248		

** CCP ** without CCP*

Source: NEPRA

TABLE 88 (B)

Indexed/Adjusted Tariff of Hydel Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			WUC	VOM	CPP	WUC	VOM	CPP	WUC	VOM	CPP	WUC	VOM	CPP
1	Jagran	2020-21	N/A	1.2000	1.3900	N/A	1.3273	1.3900	N/A	1.3273	1.3900	N/A	1.3273	1.3900
		2021-22	N/A	1.3273	1.3900	N/A	1.4444	1.3900	N/A	1.4444	1.3900	N/A	1.4444	1.3900
2	Pehur Hydro	2018-19	0.1500	0.1350	3.7331	-	-	-	-	-	-	-	-	-
3	Malakand-III	2019-20	0.3209	0.3368	4.8788	0.3612	0.3216	4.6654	0.3209	0.3191	4.6330	0.3209	0.3441	4.9643
		2020-21	0.3209	0.3468	5.0095	0.3209	0.3457	4.9614	0.3771	0.3345	4.8024	0.3771	0.3229	4.6044
		2021-22	0.3771	0.3407	4.7556	0.3771	0.3738	5.1318	0.3771	0.3954	5.3467	0.3771	0.4155	5.5165
4	Laraib Energy	2018-19	0.3467	0.0575	10.6702	0.3523	0.0585	11.0005	0.3604	0.0598	11.5906	0.3663	0.0608	11.0811
		2019-20	0.3777	0.0627	13.0202	0.3928	0.0652	13.5380	0.4033	0.0669	13.0164	0.4101	0.0681	13.0368
		2020-21	0.4124	0.0685	13.6274	0.4124	0.0685	13.7788	0.4124	0.0685	12.8580	0.4124	0.0685	12.7736
		2021-22	0.4124	0.5786	12.1734	0.4124	0.0685	13.3147	0.4124	0.0685	14.1816	0.4124	0.0685	12.8513
5	Patrind Hydro	2018-19	0.1500	0.0250	1.7275	0.1500	0.0250	1.7734	0.1500	0.0250	2.0011	0.1500	0.0250	2.0092
		2019-20	0.1500	0.0250	2.1440	0.1500	0.0250	2.1279	0.1500	0.0250	2.3636	-	-	-
		2021-22	0.1867	0.0425	13.8227	0 .1867	0.1881	13.9234	0.1881	0.0425	14.9648	1.1881	0.0425	15.1083
6	Marala Hydro	2018-19	0.1500	0.3378	8.3119	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7	Neelum Jhelum	2018-19	-	0.7217	8.3967	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8	Gulpur Hydro	2018-19	0.1500	0.0441	8.8536	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: NEPRA

TABLE 88 (C)

Indexed/Adjusted Tariff of Gas Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
1	Uch-II	2018-19	5.7251	0.2589	2.6678	6.0442	0.2649	2.7269	6.4987	0.2917	3.0528	6.7063	0.2957	3.0851
		2019-20	7.0797	0.3426	3.5735	7.5721	0.3315	3.3930	7.4948	0.3315	3.4049	7.4944	0.3540	3.6116
		2020-21	7.8425	0.3553	3.5848	7.2150	0.3553	3.5854	6.9423	0.3457	3.5633	6.8471	0.3358	3.3638
		2021-22	6.6804	0.3510	3.4765	7.1038	0.3795	3.7496	7.5346	0.398	3.9543	7.6673	0.4153	4.0815
2	Foundation Power	2018-19	3.8680	0.4467	2.4081	5.6395	0.4569	2.4357	5.6395	0.5030	2.6733	5.6395	0.5101	2.6893
		2019-20	7.1480	0.5909	2.9345	7.1480	0.5718	2.8883	7.1480	0.5718	2.8871	7.1480	0.6105	2.9682
		2020-21	7.1480	0.6127	2.9241	6.6297	0.6130	2.9109	6.6297	0.5963	2.8993	6.6297	0.5792	1.3985
		2021-22	6.6297	0.6054	1.4386	6.6297	0.6546	1.5380	6.6297	0.6866	1.6026	6.6297	0.7164	1.652
3	Engro PowerGen. Qadirpur	2018-19		0.3944	2.0542		0.4034	2.0988		0.4430	2.3277		0.4505	2.3460
		2019-20	7.6810	0.5221	2.6944		0.5052	2.5895		0.5051	2.5720		0.5393	1.3125
		2020-21		0.5414	1.3114		0.5415	1.2995		0.5268	1.2673		0.5116	1.2277
		2021-22	7.1240	0.5348	1.2547	7.1240	0.5784	1.3287	7.1240	0.6068	1.3793	7.1240	0.6332	1.4153

Source: NEPRA

TABLE 88 (D)

Indexed/Adjusted Tariff of RFO Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
1	Attock Gen.	2018-19	12.3406	1.1056	2.4018	13.1633	1.1309	2.4487	10.9987	1.2408	2.5701	13.6451	1.2581	1.1765
		2019-20	13.6681	1.4506	1.3436	15.5902	1.4080	1.3014	9.8771	1.4098	1.2997	6.4667	1.5014	1.3788
		2020-21	9.2189	1.5072	1.3915	9.8010	1.5080	1.3806	11.6970	1.4688	1.3438	14.2455	1.4284	1.2988
		2021-22	15.6287	1.4902	1.3362	20.5891	1.6062	1.4254	18.8586	1.6814	1.4773	28.1311	1.7516	1.5194
2	Atlas Power	2018-19	12.2638	1.0889	2.5074	13.0382	1.1138	2.5874	11.6612	1.2230	2.7659	11.6674	1.2401	2.7969
		2019-20	14.0484	1.4313	3.0178		1.3884	2.9841	11.5178	1.3897	1.4986		1.4808	1.5496
		2020-21	12.0144	1.4866	1.5096	12.6185	1.4873	1.4966	12.3983	1.4482	1.4568	11.4835	1.4080	1.4133
		2021-22	15.9233	1.4696	1.4504	18.8931	1.5851	1.5484	22.2725	1.66	1.6392	23.8323	1.73	1.7017
3	Nishat Power	2018-19	12.2768	1.0888	2.4917	13.9619	1.1138	2.5803	14.0472	1.2229	2.7631	11.0028	1.2400	2.7959
		2019-20	14.8627	1.4313	3.0115	14.2500	1.3884	2.9916	15.5232	1.3897	2.9783		1.4807	3.0056
		2020-21	11.2375	1.4866	1.3691	11.9540	1.4873	1.3585	11.4870	1.4482	1.3236	12.0047	1.4080	1.2867
		2021-22	16.3035	1.4696	1.3197	19.5235	1.5850	1.4067	23.4321	1.6600	1.4921	21.6372	1.73	1.5507
4	Nishat Chunian	2018-19	12.5526	1.0864	2.6391	14.1910	1.1111	2.7315	14.5856	1.2201	2.9211	10.9221	1.2371	2.9552
		2019-20	14.7428	1.4280	3.1776	13.7420	1.3851	3.1559	13.8814	1.3864	3.1416	11.6976	1.4772	3.1712
		2020-21	10.7477	1.4831	2.6956	11.8764	1.4838	1.3986		1.4448	1.3535	11.7334	1.4046	1.3146
		2021-22	15.0494	1.4661	1.3489	18.6228	1.5813	1.4385	22.9832	1.6561	1.5239	25.2196	1.7259	1.5827
5	Narowal Energy	2018-19	12.0369	1.0122	2.7721	13.5986	1.0340	2.8854	12.9883	1.1160	3.1475	12.3594	1.1312	3.1910
		2019-20	14.5765	1.2736	3.5188	13.6999	1.2550	3.4801	12.5096	1.2646	3.4553		1.3309	3.4858
		2020-21	12.8512	1.3372	3.3859	12.4791	1.3358	3.3849	12.2017	1.3117	3.3468	11.7283	1.2837	3.3047
		2021-22	15.898	1.3265	1.8438	19.7987	1.4068	1.9809	22.7597	1.4589	2.1109	24.5703	1.5076	2.2004
6	Liberty Power	2018-19	12.9523	1.2068	2.7555	12.9378	1.2340	2.8644	12.1740	1.3489	3.0930	11.1208	1.3676	3.1368
		2019-20	13.2442	1.5684	3.4128	13.2462	1.5275	3.3905	11.5427	1.5316	3.3749		1.6268	3.4032
		2020-21	11.6379	1.6336	3.3368	12.6064	1.6345	3.3482	11.3621	1.5941	3.3293	12.0423	1.5525	1.4982
		2021-22	15.879	1.6162	1.5400	20.0485	1.7356	1.6488	22.5202	1.8131	1.7476	28.2842	1.8855	1.817

Source: NEPRA

TABLE 88 (E)

Indexed/Adjusted Tariff of HSD Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
1	Saif Power	2018-19		0.6401	2.3316		0.6558	2.4022		0.7335	2.5712		0.7442	2.5989
		2019-20		0.8814	2.8155		0.8412	2.7733		0.8360	2.7604		0.9025	2.8243
		2020-21	20.8883	0.9053	1.4317	18.6751	0.9049	1.4181	19.7699	0.8755	1.3769	20.2931	0.8453	1.3285
		2021-22	20.4379	0.8916	1.3682	23.1749	0.9785	1.4678	23.1749	1.0349	1.5413	30.137	1.0875	1.5952
2	Sapphire Electric	2018-19		0.6330	2.2431		0.6485	2.3186		0.7254	2.4977		0.7359	2.5278
		2019-20		0.8716	2.7568		0.8318	2.7197		0.8267	2.7060		0.8925	2.7603
		2020-21	18.9038	0.8952	2.7399		0.8949	2.7751	19.5726 20.0947	0.8658	1.3868	19.6652	0.8359	1.3380
		2021-22	20.2368	0.8817	1.377	22.9705	0.9676	1.4738	27.8787	1.0233	1.5527	29.9195	1.0754	1.6073
3	Orient Power	2018-19	19.0052	0.4274	2.0939	18.9266	0.4378	2.1581	19.0285	0.4897	2.3224		0.4968	2.3511
		2019-20		0.5885	2.5722		0.5616	2.5336	22.6785	0.5582	2.5270		0.6026	2.4165
		2020-21	18.1151	0.6044	1.5596	18.5753	0.6042	1.5463	19.6700 20.1920	0.5845	1.5039	19.7621 19.7621	0.5644	1.4548
		2021-22	20.334	0.5953	1.4958	23.0661	0.6533	1.5987	26.2901	0.6909	1.6744	26.2901	0.7261	1.7306
4	Halmore Power	2018-19		0.6431	2.6352		0.6588	2.7379	18.9778	0.7370	2.9701		0.7476	3.0122
		2019-20		0.8856	3.3030		0.8451	3.2702		0.8400	3.2528		0.9607	3.2932
		2020-21	18.0411	0.9095	3.2281	18.5182	0.9092	3.2325	20.1238	0.8796	3.205	19.6952	0.8492	3.1725
		2021-22	20.7171	0.8958	1.5962	23.0009	0.9831	1.7136	27.7637	1.0397	1.8004	27.7637	1.0926	1.8637
5	Engro PowerGen. Qadirpur	2018-19		0.4025	2.0970		0.4118	2.1427		0.4535	2.3764		0.4599	2.3948
		2019-20		0.5330	2.7505		0.5156	2.6436		0.5156	2.6258		0.5505	1.3399
		2020-21		0.5526	1.3387		0.5527	1.3265		0.5376	1.2935		0.5221	1.2531
		2021-22		0.5459	1.2808		0.5904	1.3563	30.1303	0.6193	1.408	31.4388	0.6463	1.4448
6	Haveli Bahadur Shah	2021-22	17.3142	0.2512	1.8024	17.3142	0.2757	1.9293	23.9	0.2916	2.1325	27.501	0.3064	2.2302
7	Balloki	2021-22	17.7269	0.2742	1.7002	17.7269	0.3009	1.8214	24.4806	0.3182	2.0067	26.3162	0.3344	2.0811

Source: NEPRA

TABLE 88 (F)

Indexed/Adjusted Tariff of RLNG Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
1	Saif Power	2018-19	10.6930	0.4453	2.3013	10.641	0.4543	2.3672	10.4740	0.5082	2.5289	9.9357	0.5156	2.5550
		2019-20	11.8410	0.6107	2.765	11.149	0.5828	2.7198		0.5792	2.7078	10.6610	0.6253	2.7796
		2020-21	7.2121	0.6272	1.4000	8.4811	0.6270	1.3867		0.6066	1.3458	10.4230	0.5856	1.2962
		2021-22	14.2694	0.6177	1.3361	18.7805	0.6779	1.4347	18.8764	0.717	1.499	19.9602	0.7535	1.5481
2	Sapphire Electric	2018-19	10.6923	0.4386	2.2117	10.6400	0.4493	2.2822	10.4730	0.5026	2.4538	9.9348	0.5098	2.4822
		2019-20	11.8400	0.6039	2.7043	11.1480	0.5763	2.6641	10.7980	0.5728	2.6514		0.6184	2.7139
		2020-21	7.2114	0.6202	2.7074	8.4804	0.6200	2.7425	9.7492	0.5999	1.3544	10.4220	0.5791	1.3045
		2021-22	14.2681	0.6109	1.3444	18.7788	0.6704	1.4439	15.5401	0.7090	1.5088	19.9584	0.7451	1.5584
3	Orient Power	2018-19	10.6920	0.2607	2.0624	10.6400	0.2671	2.1217	10.4730	0.2987	2.2786	9.9348	0.3030	2.3055
		2019-20	11.8400	0.3590	2.5196	11.1750	0.3426	2.4780	10.7980	0.3405	2.4724	8.0182	0.3675	2.3702
		2020-21	7.2114	0.3687	1.5270	8.4804	0.3685	1.5137	9.7492	0.3565	1.4716	10.4220	0.3442	1.4212
		2021-22	14.2681	0.3631	1.4625	18.7788	0.3985	1.5642	15.6695	0.4214	1.6305	19.9584	0.4429	1.6817
4	Halmore Power	2018-19	10.6930	0.4455	2.5979	10.6400	0.4564	2.6948	10.4740	0.5105	2.9181	9.9354	0.5179	2.9582
		2019-20	11.8410	0.6135	3.2407	11.1490	0.5854	3.2043	10.7990	0.5819	3.1881	10.6600	0.6281	3.2383
		2020-21	7.2119	0.6301	3.1895	8.4808	0.6298	3.1939	9.7498	0.6094	3.1667	10.4220	0.5883	3.1327
		2021-22	14.2689	0.6205	1.5567	18.7798	0.681	1.6728	19.2334	0.7203	1.7484	19.9595	0.7569	1.8057
5	QATPL (Bhikki)	2018-19	1.9380			2.0796			2.3520			2.3582		
		2019-20	2.6434			2.6792			2.6458			2.5474		
		2020-21	2.2325			2.2035			2.1972			1.9990		
		2021-22	11.9190	0.5424	2.0246	15.5668	0.5953	2.2126	13.0235	0.6296	2.5023	16.5762	0.6616	2.606
6	NPPMCL (Haveli Bahadur Shah)	2018-19	1.5041			1.6128			1.7980			1.8154		
		2019-20	2.0702			2.0651			2.0422			1.9290		
		2020-21	1.7484			1.7316 1.5644			1.5433			1.5386		
		2021-22	11.805	0.1937	1.5794	15.4179	0.2126	1.6906	12.8864	0.2248	1.869	16.4176	0.2362	1.9543
7	NPPMCL (Balloki)	2018-19	1.4516			1.5575			1.7286			1.7644		
		2019-20	2.0145			2.0255			1.9510			1.8755		
		2020-21	1.6969			1.6819 1.5201			1.5031			1.4916		
		2021-22	11.8978	0.2161	1.5426	15.5391	0.2371	1.6525	12.9878	0.2508	1.8207	16.5467	0.2635	1.8881

Source: NEPRA

TABLE 88 (G)

Indexed/Adjusted Tariff of Coal Fired Power Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July			October			January			April		
			FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP	FCC	VOM	CPP
1	China Hub Power	2021-22	6.3562	0.5092	5.7108	8.6382	0.5221	6.1409	12.034	0.5304	6.7296	11.2902	0.538	7.2117
2	HSR (Sahiwal Coal)	2021-22	11.0828	0.1889	4.7894	12.8493	0.2012	5.2379	16.3442	0.2092	5.7787	23.9561	0.2166	6.1394
3	Engro Thar PowerGen	2021-22	5.6771 2.4853	1.0776	5.8156	6.1354 2.4077	1.0899	6.2533	6.3452 2.5183	1.0979	6.6408	6.8161 2.5283	1.1053	6.9755
4	Port Qasim	2021-22	7.3026	0.1918	4.7798	10.7306	0.2043	5.1881	16.6909	0.2124	5.7679	15.3063	0.2198	6.1774

Source: NEPRA

TABLE 88 (H)

Indexed/Adjusted Tariff of Wind Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July	October	January	April
1	Zorlu Enerji Pakistan	2018-19	17.9667	18.1441	20.4187	20.5278
		2019-20	23.6034	23.1985	22.2882	22.9707
		2020-21	23.2873	23.1664	22.3285	21.9163
		2021-22	22.0815	22.8368	24.6398	24.9682
2	FFC Energy	2018-19	17.2546	17.3951	19.5463	19.6342
		2019-20	21.5151	21.2441	21.0670	21.5756
		2020-21	19.9800	19.8961	19.8252	19.5240
		2021-22	19.8548	18.9647*	19.7126	19.9137
3	Three Gorges First Wind	2018-19	20.3083	20.4662	23.2130	23.3118
		2019-20	27.0625	26.6905 26.5770	25.1033	25.6821
		2020-21	26.7102	26.6198	25.4996	25.1445
		2021-22	25.1220	25.7758	28.2415	28.5411
4	Foundation Wind Energy-I	2018-19	17.8443	18.0284	19.7688	19.8838
		2019-20	25.1473	24.7601	23.8942	24.6497 24.9775
		2020-21	24.4571	24.3459	23.5319	23.0836
		2021-22	23.3628	24.2672	26.295	26.7278
5	Foundation Wind Energy-II	2018-19	17.8796	18.0704	19.7522	19.8706
		2019-20	25.0368	24.5439 24.8512	24.0837	24.8866
		2020-21	24.5426	24.4267	23.6097	23.1469
		2021-22	23.4395	24.3703	26.3422	26.7862
6	Sapphire Wind	2018-19	20.6839	21.1323	23.7910	23.8683
		2019-20	27.5397	26.0614	24.9046	27.1724
		2020-21	26.6567	26.2951	25.4446	24.3491
		2021-22	25.1177	27.1121	28.2928	29.5654
7	Younus Energy	2018-19	20.4896	21.6008	24.0252	24.3956
		2019-20	27.2397	27.1671	26.8452	26.2986
		2020-21	24.2429	24.1483	23.8151	23.5249
		2021-22	23.8856	25.0112	26.8006	27.8182
8	Metro Power	2018-19	17.2393	17.4052	19.9974	20.1004
		2019-20	22.7522	22.3284	22.3023	22.9764
		2020-21	21.5079	21.4077	20.8006	20.4094
		2021-22	20.6884	21.4656	23.3371	23.7037
9	Gul Ahmad Wind	2018-19	20.6718	21.4669	24.0531	24.2742
		2019-20	27.5522	26.7696	26.4118	26.8439
		2020-21	25.4623	25.2299	24.6385	23.9458
		2021-22	24.506	26.0668	27.5838	28.7922
10	Master Wind Energy	2018-19	20.6718	21.4669	24.0531	24.2742
		2019-20	27.5522	26.7696	26.4118	26.8439
		2020-21	25.4623	25.2299	24.6385	23.9458
		2021-22	24.506	26.0668	27.5839	28.7922
11	Tenaga Generasi	2018-19	20.7503	21.3769	24.0266	24.1695
		2019-20	27.6482	26.5027	26.1287	27.0693
		2020-21	26.0596	25.7589	25.0382	24.1419
		2021-22	24.8034	26.5795	27.9328	29.2217
12	Act Wind	2018-19	20.5150	21.6469	24.1057	24.4835
		2019-20	27.3604	27.3036	26.9783	26.3928
		2020-21	24.2678	24.1722	23.8389	23.5535
		2021-22	23.9107	21.2522*	22.9626	23.9021
13	HydroChina Dawood	2018-19	20.8985	21.3613	24.1010	24.1596
		2019-20	27.8426	26.3196	25.9214	27.3539
		2020-21	26.6569	26.2843	25.4348	24.3327
		2021-22	25.0930	27.0824	28.276	29.692
14	Sachal Energy	2018-19	20.4905	20.6191	23.0006	24.3846
		2019-20	27.9771	27.6142	25.5704	26.1775
		2020-21	26.3683	26.2782	24.5596	24.2078
		2021-22	24.2157	24.9084	26.689	27.0451

S. No.	Power Plant	Year	July	October	January	April
15	UEP Wind	2018-19	20.8985	21.3613	24.101	24.1596
		2019-20	27.8426	26.3196	25.9214	27.3539
		2020-21	26.6569	26.2843	25.4348	24.3327
		2021-22	25.0930	27.0824	28.2760	29.692
16	AEP Wind	2018-19	14.0035	14.3652	15.3666	15.5158
		2019-20	17.0711	16.7807	16.6594	16.9378
		2020-21	16.4777	16.3933	16.1102	15.7992
		2021-22	16.0942	14.8627	15.5151	15.9393
17	Jhimpir Power	2018-19	15.5386	15.8990	18.0347	18.0709
		2019-20	20.9067	19.7179	19.4016	20.4823
		2020-21	19.8729	19.5868	18.9343	18.0884
		2021-22	18.6771	20.2101	21.1386	22.2877
18	Hawa Energy	2018-19	15.5386	15.8990	18.0347	18.0709
		2019-20	20.9067	19.7179	19.4016	20.4823
		2020-21	19.8729	19.5868	18.9343	18.0884
		2021-22	18.6771	20.2100	21.1385	22.2876
19	Three Gorges Third Wind	2018-19	14.7793	15.1150	16.9769	17.1334
		2019-20	20.0007	19.0053	18.8088	20.1121
		2020-21	20.1137	19.8588	19.1945	18.3207
		2021-22	18.9154	20.4669	21.4082	22.5878
20	Three Gorges Second Wind	2018-19	14.7793	15.1150	16.9769	17.1334
		2019-20	20.0007	19.0053	18.8088	20.1121
		2020-21	20.1137	19.8588	19.1945	18.3207
		2021-22	18.9154	20.4669	21.4082	22.5878
21	Tricon Boston Consulting-A	2018-19	15.8113	16.1806	18.3656	18.3990
		2019-20	21.2793	20.0640	19.7380	20.8233
		2020-21	20.1643	19.8710	19.2092	18.3490
		2021-22	18.9435	20.4970	21.4414	22.6401
22	Tricon Boston Consulting-B	2018-19	15.8113	16.1806	18.3656	18.3990
		2019-20	21.2793	20.0640	19.7380	20.8233
		2020-21	20.1643	19.8710	19.2092	18.3490
		2021-22	18.9435	20.4970	21.4414	22.6401
23	Tricon Boston Consulting-C	2018-19	15.8113	16.1806	18.3656	18.3990
		2019-20	21.2793	20.0640	19.7380	20.8233
		2020-21	20.1643	19.8710	19.2092	18.3490
		2021-22	18.9435	20.4970	21.4413	22.6401
24	Zephyr Power	2018-19			18.3682	18.5435
		2019-20	21.1715	20.5759	20.2719	20.4752
		2020-21	19.1167	18.9270	18.4634	17.9330
		2021-22	18.3552	19.5777	20.906	22.0036

** Revised Tariff after negotiations*
Source: NEPRA

TABLE 88 (I)

Indexed/Adjusted Tariff of Solar Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	July	October	January	April
1	Quid-e-Azam Solar	2018-19	20.5368	21.5440	23.7915	24.0997
		2019-20	26.7641	26.6133	26.2788	25.8459
		2020-21	24.0405	23.9233	23.5572	21.0250
		2021-22	21.2981	22.1694	23.5694	24.3394
2	Appollo Solar	2018-19	20.0387	20.4683	23.0035	23.1445
		2019-20	26.8675	25.4920	25.1847	26.7818
		2020-21	26.5411	26.1886	25.3171	24.2124
		2021-22	24.9945	27.0009	28.1694	29.3158
3	Best Green Energy	2018-19	21.0837	21.5567	24.3449	24.4158
		2019-20	28.2253	26.6872	23.1985	27.8027
		2020-21	27.1687	26.7901	25.9056	24.7694
		2021-22	25.5584	27.6126	28.8366	30.2248
4	Crest Energy	2018-19	21.2023	21.6779	24.4575	24.5484
		2019-20	28.4075	26.8817	26.5052	28.0628
		2020-21	27.5127	27.1294	26.2332	25.0897
		2021-22	25.8913	27.9732	29.2076	30.5662
5	Harappa Solar	2018-19	16.6206	16.8906	18.3356	18.4048
		2019-20	20.3902	19.6870	19.5482	20.3437
		2020-21	20.0679	19.8812	19.4414	18.8648
		2021-22	19.2590	18.3647*	18.9144	19.5693
6	AJ Power	2018-19	16.3362	16.6052	18.0382	18.1080
		2019-20	20.0734	19.3800	19.2428	20.0325
		2020-21	19.7567	19.5745	19.1423	18.5742
		2021-22	18.9671	18.0936*	18.642	19.298

** Revised Tariff after negotiations*
Source: NEPRA

TABLE 88 (J)

Indexed/Adjusted Tariff of Bagasse Plants on Quarterly Basis (Rs./kWh) As on 1st of

S. No.	Power Plant	Year	FCC	July	October	January	April
1	Almoiz Industries	2018-19	Upfront			6.9739	7.1008
		2019-20		7.8985	8.0018	7.9306	7.5691
		2020-21		6.732	6.7158	6.6451	6.6268
		2021-22		6.6889	6.2498*	6.8801	7.2134
2	RYK Mills	2018-19	6.2089	5.9616	6.2841	6.9219	7.0255
		2020-21		7.7188	7.7694	7.7055	7.4705
		2019-20		6.8632	6.8517	6.7857	6.7508
		2021-22		6.8250	6.3624*	6.8065	7.035
3	Chiniot Power	2018-19	6.2089	5.9414	6.2746	6.9308	7.0384
		2019-20		7.7498	7.8095	7.7439	7.4873
		2020-21		6.8408	6.8285	-	6.7297
		2021-22		6.8019	7.0471	7.5426	7.8081
4	The Thal Industries	2018-19	Upfront	5.8721	6.2418	6.9612	7.0824
		2019-20		7.8549	7.9454	7.8758	7.5451
		2020-21		6.7639	6.7488	6.6793	6.6569
		2021-22		6.7219	6.2787	6.8622	7.1701
5	Jamal Din Wali-II	2018-19	6.2089	5.9616	6.2841	6.9219	7.0255
		2019-20		7.7188	7.7694	7.7055	7.4705
		2020-21		6.8633	6.8516	6.7856	6.7507
		2021-22		6.8249	6.3685*	6.8067	7.0351
6	Jamal Din Wali-III	2018-19	6.2089	5.9616	6.2841	6.9219	7.0255
		2019-20		7.7188	7.7694	7.7055	7.4705
		2020-21		6.8633	6.8516	6.7856	6.7507
		2021-22		6.8249	6.3685*	6.8067	7.0351
7	Hamza Sugar	2018-19	6.2089	5.8962	6.2533	6.9508	7.0673
		2019-20		7.8181	7.8978	7.8302	7.5251
		2020-21		6.7907	6.7766	6.7079	
		2021-22		6.7496	6.3029*	6.8474	7.1339
8	Channar Energy	2021-22		6.6889	6.2498*	6.8801	7.2134

** Revised Tariff after negotiations*

Source: NEPRA

TABLE 89

Insurance Cost Component

S. No.	Company Name	Insurance Premium (Rs. in Million)		Insurance Component (Rs./kWh)		Period
		Reference	Revised	Reference	Revised	
1.	Harappa Solar	12,849,379	15,646,010	0.4808	0.5837	October 14, 2020 to October 13, 2021
2.	AJ Power	7,034,305	5,488,860	0.3936	0.3072	December 14, 2020 to December 13, 2021
3.	Gharo Solar	29,290,000	28,853,150	0.3010	0.2966	December23, 2021 to December22, 2022
4.	Tricon Boston-C	96,554,760	34,948,169	0.6349	0.2292	November 22, 2020 to November21, 2021
5.	Tricon Boston-B	96,554,760	34,948,169	0.6349	0.2292	November 22, 2020 to November21, 2021
6.	Tricon Boston-A	96,554,760	34,948,169	0.6349	0.2292	November22, 2020 to November21, 2021
7.	FWEL-II	47,555,000	64,949,532	0.3309	0.4520	July01, 2021 to June 30, 2022
8.	FWEL-I	47,555,000	64,949,535	0.3291	0.4495	July01, 2021 to June 30, 2022
9.	Artistic Energy	67,179,530	71,233,632	0.4444	0.4713	March 16, 2021 to March 15, 2022
10.	Jhimpir Power	96,817,558	66,281,550	0.6349	0.4346	March 16, 2021 to March 15, 2022
11.	Hawa Energy	96,817,558	66,138,233	0.6349	0.4337	March 15, 2021 to March 14, 2022
12.	Sachal Energy	66,547,000	67,482,923	0.4875	0.4944	April 11,2021 to April 10, 2022
13.	Zephyr Power	102,784,097	73,061,170	0.6349	0.4766	March 28, 2021 to March 27, 2022
14.	Metro Power	61,436,000	105,617,984	0.4317	0.7422	September 16, 2021 to September 15, 2022
15.	FFC	69,874,959	54,195,702	0.4867	0.3775	January01, 2022 to December31, 2022
16.	ACT Wind	44,669,719	70,219,390	0.5483	0.8619	October 08, 2021 to October 07, 2022
17.	Three Gorges-III	96,360,090	43,054,329	0.6349	0.2837	June 09, 2021 to June 08, 2022
18.	Three Gorges-II	96,360,090	43,053,387	0.6349	0.2837	June 20, 202] to June 19, 2022
19.	Three Gorges-I	74,157,000	82,361,457	0.5347	0.5938	November 26, 2021 to November 25, 2022

Source: NEPRA

Table 90
Use of Transmission System Charges

(A) National Transmission and Despatch Company Limited

Description	Rs./kW/Month
FY 2014-15	126.75
FY 2015-16	133.18
FY 2016-17	148.33
FY 2017-18	159.08
FY 2018-19	176.16

Note: The review decision of NTDC for the use of system charges of NTDC for FY 2019-20, FY 2020-21 and FY 2021-22 is under process with NEPRA
Source: NEPRA

(B) Pak Matiari Lahore Transmission Company Pvt. Ltd (PMLTC)

Description	Dec-18	Jul-Sep 2021	Oct-Dec 2021	Jan-March 2022	April-June 2022
	Reference	Allowed	Allowed	Allowed	Allowed
Fixed O&M ITC (Foreign)	0.0441	0.0746	0.0818	0.0866	0.0910
Local ITC O&M	0.0323	0.0420	0.0420	0.0420	0.0420
Local NTDC O&M	0.0411	0.0534	0.0534	0.0534	0.0534
Land Lease	0.0073	0.0073	0.0073	0.0073	0.0073
Insurance	0.0409	0.0409	0.0409	0.0409	0.0409
ROE	0.1680	0.2547	0.2751	0.2864	0.2948
ROEDC	0.0388	0.0588	0.0635	0.0661	0.0681
Principal	0.3038	0.4606	0.4975	0.4975	0.5331
Interest	0.2189	0.2729	0.2946	0.2946	0.4059
Sinosure Fee	0.0250	0.0250	0.0250	0.0250	0.0250
Total Tariff (PKR/kW/hr)	**0.9202**	**1.2902**	**1.3811**	**1.3997**	**1.5614**
Total Tariff (US Cents/kWh)	**0.8814**	**0.8151**	**0.8079**	**0.7866**	**0.8523**

Source: NEPRA

(C) Sindh Transmission and Despatch Company Pvt. Ltd. (STDC)

Description	Reference	Interim Relief (July - Dec 2021)	Indexation Adjustment (Jan-Jun 2022)
	(Rs./kW/Hr)	(Rs./kW/Hr)	(Rs./kW/Hr)
O & M	0.1411	0.197	0.2211
Insurance	0.0192	0.0192	0.0192
ROE	0.0935	0.0935	0.0935
Debt Servicing	0.2127	0.2288	0.2643

Source: NEPRA

TABLE 91 (A)

Consumer-end Applicable Tariff from November 2021 and onwards CPPA-G System

Description	Fixed Charges	Notified Tariff w.e.f. 01-01-2019	Fixed Charges	Notified Tariff w.e.f. 12-02-2021	Fixed charges	Notified Base Tariff w.e.f. 01-11-2021
		Variable Charges		Variable Charges		Variable Charges
	Rs./ kW/M	Rs./kWh	Rs./ kW/M	Rs./kWh	Rs./ kW/M	Rs./kWh
A1- Residential						
Up to 50 Units		2.00		3.95		3.95
For peak load requirement less than 5 kW						
01-100 Units		5.79		7.74		9.42
101-200 Units		8.11		10.06		11.74
201-300 Units		10.20		12.15		13.83
301-700Units		17.60		19.55		21.23
Above 700 Units		20.70		22.65		24.33
For peak load requirement exceeding 5 kW)						
Time of Use (TOU) - Peak		20.70		22.65		24.33
Time of Use (TOU) - Off-Peak		14.38		16.33		18.01
Temporary Supply		20.84		22.79		24.47
A2- Commercial						
For peak load requirement less than 5 kW		18.00		19.95		21.34
For peak load requirement exceeding 5 kW						
Regular	400	19.68	440	21.63	440	23.02
Time of Use (TOU) - Peak		21.60		23.55		24.94
Time of Use (TOU) - Off-Peak	400	15.63	440	17.58	440	18.97
Temporary Supply		18.39		20.34		21.73
A3- General Services		17.56		19.51		20.90

Description	Fixed Charges	Notified Tariff w.e.f. 01-01-2019	Fixed Charges	Notified Tariff w.e.f. 12-02-2021	Fixed charges	Notified Base Tariff w.e.f. 01-11-2021
		Variable Charges		Variable Charges		Variable Charges
	Rs./ kW/M	Rs./kWh	Rs./ kW/M	Rs./kWh	Rs./ kW/M	Rs./kWh
B- Industrial						
B1 (upto 25kW)		15.28		17.23		18.62
B1 - TOU (Peak)		18.84		20.79		16.62
B1 Off Peak		13.28		15.23		16.62
B2 (25-500 kW)	400	14.78	440	16.73	440	18.12
B2 - TOU (Peak)		18.78		20.73		16.41
B2 - TOU (Off-peak)	400	13.07	440	15.02	440	16.41
B3 - TOU (Peak)		18.78		20.73		16.32
B3 - TOU (Off-peak)	380	12.98	420	14.93	420	16.32
B4 - TOU (Peak)		18.78		20.73		16.22
B4 - TOU (Off-peak)	360	12.88	400	4.83	400	16.22
Temporary Supply		16.36		18.31		19.70
C - Single Point Supply						
C1(a) Supply at 400 Volts-less than 5 kW		18.68		20.63		2.02
C1(b) Supply at 400 Volts-exceeding 5 kW	400	18.18	440	20.13	440	21.52
Time of Use (TOU) - Peak		21.60		23.55		24.94
Time of Use (TOU) - Off-Peak	400	15.00	440	16.95	440	18.34
C2 Supply at 11 kV	380	17.98	420	19.93	420	21.32
Time of Use (TOU) - Peak		21.60		23.55		24.94
Time of Use (TOU) - Off-Peak	380	14.80	420	16.75	420	18.14
C3 Supply above 11 kV	360	17.88	400	19.83	400	21.22
Time of Use (TOU) - Peak		21.60		23.55		24.94
Time of Use (TOU) - Off-Peak	360	14.70	400	16.65	400	18.04
D- Agricultural						
Scarp		15.68		17.63		19.02
Time of Use (TOU) - Peak		18.60		20.55		21.94
Time of Use (TOU) - Off-Peak	200	11.35	200	13.30	200	14.69
Agricultual Tube-wells	200	5.35	200	7.30	200	8.69
Time of Use (TOU) - Peak		5.35		7.30		8.69
Time of Use (TOU) - Off-Peak	200	5.35	200	7.30	200	8.69
Public Lighting - Tariff G		18.68		20.63		22.02
Residential Colonies - Tariff H		18.68		20.63		22.02
Railway Traction Tariff I		18.68		20.63		22.02
Tariff K - AJK	360	15.90	400	17.85	400	19.24
Time of Use (TOU) - Peak		21.60		23.55		24.94
Time of Use (TOU) - Off-Peak	360	14.70	400	16.65	400	18.04
Tariff K -Rawat Lab		18.68		20.63		22.02

Table 91 (B)
Consumer-end Determined Tariff for K-Electric Applicable for April – June 2022

Sr. No.	TARIFF CATEGORY / PARTICULARS	FIXED CHARGES	VARIABLE CHARGES		Quarterly Adjustment		TOTAL VARIABLE CHARGES	
		Rs/kW/M	Rs/kWh		Rs/kWh		Rs/kWh	
A 1 Residential								
a)	For Sanctioned load less than 5 kW							
i	Up to 50 Units - Life Line	-		4.00				4.00
ii	51 - 100 Units - Life Line			23.41		3.55		26.96
iii	001 - 100 Units			23.41		3.55		26.96
iv	101 - 200 Units			25.00		3.55		28.55
v	001- 100 Units	-		23.41		3.55		26.96
vi	101- 200 Units	-		25.00		3.55		28.55
vii	201- 300 Units	-		26.21		3.55		29.76
viii	301- 400 Units	-		27.26		3.55		30.81
ix	401- 500 Units			27.26		3.55		30.81
x	501- 600 Units			27.26		3.55		30.81
xi	601- 700 Units			27.26		3.55		30.81
xii	Above 700 Units	-		29.61		3.55		33.16
b)	For Sanctioned load 5 kW & above							
			Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
	Time Of Use	-	30.82	26.64	3.55	3.55	34.37	30.19
A-2 GENERAL SUPPLY TARIFF - COMMERCIAL								
a)	For Sanctioned load less than 5 kW			27.57		3.55		31.12
b)	For Sanctioned load 5 kW & above	440		26.80		3.55		30.35
			Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
c)	Time Of Use	440	30.81	26.58	3.55	3.55	34.36	30.13

Sr. No.	TARIFF CATEGORY / PARTICULARS	FIXED CHARGES	VARIABLE CHARGES		Quarterly Adjustment		TOTAL VARIABLE CHARGES	
		Rs/kW/M	Rs/kWh		Rs/kWh		Rs/kWh	
A-3 GENERAL SERVICES								
a)	General Services	-		27.76		3.55		31.31
	B INDUSTRIAL SUPPLY TARIFFS							
B1	Upto 25 kW (at 400/230 Volts)	-		27.81		3.55		31.36
B2(a)	25-500 kW (at 400 Volts)	440		26.96		3.55		30.51
B3(a)	For all loads upto 5000 KW (at 11,33 kV)	420		26.81		3.55		30.36
B4(a)	For all loads upto 5000 KW (at 66,132 kV)	400		26.31		3.55		29.86
	Time Of Use		Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
B1(b)	Upto 25 kW (at 400/230 Volts)	-	30.81	26.81	3.55	3.55	34.36	30.36
B2(b)	25-500 kW (at 400 Volts)	440	30.81	26.31	3.55	3.55	34.36	29.86
B3(b)	For All Loads up to 5000 kW (at 11,33 kV)	420	30.81	25.81	3.55	3.55	34.36	29.36
B4(b)	For All Loads (at 66,132 kV & above)	400	30.81	25.56	3.55	3.55	34.36	29.11
B5	For All Loads (at 220 kV & above)	340	30.81	24.81	3.55	3.55	34.36	28.36
C - SINGLE-POINT SUPPLY								
C -1	For supply at 400/230 Volts							
a)	Sanctioned load less than 5 kW	-		27.81		3.55		31.36
b)	Sanctioned load 5 kW & up to 500 kW	440		26.81		3.55		30.36
C -2(a)	For supply at 11,33 kV up to and including 5000 kW	420		26.81		3.55		30.36
C -3(a)	For supply at 132 and above, up to and including 5000 kW	400		26.31		3.55		29.86
	Time Of Use		Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
C -1(c)	For supply at 400/230 Volts 5 kW & up to 500 kW	440	30.81	26.31	3.55	3.55	34.36	29.86
C -2(b)	For supply at 11,33 kV up to and including 5000 kW	420	30.81	25.81	3.55	3.55	34.36	29.36
C -3(b)	For supply at 132 kV up to and including 5000 kW	400	30.81	25.56	3.55	3.55	34.36	29.11
D - AGRICULTURE TARIFF								
D-1	For all Loads	200		25.53		3.55		29.08
	Time of Use		Peak	Off-Peak	Peak	Off-Peak	Peak	Off-Peak
D-2	For all Loads	200	30.81	25.11	3.55	3.55	34.36	28.66
	E - TEMPORARY SUPPLY TARIFFS							
E-1(i)	Residential Supply	-		28.31		3.55		31.86
E-1(ii)	Commercial Supply	-		28.91		3.55		32.46
E-2 (i)	Industrial Supply	-		29.36		3.55		32.91
E-2 (ii)	Bulk Supply							
	(a) at 400 Volts	-		29.31		3.55		32.86
	(b) at 11 kV			29.29		3.55		32.84
For the categories of E-1(i&ii) and E-2 (I&ii) above, the minimum bill of the consumers shall be Rs. 50/- per day subject to a minimum of Rs.500/- for the entire period of supply, even if no energy is consumed.								
F - SEASONAL INDUSTRIAL SUPPLY TARIFF								
125% of relevant industrial tariff								
Note:	Tariff-F consumers will have the option to convert to Regular Tariff and vice versa. This option can be exercised at the time of a new connection or at the beginning of the season. Once exercised , the option remains in force for at least one year.							
	G- PUBLIC LIGHTING							
	Street Lighting		-	28.21		3.55		31.76
H - RESIDENTIAL COLONIES ATTACHED TO INDUSTRIAL PREMISES								
	Residential Colonies attached to industrial premises	-		28.31		3.55		31.86

Source: NEPRA

Table 92
National Average Uniform Determined Tariff with PYA

Description	Fixed Charge Rs./kW/M	IESCO	FESCO	LESCO	MEPCO	GEPCO	PESCO	HESCO	SEPCO	QESCO	TESCO	Uniform National Average Determined tariff with PYA w.e.f July 2022
		Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh
Residential												
For peak load requirement less than 5 kW												
Up to 50 Units - Life Line		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
51-100 units - Life Line		14.58	15.16	13.76	15.60	15.03	18.03	22.16	21.26	17.55	16.83	16.61
01-100 Units		17.55	18.15	16.77	18.66	18.03	21.03	25.19	24.27	20.55	19.83	18.88
101-200 Units		19.55	20.15	18.77	20.67	20.03	23.04	27.20	26.27	22.54	21.83	21.06
01-100 Units		20.20	20.79	19.39	21.26	20.67	23.62	27.82	26.89	23.16	22.45	22.46
101-200 Units		23.37	23.98	22.58	24.45	23.82	26.81	31.04	30.08	26.35	25.64	24.85
201-300 Units		23.90	24.49	23.10	24.96	24.33	27.32	31.55	30.59	26.86	26.15	25.33
301-400 Units		25.14	25.73	24.34	26.20	25.57	28.56	32.79	31.83	28.10	27.39	26.33
401-500 Units		25.58	26.17	24.78	26.64	26.01	29.00	33.23	32.28	28.54	27.83	26.82
501-600 Units		26.58	27.17	25.78	27.64	27.01	30.00	34.23	33.28	29.54	28.83	27.81
601-700Units		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.54	29.83	28.97
Above 700 Units		28.58	29.17	27.78	29.64	29.01	32.00	36.23	35.28	31.54	30.84	30.30
For peak load requirement exceeding 5 kW)												
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.53	29.83	27.80
Time of Use (TOU) - Off-Peak		20.20	20.79	19.40	21.26	20.63	23.62	27.85	26.90	23.15	22.45	20.44
Temporary Supply		28.58	29.17	27.78	29.64	29.01	32.00	36.23	35.28	31.53	30.83	28.89
Total Residential												
Commercial - A2												
For peak load requirement less than 5 kW		24.56	25.16	23.77	25.62	24.99	27.98	32.21	31.26	27.51	26.81	25.81
For peak load requirement exceeding 5 kW												
Regular	500	23.08	23.17	21.78	23.64	23.03	26.02	30.25	29.30	25.55	24.85	24.58
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.04	31.03	35.26	34.31	30.56	29.86	28.77
Time of Use (TOU) - Off-Peak	500	21.48	22.07	20.68	22.54	21.91	24.90	29.13	28.18	24.43	23.73	22.70
Temporary Supply		24.64	25.15	23.76	25.62	25.01	28.00	32.23	31.28	27.53	26.83	24.64
Electric Vehicle Charging Station		26.13	25.48	25.22	25.05	25.35	24.79	25.36	25.00	26.96	25.00	25.59
Total Commercial												
General Services-A3		24.61	25.19	23.85	25.70	24.78	28.04	32.26	31.32	27.57	26.92	26.36
Industrial												
B1		23.59	24.28	22.87	24.62	24.07	27.03	31.16	29.98	26.06	25.93	24.48
B1 Peak		27.48	28.17	26.76	28.51	27.96	30.92	35.05	33.87	29.95	29.82	28.31
B1 Off Peak		21.38	22.07	20.66	22.41	21.86	24.82	28.95	27.77	23.85	23.72	22.23
B2	500	23.48	24.17	22.76	24.51	23.96	26.92	31.05	29.87	25.95	25.82	24.69
B2 - TOU (Peak)		27.48	28.17	26.76	28.51	27.96	30.92	35.05	33.87	29.95	29.82	28.54
B2 - TOU (Off-peak)	500	20.88	21.57	20.16	21.91	21.36	24.32	28.45	27.27	23.35	23.22	21.97
B3 - TOU (Peak)		27.48	28.17	26.76	28.51	27.96	30.92	35.05	33.87	29.95	29.82	28.11
B3 - TOU (Off-peak)	460	22.28	22.97	21.56	23.31	22.76	25.72	29.85	28.67	24.75	24.62	22.97
B4 - TOU (Peak)		27.48	28.17	26.76	28.51	27.96	30.92	35.05	33.87	29.95	29.82	28.64
B4 - TOU (Off-peak)	440	22.08	22.77	21.36	23.11	22.56	25.52	29.65	28.47	24.55	24.42	23.19
Temporary Supply		26.48	27.17	25.76	27.51	26.96	29.92	34.05	32.87	28.95	28.82	27.21
Total Industrial												

Description	Fixed Charge Rs./kW/M	IESCO	FESCO	LESCO	MEPCO	GEPCO	PESCO	HESCO	SEPCO	QESCO	TESCO	Uniform National Average Determined tariff with PYA w.e.f July 2022
		Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh	Variable Charges Rs./kWh
Single Point Supply												
C1(a) Supply at 400 Volts-less than 5 kW		24.19	24.78	23.39	25.25	24.62	27.61	31.84	30.89	27.14	26.44	29.96
C1(b) Supply at 400 Volts-exceeding 5 kW	500	23.99	24.58	23.19	25.05	24.42	27.41	31.64	30.69	26.94	26.24	28.74
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.53	29.83	30.36
Time of Use (TOU) - Off-Peak	500	20.98	21.57	20.18	22.04	21.41	24.40	28.63	27.68	23.93	23.23	23.82
C2 Supply at 11 kV	460	23.89	24.48	23.09	24.95	24.32	27.31	31.54	30.59	26.84	26.14	25.72
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.53	29.83	28.77
Time of Use (TOU) - Off-Peak	460	22.38	22.97	21.58	23.44	22.81	25.80	30.03	29.08	25.37	24.63	23.63
C3 Supply above 11 kV	440	23.78	24.37	22.98	24.84	24.21	27.20	31.43	30.48	26.73	26.03	24.32
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.53	29.83	27.72
Time of Use (TOU) - Off-Peak	440	22.18	22.77	21.38	23.24	22.61	25.60	29.83	28.88	25.13	24.43	22.34
Total Single Point Supply												
Agricultural Tube-wells - Tariff D												
Scarp		24.19	24.78	23.39	25.25	24.62	27.61	31.84	30.89	27.13	26.44	27.65
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.52	29.83	32.62
Time of Use (TOU) - Off-Peak	200	20.98	21.57	20.18	22.04	21.41	24.40	28.63	27.68	23.93	23.23	24.58
Agricultural Tube-wells	200	24.19	24.78	23.39	25.25	24.62	27.61	31.84	30.89	27.12	26.44	27.02
Time of Use (TOU) - Peak		27.58	28.17	26.78	28.64	28.01	31.00	35.23	34.28	30.51	29.83	28.51
Time of Use (TOU) - Off-Peak	200	20.98	21.57	20.18	22.04	21.41	24.40	28.63	27.68	23.91	23.23	21.83
Total Agricultural												
Public Lighting - Tariff G		27.88	28.45	27.11	28.94	28.31	31.30	35.63	34.58	30.83	30.13	28.64
Residential Colonies		28.18	28.75	27.40	29.24	28.61	31.60	36.03	34.88	31.13	30.43	29.62
Railway Traction		-	-	27.42	29.24	-	-	-	-	-	-	29.03
Tariff K - AJK	440	24.19	-	-	-	24.62	27.61	-	-	-	-	24.19
Time of Use (TOU) - Peak		27.58	-	-	-	28.01	31.00	-	-	-	-	28.46
Time of Use (TOU) - Off-Peak	440	20.98	-	-	-	21.41	24.40	-	-	-	-	21.83
Tariff K -Rawat Lab		28.18	-	-	-	-	-	-	-	-	-	28.18

This tariff shall remain applicable for the period of one year from the date of notification
Source: NEPRA

TABLE 93 (A)

Monthly Fuel Price Adjustment in respect of all DISCOs and K-Electric

Monthly Fuel Price Adjustment of CPPA System															
Year	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22		
	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation
July	4.7839	6.4933	-1.7094	5.5011	4.9927	0.5084	5.3219	3.5420	1.7799	4.3796	3.5420	0.8376	6.657	5.2798	1.3771
Aug.	4.6363	6.4562	-1.8198	5.9186	4.7552	1.1635	4.8660	3.2045	1.6615	3.6873	3.2045	0.4828	6.6872	4.7334	1.9539
Sep.	3.9548	2.8410	1.1138	5.3216	5.1217	0.1999	4.6676	2.8410	1.8266	3.9548	2.8410	1.1138	7.5502	5.0229	2.5272
Oct.	5.0821	7.3369	-2.2548	5.7107	5.2366	0.4741	5.3235	3.7579	1.5656	4.0505	-3.7579	0.2925	9.9179	5.1733	4.7446
Nov.	4.1897	7.3040	-3.1143	4.7269	5.0497	-0.3228	3.4701	2.4877	0.9824	3.5273	-2.4877	0.7696	8.0401	3.7381	4.3020
Dec.	5.1193	8.1037	-2.9844	6.4303	5.8619	0.5685	6.3381	4.4602	1.8779	5.9961	4.4602	1.5359	8.6315	5.5347	3.0968
Jan.	6.6249	9.8670	-3.2421	7.5633	5.7576	1.8056	6.8684	5.7576	1.1108	6.6530	5.7576	0.8954	12.4614	6.5124	5.9490
Feb.	4.9737	7.2603	-2.2866	4.7800	3.9710	0.8090	5.1760	3.9710	1.2051	4.7830	4.1414	0.6416	9.1046	4.2516	4.8530
Mar.	6.2134	8.0985	-1.8851	4.9638	5.0010	-0.0372	5.1079	5.0010	0.1069	5.5861	6.2295	-0.6434	9.0974	6.2295	2.8678
April	6.0329	6.7227	-0.6898	5.7876	5.2359	0.5508	4.5319	5.2359	-0.7040	6.1715	6.6087	-0.4371	10.6009	6.6087	3.9923
May	6.5120	5.2908	1.2212	5.1456	5.0457	0.0999	3.7939	5.0457	-1.2517	5.6678	5.9322	-0.2644	13.8363	5.9322	7.9040
June	5.5011	4.9927	0.5084	5.3129	3.5420	1.7990	4.0550	5.1150	-1.0581	5.7414	5.9344	-0.1930	15.8315	5.9344	9.8972
Monthly Fuel Price Adjustment of K-Electric System															
Year	FY 2017-18			FY 2018-19			FY 2019-20			FY 2020-21			FY 2021-22		
	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation	Act. Fuel Cost (Rs.)	Ref. Fuel Cost (Rs.)	Variation
July	5.6406	5.8618	-0.2122	9.0450	8.4302	0.6148	11.3069	10.0958	1.2110	8.6177	7.8921	-0.7478	11.5811	10.8921	0.6890
Aug.	5.8984	5.8618	0.0366	8.9818	8.4302	0.5516	10.8542	10.0958	0.7584	8.1999	7.8921	0.7526	11.6532	10.8921	0.7611
Sep.	5.5726	5.8618	-0.2892	9.1813	8.4302	0.7511	10.4028	10.0958	0.3070	8.6022	7.8921	0.3078	14.6492	10.8921	3.7571
Oct.	6.0075	5.5726	0.4349	10.7689	9.1813	1.5876	10.5052	10.4028	0.1024	8.5734	8.6022	0.7101	15.7243	14.6492	1.0751
Nov.	5.4526	5.5726	-0.1200	9.7614	9.1813	0.5801	8.2763	10.4028	-2.1265	7.5005	8.6022	-0.0288	13.8902	14.6492	-0.7590
Dec.	5.3327	5.5726	-0.2399	9.8396	9.1813	0.6583	8.6436	10.4028	-1.7591	9.1009	8.6022	-0.1017	12.0557	14.6492	-2.5935
Jan.	6.4802	5.3327	1.1475	9.8017	9.8396	-0.0379	9.5863	8.6436	0.9426	10.3514	9.1009	1.2505	15.3337	12.0557	3.2780
Feb.	6.3000	5.3327	0.9673	8.9077	9.8396	-0.9319	9.1529	8.6436	0.5093	11.1992	9.1009	2.0983	13.4420	12.0557	1.3863
Mar.	7.4222	5.3327	2.0895	8.6210	9.8396	-1.2186	8.6399	8.6436	-0.0038	11.0428	9.1009	1.9419	16.8827	12.0557	4.8269
April	7.7873	7.4222	0.3651	9.2779	8.6210	0.6569	7.8526	8.6399	-0.7873	10.4929	11.0428	-0.5499	22.1545	16.8827	5.2718
May	8.6174	7.4222	1.1952	10.0537	8.6210	1.4327	7.2860	8.6399	-1.3538	10.0930	11.0428	-0.9498	26.4006	16.8827	9.5180
June	8.4302	7.4222	1.0080	10.0598	8.6210	1.4748	7.8921	8.6399	-0.7478	10.8921	11.0428	0.1507	27.9850	16.8827	11.1023

Source: NEPRA

Table 93 (B)

DETAIL OF QUARTERLY ADJUSTMENTS of DISCOs

Quarterly Adjustments Period	Decision Dated	Average Rs./kWh	Notification Dated	Applicability period
2nd & 3rd Quarter FY 2019-20	24.09.2020	1.6236	19.10.2020	w.e.f. October 2020 to September 2021
4th Qtr. FY 2019-20	10.02.2021	0.8276	30.09.2021	w.e.f. October 2021 to September 2022
1st & 2nd Qtr. FY 2020-21	02.07.2021	0.8966	30.09.2021	w.e.f. October 2021 to September 2022
3rd Qtr. FY 2020-21	30.07.2021	(0.0673)	25.08.2021	w.e.f. October 2021 to September 2022
4th Qtr. FY 2020-21	30.12.2021	(0.9908)	20.01.2022	w.e.f. February , 2022 to April 2022
1st Quarter FY 2021-22	09.05.2022	0.5715	31.05.2022	w.e.f. June, 2022 to August , 2022

TABLE 94
CPI (General/US), Exchange Rate, KIBOR and LIBOR

Quarter	CPI (General)	CPI (US)	PKR/USD	KIBOR (3 Month)	LIBOR (3 Month)
July – September, 2017	216.330	244.733	105.00	6.14%	1.30%
October – December, 2017	216.610	245.519	105.45	6.15%	1.34%
January – March, 2018	220.420	246.669	110.50	6.16%	1.69%
April – June, 2018	219.580	248.991	115.40	6.50%	2.31%
July – September, 2018	225.400	251.588	121.60	6.92%	2.34%
October – December, 2018	229.270	252.146	124.30	8.32%	2.40%
January – March, 2019	234.750	252.038	139.10	10.55%	2.81%
April – June, 2019	237.610	252.776	140.70	10.99%	2.60%
July – September, 2019	245.940	256.092	164.50	12.97%	2.32%
October – December, 2019	255.940	256.558	156.70	13.85%	2.09%
January – March, 2020	263.590	257.208	155.35	13.55%	1.91%
April – June, 2020	266.200	258.678	166.75	11.22%	1.45%
July 2020 – September, 2020	269.270	256.394	168.75	7.26%	0.30%
October 2020 – December, 2020	269.270	259.918	166.40	7.25%	0.23%
January 2021 – March, 2021	269.270	260.229	160.80	7.29%	0.24%
April 2021 – June, 2021	269.270	263.014	153.60	7.59%	0.19%
Jul - Sep 2021	269.270	269.195	158.300	7.450%	0.146%
Oct - Dec 2021	269.270	273.567	170.950	7.780%	0.130%
Jan - Mar 2022	269.270	277.948	177.950	10.540%	0.209%
Apr - Jun 2022	269.270	283.716	183.200	11.950%	0.962%

** For the purpose of indexation of Local O&M components for the whole year 2021-22, CPI for June, 2020 was used. This is due to the fact that Pakistan Bureau of Statistics discontinued the publication of CPI for base year 2007-08 w.e.f. July 2020 and replaced it with National CPI for new base year 2015-16. The Authority vide its decision dated March 10, 2021 replaced CPI Base Year 2007-08 with N-CPI Base Year 2015-16, However, that decision has not been implemented pending Notification thereof in the Official Gazette. The Indexation of Local O&M components has been made on provisional basis, subject to revision upon notification of the Authority's decision of revised index.*

Source: NEPRA

TABLE 95
CPPA-G Market Operator Fee

Description	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Revenue Requirement (Rs. in Million)	451.87	391.92	236.90	468.07	863.67
Average Monthly MDI (MW)	22,695.00	23,507.00	23,640	23,693.00	26,535
Market Operation Fee (Rs./kW/Month)	1.66	1.39	0.84	1.71	2.71

Source: NEPRA

Table 96

Import by K-Electric from CPPA-G Basket (GWh)

	Jul, 2021		Aug, 2021		Sep, 2021		Oct, 2021		Nov, 2021		Dec, 2021		Jan, 2022		Feb, 2022		Mar, 2022		Apr, 2022		May, 2022		June, 2022	
	From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC		From NTDC	
Day	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs	Basket	WPPs
1	25.90	3.07	21.15	3.31	23.33	0.65	25.18	0.00	25.40	0.00	25.14	0.00	23.45	0.00	25.36	0.00	24.31	0.00	25.40	0.00	22.82	0.00	25.52	0.00
2	25.17	2.86	21.58	3.08	22.68	0.55	26.11	0.00	24.82	0.00	24.57	0.00	19.96	0.00	25.18	0.00	24.89	0.00	26.00	0.00	22.76	0.00	25.82	0.00
3	25.23	2.45	25.12	2.85	22.01	0.81	25.44	0.00	25.96	0.00	25.17	0.00	20.56	0.00	24.74	0.00	25.10	0.00	25.15	0.00	24.47	0.00	25.58	0.00
4	19.34	2.30	25.83	2.62	20.72	1.42	26.38	0.00	25.89	0.00	24.78	0.00	23.35	0.00	24.86	0.00	24.15	0.00	25.05	0.00	22.12	0.00	25.45	0.00
5	25.74	1.73	26.54	1.66	23.34	1.41	26.13	0.00	25.84	0.00	23.82	0.00	20.47	0.00	25.80	0.00	24.55	0.00	23.52	0.00	22.19	0.00	24.53	0.00
6	25.58	2.26	26.07	1.24	23.30	0.00	27.32	0.00	25.87	0.00	25.12	0.00	24.33	0.00	20.22	0.00	24.81	0.00	25.22	0.00	21.77	0.00	24.01	0.00
7	25.97	2.99	26.04	0.80	23.24	0.00	25.89	0.00	25.69	0.00	24.60	0.00	22.43	0.00	25.23	0.00	25.76	0.00	26.14	0.00	22.30	0.00	23.07	0.00
8	25.54	3.32	20.43	1.04	22.79	0.00	25.78	0.00	25.77	0.00	23.35	0.00	23.58	0.00	25.90	0.00	25.36	0.00	25.59	0.00	22.16	0.00	23.50	0.00
9	25.53	2.51	25.40	1.64	22.85	0.00	25.57	0.00	25.93	0.00	22.47	0.00	17.86	0.00	24.81	0.00	25.01	0.00	24.34	0.00	23.39	0.00	23.63	0.00
10	23.75	1.05	25.70	2.47	23.45	0.00	23.94	0.00	26.94	0.00	24.55	0.00	20.92	0.00	25.95	0.00	25.61	0.00	23.82	0.00	24.27	0.00	24.03	0.00
11	23.84	0.80	25.20	2.65	24.63	0.00	25.76	0.00	26.06	0.00	23.15	0.00	23.78	0.00	25.33	0.00	27.15	0.00	26.03	0.00	25.45	0.00	24.67	0.00
12	18.27	0.30	25.31	1.97	20.71	0.00	25.66	0.00	24.73	0.00	26.55	0.00	24.18	0.00	22.50	0.00	26.30	0.00	26.93	0.00	24.94	0.00	23.23	0.00
13	25.63	1.20	22.06	2.32	25.04	0.00	25.73	0.00	23.57	0.00	20.80	0.00	24.46	0.00	20.03	0.00	25.81	0.00	27.08	0.00	25.12	0.00	23.87	0.00
14	26.54	1.10	23.31	2.99	26.28	0.00	25.79	0.00	23.27	0.00	22.06	0.00	25.01	0.00	25.40	0.00	27.47	0.00	24.96	0.00	26.04	0.00	24.48	0.00
15	24.82	1.57	19.38	2.54	27.98	0.00	23.92	0.00	25.41	0.00	21.81	0.00	24.98	0.00	25.73	0.00	26.80	0.00	25.09	0.00	24.47	0.00	25.33	0.00
16	22.19	0.63	24.90	1.25	28.35	0.00	24.30	0.00	24.68	0.00	21.77	0.00	18.76	0.00	26.00	0.00	27.49	0.00	25.53	0.00	24.38	0.00	25.75	0.00
17	28.12	0.76	25.20	1.10	28.37	0.00	25.77	0.00	24.99	0.00	21.69	0.00	22.92	0.00	25.27	0.00	26.40	0.00	22.53	0.00	25.83	0.00	26.26	0.00
18	24.73	3.31	23.61	2.27	28.70	0.00	24.53	0.00	24.30	0.00	20.77	0.00	22.45	0.00	25.74	0.00	26.89	0.00	25.78	0.00	26.72	0.00	26.18	0.00
19	24.36	3.46	19.60	2.87	26.42	0.00	24.36	0.00	24.66	0.00	20.89	0.00	23.63	0.00	25.59	0.00	26.79	0.00	25.72	0.00	25.78	0.00	26.49	0.00
20	25.23	3.46	24.37	2.60	26.54	0.00	22.87	0.00	22.03	0.00	21.04	0.00	24.19	0.00	24.85	0.00	26.20	0.00	25.61	0.00	24.94	0.00	28.33	0.00
21	22.13	3.34	25.14	1.64	27.06	0.00	27.19	0.00	20.98	0.00	24.20	0.00	23.34	0.00	25.89	0.00	26.00	0.00	23.65	0.00	26.61	0.00	28.88	0.00
22	24.56	1.91	25.26	1.49	27.70	0.00	25.69	0.00	23.53	0.00	21.95	0.00	23.67	0.00	25.49	0.00	24.24	0.00	22.75	0.00	24.89	0.00	24.96	0.00
23	25.97	0.83	25.99	2.21	26.07	0.00	23.65	0.00	23.82	0.00	19.93	0.00	20.57	0.00	22.91	0.00	23.78	0.00	23.94	0.00	25.60	0.00	27.04	0.00
24	26.31	1.61	25.44	2.76	26.26	0.00	24.64	0.00	24.65	0.00	22.59	0.00	22.74	0.00	23.43	0.00	24.59	0.00	24.71	0.00	25.83	0.00	27.84	0.00
25	24.61	2.78	25.65	3.32	26.72	0.00	23.61	0.00	23.25	0.00	22.45	0.00	24.52	0.00	24.73	0.00	26.57	0.00	25.22	0.00	25.77	0.00	27.53	0.00
26	26.55	3.12	25.31	3.10	21.09	0.00	24.00	0.00	24.15	0.00	22.15	0.00	25.01	0.00	25.82	0.00	23.82	0.00	25.80	0.00	25.12	0.00	25.08	0.00
27	23.55	3.11	23.59	1.97	23.10	0.00	22.62	0.00	25.43	0.00	22.57	0.00	21.76	0.00	25.06	0.00	22.29	0.00	25.94	0.00	25.77	0.00	25.84	0.00
28	25.55	3.31	25.08	0.96	26.31	0.00	23.18	0.00	20.32	0.00	22.77	0.00	23.79	0.00	26.14	0.00	19.30	0.00	24.84	0.00	25.17	0.00	28.30	0.00
29	24.43	3.09	24.20	0.59	27.76	0.00	25.54	0.00	25.63	0.00	24.43	0.00	20.19	0.00			24.23	0.00	25.64	0.00	25.52	0.00	26.92	0.00
30	26.32	3.31	25.46	0.40	26.94	0.00	25.27	0.00	25.02	0.00	23.45	0.00	18.56	0.00			24.55	0.00	22.31	0.00	25.78	0.00	26.93	0.00
31	28.88	3.45	27.16	3.31			25.05	0.00			24.83	0.00	20.02	0.00			19.93	0.00			24.95	0.00		
Total	770.33	71.00	757.48	62.04	749.73	4.83	776.86	0.00	738.56	0.00	715.39	0.00	695.42	0.00	693.96	0.00	776.14	0.00	750.27	0.00	762.93	0.00	769.05	0.00

Source: National Power Control Centre (NPCC)

Table 97
Technology wise Daily Generation Capacity (MW), Daily Energy Generation (GWh) and % age Plant Utilization

July , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Load (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap
1	9,874	9,873	5,636	4,007	122.97	51.89	1,235	1,085	1,039	720	22.08	84.78	400	400	279	0	2.09	21.76	364	233	117	88	2.43	43.45
2	9,874	9,873	5,667	4,035	121.33	51.20	1,235	1,085	1,026	764	22.15	85.05	400	400	271	0	2.04	21.25	364	233	117	87	2.62	46.80
3	9,874	9,873	5,670	3,714	117.90	49.76	1,235	1,085	1,014	474	19.56	75.10	400	400	264	0	1.96	20.37	364	233	89	88	2.12	37.99
4	9,874	9,873	5,746	3,831	121.24	51.16	1,235	1,085	1,017	358	19.00	72.96	400	400	288	0	2.08	21.65	364	233	89	69	2.10	37.56
5	9,874	9,873	5,759	4,177	124.09	52.37	1,235	1,085	859	223	12.91	49.57	400	400	280	0	2.10	21.89	364	233	89	61	2.11	37.74
6	9,874	9,873	5,606	4,038	123.23	52.01	1,235	1,085	991	429	16.27	62.48	400	400	271	0	2.06	21.47	364	233	88	88	2.11	37.68
7	9,874	9,873	5,612	4,057	122.98	51.90	1,235	1,085	1,009	611	21.08	80.95	400	400	278	0	2.10	21.87	364	233	88	88	2.13	38.07
8	9,874	9,873	5,689	4,024	124.35	52.48	1,235	1,085	1,048	841	23.51	90.28	400	400	275	0	2.10	21.83	364	233	88	61	2.13	38.02
9	9,874	9,873	6,298	4,731	134.15	56.61	1,235	1,085	941	445	17.77	68.23	400	400	285	0	1.93	20.12	364	233	88	61	1.69	30.15
10	9,874	9,873	6,281	4,460	136.04	57.41	1,235	1,085	711	175	8.86	34.04	400	400	274	0	2.08	21.64	364	233	61	48	1.47	26.22
11	9,874	9,873	6,160	4,609	129.64	54.71	1,235	1,085	656	76	6.00	23.02	400	400	248	0	1.77	18.39	364	233	48	48	1.16	20.66
12	9,874	9,873	6,053	4,662	126.19	53.25	1,235	1,085	251	0	2.49	9.58	400	400	260	0	1.78	18.49	364	233	48	24	1.11	19.91
13	9,874	9,873	6,261	4,808	137.08	57.85	1,235	1,085	867	0	8.23	31.59	400	400	195	0	1.46	15.16	364	233	48	48	1.15	20.61
14	9,874	9,873	7,433	4,300	153.12	64.62	1,235	1,085	564	12	5.12	19.68	400	400	275	0	1.96	20.44	364	233	48	48	1.15	20.64
15	9,874	9,873	7,649	6,042	166.65	70.33	1,235	1,085	883	17	9.31	35.74	400	400	281	0	2.10	21.83	364	233	48	48	1.15	20.61
16	9,874	9,873	7,676	5,845	166.87	70.42	1,235	1,085	624	5	2.52	9.68	400	400	221	0	1.68	17.51	364	233	48	48	1.15	20.62
17	9,874	9,873	7,626	6,087	171.22	72.26	1,235	1,085	759	0	3.34	12.82	400	400	257	0	2.03	21.12	364	233	48	48	1.15	20.65
18	9,874	9,873	7,679	5,834	167.44	70.66	1,235	1,085	1,052	500	21.24	81.58	400	400	280	0	2.15	22.38	364	233	48	48	1.16	20.71
19	9,874	9,873	7,654	5,034	155.10	65.45	1,235	1,085	1,056	968	24.88	95.56	400	400	284	0	1.83	19.05	364	233	48	48	1.16	20.75
20	9,874	9,873	7,942	5,924	170.45	71.93	1,235	1,085	1,059	332	21.76	83.58	400	400	188	0	1.34	14.00	364	233	48	48	1.17	20.84
21	9,874	9,873	7,836	5,657	164.41	69.38	1,235	1,085	1,031	678	22.07	84.75	400	400	201	0	1.49	15.51	364	233	48	48	1.17	20.86
22	9,874	9,873	7,760	5,201	167.36	70.63	1,235	1,085	746	156	10.63	40.84	400	400	250	0	1.94	20.20	364	233	48	24	1.13	20.22
23	9,874	9,873	7,865	5,367	166.25	70.16	1,235	1,085	723	14	4.61	17.69	400	400	242	0	1.91	19.93	364	233	48	48	1.16	20.76
24	9,874	9,873	7,836	5,864	166.92	70.44	1,235	1,085	751	204	8.83	33.91	400	400	284	0	2.00	20.83	364	233	48	48	1.16	20.75
25	9,874	9,873	8,093	6,016	168.76	71.22	1,235	1,085	948	476	18.04	69.29	400	400	274	0	1.79	18.64	364	233	48	48	1.16	20.69
26	9,874	9,873	7,856	5,761	167.33	70.61	1,235	1,085	1,024	810	22.10	84.88	400	400	243	0	1.70	17.73	364	233	48	48	1.15	20.64
27	9,874	9,873	8,258	6,100	173.97	73.42	1,235	1,085	1,047	717	21.76	83.56	400	400	212	0	1.18	12.32	364	233	48	48	1.15	20.65
28	9,874	9,873	8,626	6,645	187.66	79.20	1,235	1,085	992	624	20.79	79.83	400	400	246	0	1.61	16.79	364	233	48	48	1.16	20.70
29	9,874	9,873	8,469	6,699	182.48	77.01	1,235	1,085	992	570	19.72	75.74	400	400	258	0	1.67	17.36	364	233	48	48	1.16	20.68
30	9,874	9,873	8,318	7,098	187.13	78.97	1,235	1,085	986	609	20.15	77.37	400	400	261	0	1.75	18.22	364	233	48	48	1.16	20.68
31	9,874	9,873	8,520	7,136	190.90	80.56	1,235	1,085	1,042	794	22.70	87.17	400	400	316	0	1.50	15.60	364	233	48	48	1.16	20.69
Total	9,874	9,873	-	-	4,715.21	64.19	1,235	1,085	-	-	479.47	59.40	400	400	-	-	57.15	19.21	364	233	-	-	45.13	26.03

August , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Load (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap
1	9,874	9,873	8,537	7,026	190.68	80.47	1,235	1,085	1,029	607	21.77	83.58	400	400	256	0	1.68	17.46	364	233	48	48	1.16	20.72
2	9,874	9,873	8,537	7,355	189.50	79.97	1,235	1,085	996	607	20.43	78.46	400	400	266	0	2.01	20.94	364	233	48	48	1.16	20.67
3	9,874	9,873	8,443	6,971	189.86	80.12	1,235	1,085	980	625	19.09	73.32	400	400	271	0	1.92	19.99	364	233	48	48	1.16	20.68
4	9,874	9,873	8,686	7,264	191.67	80.89	1,235	1,085	951	578	18.88	72.52	400	400	275	0	1.84	19.16	364	233	48	48	1.16	20.67
5	9,874	9,873	8,583	6,747	191.36	80.76	1,235	1,085	770	384	13.87	53.28	400	400	273	0	2.05	21.31	364	233	48	48	1.16	20.71
6	9,874	9,873	8,521	7,056	191.07	80.63	1,235	1,085	774	263	11.46	44.00	400	400	273	0	2.04	21.27	364	233	48	48	1.16	20.75
7	9,874	9,873	8,310	5,852	174.58	73.67	1,235	1,085	516	151	7.89	30.30	400	400	278	0	2.03	21.20	364	233	48	24	1.12	20.10
8	9,874	9,873	7,570	5,117	158.02	66.69	1,235	1,085	623	289	10.36	39.80	400	400	276	0	2.06	21.47	364	233	48	48	1.16	20.78
9	9,874	9,873	8,986	5,105	170.59	71.99	1,235	1,085	878	349	14.80	56.85	400	400	280	0	2.08	21.69	364	233	48	48	1.16	20.74
10	9,874	9,873	8,526	6,149	185.55	78.30	1,235	1,085	979	498	18.42	70.72	400	400	289	0	2.14	22.34	364	233	48	24	1.12	20.03
11	9,874	9,873	9,004	6,548	190.91	80.57	1,235	1,085	937	659	19.70	75.66	400	400	292	0	2.16	22.54	364	233	48	25	1.12	19.94
12	9,874	9,873	8,984	6,805	194.29	81.99	1,235	1,085	904	502	16.18	62.15	400	400	287	0	2.14	22.24	364	233	24	24	0.58	10.40
13	9,874	9,873	8,838	7,193	188.74	79.65	1,235	1,085	963	582	19.17	73.61	400	400	287	0	2.11	21.96	364	233	24	24	0.58	10.40
14	9,874	9,873	8,649	6,832	188.25	79.44	1,235	1,085	1,001	849	22.55	86.58	400	400	292	0	2.15	22.42	364	233	24	24	0.58	10.43
15	9,874	9,873	8,717	5,524	171.67	72.45	1,235	1,085	948	379	18.85	72.40	400	400	288	0	2.14	22.25	364	233	24	24	0.58	10.44

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Load (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap
16	9,874	9,873	8,188	5,692	174.18	73.50	1,235	1,085	696	167	9.21	35.36	400	400	265	0	1.97	20.52	364	233	24	24	0.58	10.37
17	9,874	9,873	8,603	5,537	172.15	72.65	1,235	1,085	794	180	9.88	37.94	400	400	285	0	2.08	21.67	364	233	24	0	0.53	9.50
18	9,874	9,873	8,789	6,637	191.45	80.80	1,235	1,085	882	369	14.95	57.40	400	400	287	0	2.09	21.82	364	233	24	24	0.58	10.36
19	9,874	9,873	8,804	6,866	196.93	83.10	1,235	1,085	919	606	18.42	70.76	400	400	281	0	2.06	21.44	364	233	24	2	0.57	10.20
20	9,874	9,873	8,731	5,017	180.77	76.29	1,235	1,085	925	488	16.06	61.66	400	400	280	0	2.07	21.60	364	233	24	24	0.58	10.33
21	9,874	9,873	7,508	4,766	156.84	66.19	1,235	1,085	825	87	10.12	38.87	400	400	279	0	1.89	19.72	364	233	24	24	0.58	10.30
22	9,874	9,873	8,148	4,576	150.42	63.48	1,235	1,085	786	100	9.42	36.16	400	400	165	0	1.24	12.87	364	233	24	24	0.58	10.30
23	9,874	9,873	8,516	4,836	171.85	72.52	1,235	1,085	987	424	16.57	63.62	400	400	252	0	1.75	18.20	364	233	24	0	0.56	10.01
24	9,874	9,873	8,232	5,560	177.66	74.97	1,235	1,185	1,103	822	24.24	85.22	400	400	293	0	2.13	22.16	364	233	24	24	0.58	10.32
25	9,874	9,873	8,604	6,201	180.92	76.35	1,235	1,185	1,139	987	25.97	91.32	400	400	293	0	2.14	22.26	364	233	24	24	0.58	10.33
26	9,874	9,873	8,723	7,019	196.50	82.92	1,235	1,185	1,096	824	24.55	86.34	400	400	295	0	2.14	22.25	364	233	24	24	0.58	10.32
27	9,874	9,873	8,615	7,169	192.31	81.16	1,235	1,185	902	483	17.65	62.06	400	400	293	0	2.14	22.31	364	233	24	10	0.53	9.40
28	9,874	9,873	8,754	6,936	189.89	80.13	1,235	1,185	709	296	10.74	37.77	400	400	293	0	2.13	22.23	364	233	24	24	0.58	10.33
29	9,874	9,873	8,703	7,588	195.30	82.42	1,235	1,185	467	92	5.72	20.12	400	400	279	0	2.02	21.09	364	233	24	24	0.58	10.36
30	9,874	9,873	8,366	5,977	173.14	73.07	1,235	1,185	317	10	2.83	9.94	400	400	314	0	1.64	17.10	364	233	24	24	0.58	10.33
31	9,874	9,873	7,639	5,548	158.29	66.80	1,335	1,185	437	20	3.91	13.74	400	400	288	0	2.04	21.20	364	233	24	24	0.58	10.34
Total	9,874	9,873	-	-	5,625.34	76.58	1,235	1,185	-	-	473.66	53.72	400	400	-	-	62.08	20.86	364	233	-	-	24.08	13.89

September , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %	Load (MW)		Load (MW)		Generation (GWh)	Energy %	Capacity (MW)		Load (MW)		Generation (GWh)	Energy %
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	Inst.	Dep.	Max	Min		W.r.t Dep. Cap
1	9,874	9,873	8,666	4,239	167.79	70.81	1,335	1,185	782	0	5.98	21.02	400	400	297	0	2.16	22.48	364	233	24	24	0.58	10.33
2	9,874	9,873	8,540	7,094	192.22	81.12	1,335	1,185	533	87	7.54	26.50	400	400	306	0	2.13	22.23	364	233	24	24	0.58	10.32
3	9,874	9,873	8,548	7,034	195.44	82.48	1,335	1,185	823	13	4.26	14.97	400	400	304	0	1.88	19.54	364	233	24	24	0.57	10.13
4	9,874	9,873	8,540	7,235	193.54	81.68	1,335	1,185	780	10	4.08	14.33	400	400	287	0	2.01	20.98	364	233	24	24	0.58	10.33
5	9,874	9,873	8,566	7,003	194.03	81.88	1,335	1,185	290	50	3.77	13.26	400	400	272	0	2.07	21.56	364	233	24	24	0.58	10.33
6	9,874	9,873	8,592	6,909	193.57	81.69	1,335	1,335	400	24	4.68	14.60	400	400	300	0	2.14	22.29	364	233	24	24	0.58	10.30
7	9,874	9,873	8,573	7,081	194.16	81.94	1,335	1,335	354	21	3.67	11.46	400	400	271	0	1.81	18.83	364	233	24	24	0.58	10.30
8	9,874	9,873	8,589	6,969	191.84	80.96	1,335	1,335	604	58	4.59	14.31	400	400	217	0	1.52	15.78	364	233	24	24	0.58	10.29
9	9,874	9,873	8,483	6,714	187.70	79.21	1,335	1,335	649	61	6.59	20.56	400	400	286	0	1.95	20.32	364	233	24	24	0.57	10.28
10	9,874	9,873	8,845	6,261	180.47	76.16	1,335	1,335	584	61	5.68	17.71	400	400	246	0	1.77	18.46	364	233	24	24	0.58	10.30
11	9,874	9,873	8,568	6,103	180.27	76.07	1,335	1,335	314	123	4.59	14.32	400	400	266	0	1.63	16.98	364	233	24	24	0.58	10.33
12	9,874	9,873	9,287	5,912	190.29	80.30	1,335	1,335	338	86	5.85	18.27	400	400	297	0	1.63	16.96	364	233	24	24	0.58	10.35
13	9,874	9,873	8,763	5,358	176.14	74.33	1,335	1,335	283	119	4.38	13.66	400	400	293	0	2.15	22.38	364	233	24	24	0.58	10.31
14	9,874	9,873	8,539	6,033	171.28	72.28	1,335	1,335	1,046	121	12.64	39.44	400	400	275	0	2.11	21.96	364	233	24	24	0.58	10.33
15	9,874	9,873	8,349	5,003	168.34	71.04	1,335	1,335	1,069	101	11.69	36.48	400	400	273	0	1.97	20.50	364	233	24	24	0.58	10.30
16	9,874	9,873	8,211	3,579	151.60	63.98	1,335	1,335	323	0	1.50	4.68	400	400	308	0	2.24	23.33	364	233	24	24	0.57	10.19
17	9,874	9,873	8,536	4,244	164.92	69.60	1,335	1,335	249	1	3.06	9.54	400	400	294	0	2.11	21.93	364	233	24	24	0.58	10.33
18	9,874	9,873	8,564	5,103	180.15	76.03	1,335	1,335	761	176	7.74	24.16	400	400	288	0	2.02	21.02	364	233	24	24	0.58	10.30
19	9,874	9,873	8,520	6,907	188.87	79.71	1,335	1,335	720	250	11.55	36.05	400	400	282	0	1.92	20.01	364	233	24	24	0.57	10.20
20	9,874	9,873	8,228	6,547	175.32	73.99	1,335	1,335	1,093	504	18.73	58.46	400	400	261	0	1.86	19.43	364	233	24	24	0.58	10.33
21	9,874	9,873	8,029	4,505	154.91	65.37	1,335	1,335	1,065	646	20.45	63.84	400	400	275	0	1.03	10.68	364	233	0	0	0.01	0.09
22	9,874	9,873	7,940	4,378	153.92	64.95	1,335	1,335	843	142	8.18	25.54	400	400	326	0	2.06	21.44	364	233	24	0	0.34	6.04
23	9,874	9,873	7,794	4,799	160.08	67.56	1,335	1,335	469	22	4.00	12.49	400	400	311	0	2.19	22.82	364	233	24	24	0.58	10.33
24	9,874	9,873	7,474	4,709	152.79	64.48	1,335	1,335	804	0	8.07	25.19	400	400	310	0	2.16	22.54	364	233	24	24	0.58	10.33
25	9,874	9,873	7,665	3,720	145.60	61.45	1,335	1,335	173	0	0.71	2.23	400	400	274	0	1.96	20.41	364	233	24	24	0.58	10.34
26	9,874	9,873	8,098	3,001	128.54	54.24	1,335	1,335	174	0	1.20	3.76	400	400	267	0	1.67	17.38	364	233	24	24	0.58	10.37
27	9,874	9,873	7,087	4,700	145.17	61.26	1,335	1,335	384	14	2.99	9.34	400	400	289	0	1.84	19.18	364	233	24	24	0.58	10.32
28	9,874	9,873	7,592	4,528	145.88	61.56	1,335	1,335	672	86	6.48	20.22	400	400	215	0	1.02	10.60	364	233	24	24	0.58	10.32
29	9,874	9,873	7,839	4,732	148.88	62.83	1,335	1,335	1,189	267	19.30	60.23	400	400	286	0	1.82	18.92	364	233	24	24	0.58	10.33
30	9,874	9,873	6,620	4,634	143.12	60.40	1,335	1,335	1,216	328	21.42	66.84	400	400	270	0	1.62	16.86	364	233	24	24	0.58	10.32
Total	9,874	9,873	-	-	5,116.83	71.98	1,335	1,335	-	-	225.35	23.44	400	400	-	-	56.43	19.59	364	233	-	-	16.48	9.82

October , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	6,289	3,602	128.38	54.18	1,335	1,335	764	66	10.59	33.07	400	400	296	0	1.29	13.46	364	233	24	24	0.58	10.34
2	9,874	9,873	6,483	3,789	131.40	55.45	1,335	1,335	223	0	1.48	4.61	400	400	309	0	2.19	22.77	364	233	24	24	0.58	10.33
3	9,874	9,873	6,948	3,498	131.39	55.45	1,335	1,335	1,104	176	14.56	45.43	400	400	308	0	2.20	22.91	364	233	24	24	0.58	10.36
4	9,874	9,873	6,596	3,228	129.35	54.59	1,335	1,335	1,174	514	21.16	66.04	400	400	291	0	2.01	20.96	364	233	24	24	0.58	10.30
5	9,874	9,873	6,491	3,129	119.57	50.46	1,335	1,335	540	64	7.06	22.02	400	400	297	0	1.81	18.90	364	233	24	24	0.58	10.29
6	9,874	9,873	5,700	2,917	109.25	46.10	1,335	1,335	129	25	1.71	5.32	400	400	295	0	2.11	21.97	364	233	24	24	0.58	10.31
7	9,874	9,873	5,843	2,930	108.53	45.80	1,335	1,335	231	0	1.62	5.05	400	400	302	0	2.14	22.27	364	233	24	24	0.58	10.34
8	9,874	9,873	5,274	2,514	95.96	40.50	1,335	1,335	599	35	4.80	14.97	400	400	305	0	2.16	22.46	364	233	24	24	0.58	10.33
9	9,874	9,873	5,237	2,051	100.28	42.32	1,335	1,335	617	179	9.05	28.26	400	400	299	0	2.08	21.62	364	233	24	24	0.57	10.25
10	9,874	9,873	4,797	2,108	88.82	37.48	1,335	1,335	604	226	9.88	30.83	400	400	306	0	2.13	22.23	364	233	0	0	0.01	0.25
11	9,874	9,873	5,525	2,075	93.19	39.33	1,335	1,335	307	18	3.24	10.11	400	400	296	0	2.00	20.79	364	233	0	0	0.00	0.00
12	9,874	9,873	5,842	2,719	103.07	43.50	1,335	1,335	214	0	1.49	4.64	400	400	291	0	1.94	20.25	364	233	0	0	0.00	0.00
13	9,874	9,873	4,986	2,008	84.52	35.67	1,335	1,335	59	0	0.51	1.58	400	400	283	0	1.92	19.95	364	233	0	0	0.00	0.00
14	9,874	9,873	4,944	1,848	84.29	35.57	1,335	1,335	275	6	1.74	5.42	400	400	300	0	2.06	21.46	364	233	0	0	0.00	0.00
15	9,874	9,873	4,170	1,691	69.96	29.52	1,335	1,335	313	5	2.74	8.55	400	400	294	0	2.04	21.30	364	233	0	0	0.00	0.00
16	9,874	9,873	4,014	1,942	71.83	30.31	1,335	1,335	371	46	4.14	12.91	400	400	295	0	2.05	21.35	364	233	0	0	0.00	0.00
17	9,874	9,873	4,363	1,662	65.63	27.70	1,335	1,335	328	6	3.52	10.99	400	400	283	0	1.96	20.44	364	233	0	0	0.00	0.00
18	9,874	9,873	4,637	1,848	78.13	32.97	1,335	1,335	575	56	5.77	18.01	400	400	252	0	1.60	16.64	364	233	0	0	0.00	0.00
19	9,874	9,873	4,384	1,663	64.74	27.32	1,335	1,335	328	13	2.83	8.82	400	400	277	0	1.84	19.13	364	233	0	0	0.00	0.00
20	9,874	9,873	4,392	1,648	69.56	29.36	1,335	1,335	525	31	6.04	18.84	400	400	293	0	2.07	21.59	364	233	0	0	0.00	0.00
21	9,874	9,873	3,741	1,453	56.05	23.65	1,335	1,335	1,015	178	14.32	44.70	400	400	291	0	2.05	21.31	364	233	0	0	0.00	0.00
22	9,874	9,873	4,165	1,438	63.27	26.70	1,335	1,335	1,148	604	21.14	65.99	400	400	293	0	1.99	20.74	364	233	0	0	0.00	0.00
23	9,874	9,873	3,651	1,802	59.77	25.23	1,335	1,335	787	46	8.36	26.09	400	400	220	0	1.35	14.02	364	233	0	0	0.00	0.00
24	9,874	9,873	3,634	1,221	61.39	25.91	1,335	1,335	213	4	1.66	5.19	400	400	254	0	1.32	13.77	364	233	0	0	0.00	0.00
25	9,874	9,873	3,895	1,293	66.18	27.93	1,335	1,335	1,029	85	14.67	45.80	400	400	273	0	1.74	18.14	364	233	0	0	0.00	0.00
26	9,874	9,873	3,963	1,898	69.83	29.47	1,335	1,335	331	0	2.94	9.17	400	400	269	0	1.75	18.18	364	233	28	0	0.22	4.00
27	9,874	9,873	3,831	1,578	61.42	25.92	1,335	1,335	80	0	0.58	1.80	400	400	266	0	1.70	17.70	364	233	27	27	0.65	11.69
28	9,874	9,873	3,755	1,735	60.36	25.47	1,335	1,335	267	0	1.78	5.56	400	400	270	0	1.77	18.42	364	233	56	27	0.77	13.70
29	9,874	9,873	5,086	1,774	68.25	28.80	1,335	1,335	149	0	0.85	2.67	400	400	275	0	1.85	19.31	364	233	28	0	0.30	5.33
30	9,874	9,873	3,976	1,862	74.13	31.28	1,335	1,335	109	0	0.91	2.84	400	400	280	0	1.87	19.52	364	233	0	0	0.00	0.00
31	9,874	9,873	4,623	1,591	70.57	29.78	1,335	1,335	409	18	5.01	15.62	400	400	289	0	1.95	20.30	364	233	0	0	0.00	0.00
Total	9,874	9,873	-	-	2,639.07	35.93	1,335	1,335	-	-	186.12	18.74	400	400	-	-	58.93	19.80	364	233	-	-	7.15	4.12

November , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	4,837	2,939	91.68	38.69	1,335	1,335	376	8	5.02	15.66	400	400	272	0	1.71	17.84	364	233	12	0	0.02	0.38
2	9,874	9,873	5,209	2,598	88.05	37.16	1,335	1,335	459	0	2.39	7.45	400	400	211	0	1.22	12.69	364	233	0	0	0.00	0.00
3	9,874	9,873	5,247	1,951	88.16	37.21	1,335	1,335	810	262	12.16	37.96	400	400	279	0	1.78	18.57	364	233	0	0	0.00	0.00
4	9,874	9,873	5,840	2,437	96.73	40.82	1,335	1,335	309	0	2.70	8.43	400	400	247	0	1.53	15.94	364	233	0	0	0.00	0.00
5	9,874	9,873	5,133	2,214	90.25	38.09	1,335	1,335	183	0	1.01	3.14	400	400	254	0	1.60	16.64	364	233	13	0	0.12	2.15
6	9,874	9,873	5,177	2,763	96.75	40.83	1,335	1,335	104	0	0.66	2.07	400	400	229	0	1.37	14.24	364	233	24	12	0.37	6.60
7	9,874	9,873	5,261	2,762	95.57	40.33	1,335	1,335	136	1	0.94	2.92	400	400	222	0	1.32	13.71	364	233	14	13	0.32	5.68
8	9,874	9,873	5,413	3,064	98.08	41.39	1,335	1,335	219	1	2.36	7.38	400	400	226	0	1.39	14.47	364	233	13	13	0.31	5.58
9	9,874	9,873	5,432	3,368	103.19	43.55	1,335	1,335	152	0	1.27	3.98	400	400	262	0	1.68	17.51	364	233	13	13	0.32	5.72
10	9,874	9,873	6,198	3,460	108.16	45.65	1,335	1,335	122	0	0.51	1.60	400	400	274	0	1.73	18.04	364	233	37	13	0.63	11.24
11	9,874	9,873	6,349	2,480	98.65	41.63	1,335	1,335	212	0	1.48	4.63	400	400	258	0	1.61	16.72	364	233	37	37	0.90	16.07
12	9,874	9,873	5,593	3,155	102.47	43.24	1,335	1,335	349	67	4.69	14.63	400	400	255	0	1.59	16.53	364	233	49	37	1.05	18.79
13	9,874	9,873	5,625	3,053	101.75	42.94	1,335	1,335	255	0	2.73	8.51	400	400	272	0	1.73	17.98	364	233	76	49	1.38	24.63
14	9,874	9,873	5,307	2,940	100.67	42.49	1,335	1,335	139	0	1.11	3.46	400	400	292	0	1.88	19.61	364	233	106	37	2.12	37.87
15	9,874	9,873	5,488	3,103	103.09	43.50	1,335	1,335	636	10	7.00	21.85	400	400	271	0	1.71	17.81	364	233	127	82	2.62	46.77
16	9,874	9,873	5,502	2,777	101.14	42.68	1,335	1,335	718	19	6.42	20.05	400	400	277	0	1.67	17.37	364	233	125	111	2.90	51.86
17	9,874	9,873	5,587	2,320	99.29	41.90	1,335	1,335	830	224	12.45	38.84	400	400	263	0	1.59	16.53	364	233	124	80	2.87	51.37
18	9,874	9,873	5,738	2,773	97.58	41.18	1,335	1,335	886	226	11.55	36.05	400	400	260	0	1.59	16.53	364	233	123	109	2.82	50.35
19	9,874	9,873	5,421	2,505	93.63	39.51	1,335	1,335	964	0	13.54	42.25	400	400	253	0	1.55	16.11	364	233	128	114	2.87	51.35
20	9,874	9,873	5,185	2,389	95.08	40.13	1,335	1,335	739	0	9.84	30.70	400	400	255	0	1.49	15.54	364	233	132	110	3.04	54.38
21	9,874	9,873	5,479	2,775	95.25	40.19	1,335	1,335	1,285	275	17.34	54.12	400	400	257	0	1.59	16.55	364	233	132	87	3.03	54.12
22	9,874	9,873	5,296	2,539	91.91	38.79	1,335	1,335	872	0	5.88	18.37	400	400	267	0	1.66	17.32	364	233	130	103	2.96	52.89

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
23	9,874	9,873	5,809	2,138	91.83	38.75	1,335	1,335	474	0	3.76	11.74	400	400	302	0	1.95	20.27	364	233	134	126	3.08	55.06
24	9,874	9,873	5,438	2,204	86.32	36.43	1,335	1,335	400	3	2.85	8.90	400	400	276	0	1.77	18.45	364	233	137	122	3.07	54.84
25	9,874	9,873	5,469	1,724	82.40	34.78	1,335	1,335	306	0	3.07	9.58	400	400	263	0	1.58	16.42	364	233	130	123	3.01	53.80
26	9,874	9,873	5,135	1,437	87.82	37.06	1,335	1,335	614	4	3.59	11.20	400	400	254	0	1.54	16.08	364	233	161	127	3.64	65.15
27	9,874	9,873	4,898	2,204	87.98	37.13	1,335	1,335	173	0	1.12	3.48	400	400	258	0	1.54	16.00	364	278	164	146	3.81	57.07
28	9,874	9,873	5,199	2,293	89.99	37.97	1,335	1,335	951	94	12.29	38.37	400	400	252	0	1.50	15.62	364	278	166	153	3.87	58.02
29	9,874	9,873	4,966	2,263	90.04	38.00	1,335	1,335	929	189	13.59	42.40	400	400	235	0	1.35	14.07	364	278	166	144	3.84	57.56
30	9,874	9,873	5,117	1,822	86.82	36.64	1,335	1,335	841	202	11.61	36.24	400	400	248	0	1.45	15.12	364	278	164	115	3.50	52.51
Total	9,874	9,873	-	-	2,840.34	39.96	1,335	1,335	-	-	174.92	18.20	400	400	-	-	47.64	16.54	364	278	-	-	58.45	29.20

December , 2021

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	5,091	1,525	83.96	35.43	1,335	1,335	733	278	11.38	35.52	400	400	245	0	1.18	12.29	364	278	162	144	3.58	53.64
2	9,874	9,873	4,881	1,802	83.73	35.34	1,335	1,335	852	347	13.36	41.70	400	400	245	0	1.41	14.67	364	278	165	126	3.72	55.79
3	9,874	9,873	4,639	1,734	83.18	35.10	1,335	1,335	852	93	7.53	23.51	400	400	272	0	1.57	16.33	364	278	160	135	3.39	50.87
4	9,874	9,873	4,736	1,793	79.73	33.65	1,335	1,335	636	0	6.76	21.09	400	400	236	0	1.36	14.16	364	278	156	133	3.57	53.56
5	9,874	9,873	4,513	1,451	76.49	32.28	1,335	1,335	108	0	0.31	0.98	400	400	248	0	1.41	14.72	364	278	173	142	3.72	55.68
6	9,874	9,873	5,050	1,272	78.09	32.95	1,335	1,335	751	0	7.93	24.74	400	400	243	0	1.36	14.18	364	278	172	132	3.90	58.51
7	9,874	9,873	4,877	1,573	77.48	32.70	1,335	1,335	885	155	10.25	31.98	400	400	270	0	1.67	17.40	364	278	176	143	3.96	59.37
8	9,874	9,873	4,653	1,483	76.95	32.47	1,335	1,335	471	87	5.36	16.74	400	400	268	0	1.64	17.04	364	278	182	161	4.20	62.93
9	9,874	9,873	4,806	1,514	75.72	31.96	1,335	1,335	555	88	6.21	19.37	400	400	277	0	1.73	18.04	364	278	184	166	4.21	63.03
10	9,874	9,873	4,868	1,565	77.04	32.51	1,335	1,335	910	305	12.37	38.59	400	400	270	0	1.65	17.23	364	278	185	169	4.29	64.37
11	9,874	9,873	4,722	1,324	74.36	31.38	1,335	1,335	299	0	2.35	7.33	400	400	287	0	1.78	18.52	364	278	185	135	4.26	63.85
12	9,874	9,873	4,493	1,357	72.88	30.76	1,335	1,335	297	0	1.50	4.68	400	400	291	0	1.74	18.10	364	278	183	164	4.25	63.66
13	9,874	9,873	3,968	1,539	72.87	30.75	1,335	1,335	492	9	4.31	13.44	400	400	268	0	1.59	16.59	364	278	182	162	4.20	62.93
14	9,874	9,873	4,439	1,181	69.09	29.16	1,335	1,335	324	5	2.43	7.59	400	400	236	0	1.33	13.81	364	278	181	118	4.06	60.89
15	9,874	9,873	4,124	1,198	68.78	29.03	1,335	1,335	172	2	2.13	6.65	400	400	232	0	1.32	13.78	364	278	179	130	3.66	54.84
16	9,874	9,873	4,390	1,599	68.41	28.87	1,335	1,335	815	2	11.43	35.69	400	400	201	0	1.09	11.39	364	278	176	105	3.48	52.14
17	9,874	9,873	3,973	1,090	62.45	26.35	1,335	1,335	884	377	14.85	46.33	400	400	240	0	0.88	9.19	364	278	182	95	3.44	51.57
18	9,874	9,873	3,845	1,026	61.07	25.77	1,335	1,335	554	145	7.63	23.82	400	400	305	0	1.83	19.07	364	278	181	129	4.14	62.00
19	9,874	9,873	3,637	1,013	55.07	23.24	1,335	1,335	350	0	3.09	9.65	400	400	302	0	1.89	19.68	364	278	185	152	4.19	62.79
20	9,874	9,873	3,612	1,142	58.30	24.60	1,335	1,335	274	0	1.41	4.39	400	400	282	0	1.75	18.21	364	278	170	142	3.66	54.83
21	9,874	9,873	3,751	1,033	56.17	23.71	1,335	1,335	128	0	0.95	2.96	400	400	267	0	1.59	16.61	364	278	179	138	3.90	58.45
22	9,874	9,873	3,518	1,046	50.28	21.22	1,335	1,335	488	0	2.92	9.10	400	400	253	0	1.36	14.14	364	278	185	171	4.28	64.21
23	9,874	9,873	3,061	1,057	47.83	20.18	1,335	1,335	191	2	1.38	4.30	400	400	235	0	1.15	11.96	364	278	190	173	4.35	65.22
24	9,874	9,873	1,996	597	28.07	11.85	1,335	1,335	348	5	3.82	11.93	400	400	223	0	1.14	11.84	364	278	189	139	4.38	65.66
25	9,874	9,873	1,773	526	19.53	8.24	1,335	1,335	187	1	1.50	4.68	400	400	222	0	0.81	8.48	364	278	188	162	4.37	65.53
26	9,874	9,873	1,577	498	16.61	7.01	1,335	1,335	402	0	2.37	7.38	400	400	139	0	0.76	7.90	364	278	185	166	4.32	64.69
27	9,874	9,873	1,797	420	18.35	7.74	1,335	1,335	645	120	7.82	24.40	400	400	28	0	0.12	1.27	364	278	181	134	4.00	59.92
28	9,874	9,873	1,556	406	17.86	7.54	1,335	1,335	865	266	14.52	45.33	400	400	212	0	0.99	10.36	364	278	183	105	3.84	57.51
29	9,874	9,873	2,183	455	22.41	9.46	1,335	1,335	930	137	10.84	33.84	400	400	251	0	1.45	15.11	364	278	186	175	4.31	64.64
30	9,874	9,873	1,816	354	22.03	9.30	1,335	1,335	1,020	201	10.29	32.11	400	400	279	0	1.42	14.81	364	278	182	145	4.27	64.05
31	9,874	9,873	1,983	485	23.54	9.93	1,335	1,335	1,174	593	20.73	64.70	400	400	273	0	1.40	14.58	364	278	184	165	4.23	63.35
Total	9,874	9,873	-	-	1,778.34	24.21	1,335	1,335	-	-	209.72	21.11	400	400	-	-	42.38	14.24	364	278	-	-	124.13	60.02

January , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	1,440	383	19.02	8.03	1,335	1,335	870	236	12.41	38.75	400	400	289	0	1.65	17.18	364	278	185	166	4.22	63.28
2	9,874	9,873	1,425	328	13.88	5.86	1,335	1,335	1,083	535	18.91	59.03	400	400	252	0	1.45	15.09	364	278	183	170	4.22	63.30
3	9,874	9,873	1,287	323	15.01	6.34	1,335	1,335	1,127	105	13.32	41.56	400	400	265	0	1.04	10.79	364	278	184	165	4.26	63.83
4	9,874	9,873	1,256	250	11.90	5.02	1,335	1,335	680	83	8.69	27.12	400	400	233	0	0.97	10.07	364	278	186	164	4.28	64.13
5	9,874	9,873	924	305	12.77	5.39	1,335	1,335	516	0	1.53	4.77	400	400	173	0	0.30	3.13	364	278	189	121	4.34	65.04
6	9,874	9,873	855	323	12.87	5.43	1,335	1,335	671	173	7.64	23.84	400	400	90	0	0.44	4.61	364	278	191	168	4.41	66.03
7	9,874	9,873	862	269	12.78	5.39	1,335	1,335	801	0	8.32	25.96	400	400	60	0	0.21	2.18	364	278	195	142	4.35	65.12
8	9,874	9,873	1,125	370	15.67	6.61	1,335	1,335	245	0	1.38	4.32	400	400	183	0	1.07	11.09	364	278	192	167	4.25	63.68
9	9,874	9,873	1,329	371	15.60	6.58	1,335	1,335	305	76	4.98	15.53	400	400	280	0	1.52	15.88	364	278	192	166	4.33	64.84
10	9,874	9,873	1,104	308	13.71	5.79	1,335	1,335	103	0	0.78	2.44	400	400	301	0	1.80	18.72	364	278	183	168	4.25	63.75
11	9,874	9,873	1,014	280	13.03	5.50	1,335	1,335	422	83	4.94	15.40	400	400	303	0	1.77	18.44	364	278	184	167	4.25	63.75
12	9,874	9,873	1,207	289	13.13	5.54	1,335	1,335	200	0	1.28	4.00	400	400	310	0	1.89	19.72	364	278	192	170	4.44	66.55
13	9,874	9,873	1,177	386	14.38	6.07	1,335	1,335	124	0	0.42	1.32	400	400	301	0	1.92	20.01	364	278	193	169	5.42	81.29
14	9,874	9,873	1,280	276	12.91	5.45	1,335	1,335	616	55	7.43	23.18	400	400	290	0	1.49	15.57	364	278	179	141	3.86	57.78
15	9,874	9,873	1,038	229	13.55	5.72	1,335	1,335	842	249	12.71	39.65	400	400	322	0	1.28	13.30	364	278	188	139	4.00	60.02
16	9,874	9,873	1,128	186	12.34	5.21	1,335	1,335	1,002	277	14.73	45.97	400	400	309	0	1.47	15.36	364	278	184	163	4.31	64.54
17	9,874	9,873	967	222	12.55	5.30	1,335	1,335	843	76	8.31	25.94	400	400	302	0	1.45	15.12	364	278	185	145	4.30	64.48
18	9,874	9,873	1,675	221	13.01	5.49	1,335	1,335	743	14	6.95	21.71	400	400	168	0	0.59	6.17	364	278	191	168	4.31	64.63
19	9,874	9,873	1,061	222	12.23	5.16	1,335	1,335	947	5	10.24	31.96	400	400	307	0	1.59	16.54	364	278	186	176	4.34	64.97
20	9,874	9,873	938	208	12.01	5.07	1,335	1,335	593	0	5.03	15.70	400	400	261	0	1.25	12.99	364	278	192	166	4.36	65.31
21	9,874	9,873	1,207	205	13.54	5.71	1,335	1,335	1,103	50	14.29	44.60	400	400	214	0	0.83	8.61	364	278	186	161	4.32	64.81
22	9,874	9,873	947	260	13.09	5.53	1,335	1,335	908	82	6.98	21.78	400	400	104	0	0.38	3.98	364	278	193	168	4.27	63.93
23	9,874	9,873	975	295	14.29	6.03	1,335	1,335	330	0	2.48	7.73	400	400	278	0	1.46	15.19	364	278	193	172	4.43	66.37
24	9,874	9,873	1,368	263	14.84	6.26	1,335	1,335	96	0	0.48	1.48	400	400	311	0	1.89	19.71	364	278	194	158	4.44	66.59
25	9,874	9,873	2,010	250	19.02	8.03	1,335	1,335	53	0	0.35	1.10	400	400	314	0	2.06	21.46	364	278	191	152	4.40	65.96
26	9,874	9,873	2,151	336	25.99	10.97	1,335	1,335	149	0	1.34	4.17	400	400	316	0	2.09	21.81	364	278	186	167	4.32	64.67
27	9,874	9,873	3,066	336	27.58	11.64	1,335	1,335	64	0	0.23	0.73	400	400	320	0	2.16	22.50	364	278	188	150	4.41	66.03
28	9,874	9,873	2,042	486	29.01	12.24	1,335	1,335	388	0	2.28	7.11	400	400	318	0	2.14	22.27	364	278	191	140	4.45	66.73
29	9,874	9,873	2,312	548	27.50	11.60	1,335	1,335	419	21	3.09	9.63	400	400	306	0	2.03	21.14	364	278	188	166	4.38	65.65
30	9,874	9,873	2,360	534	31.55	13.31	1,335	1,335	775	0	5.47	17.07	400	400	301	0	1.99	20.71	364	278	194	178	4.41	66.12
31	9,874	9,873	2,359	579	27.31	11.53	1,335	1,335	462	53	6.16	19.22	400	400	295	0	1.91	19.92	364	278	191	167	4.45	66.66
Total	9,874	9,873	-	-	516.07	7.03	1,335	1,335	-	-	193.14	19.45	400	400	-	-	44.09	14.81	364	278	-	-	134.76	65.16

February , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	2,304	480	31.89	13.46	1,335	1,335	153	2	1.71	5.33	400	400	320	0	2.02	21.06	364	278	189	178	4.44	66.49
2	9,874	9,873	2,747	568	31.09	13.12	1,335	1,335	1,060	224	14.91	46.52	400	400	298	0	1.96	20.45	364	278	193	165	4.41	66.11
3	9,874	9,873	2,795	757	39.58	16.70	1,485	1,485	831	2	7.82	21.93	400	400	320	0	2.09	21.78	364	278	188	170	4.79	71.73
4	9,874	9,873	3,483	730	47.22	19.93	1,485	1,485	384	0	3.26	9.16	400	400	320	0	2.15	22.43	364	278	190	147	4.19	62.79
5	9,874	9,873	3,405	611	44.54	18.80	1,485	1,485	371	54	3.90	10.93	400	400	317	0	2.10	21.89	364	278	191	141	4.30	64.39
6	9,874	9,873	3,605	1,225	46.48	19.62	1,485	1,485	848	6	6.68	18.75	400	400	300	0	1.81	18.84	364	278	189	160	4.38	65.60
7	9,874	9,873	3,698	1,032	52.14	22.00	1,485	1,485	222	1	1.69	4.73	400	400	278	0	1.51	15.74	364	278	188	167	4.40	65.88
8	9,874	9,873	3,575	963	55.16	23.28	1,485	1,485	303	2	2.02	5.66	400	400	283	0	0.85	8.88	364	278	191	169	4.32	64.74
9	9,874	9,873	3,753	1,258	54.09	22.82	1,485	1,485	294	1	1.91	5.35	400	400	304	0	2.02	21.09	364	278	188	128	4.33	64.97
10	9,874	9,873	3,242	2,084	61.77	26.07	1,485	1,485	163	0	1.68	4.70	400	400	306	0	2.08	21.71	364	278	188	175	4.38	65.72
11	9,874	9,873	3,279	2,386	64.53	27.23	1,485	1,485	79	0	0.56	1.57	400	400	314	0	2.15	22.38	364	278	188	163	4.34	65.12
12	9,874	9,873	3,337	2,400	64.35	27.16	1,485	1,485	533	4	4.09	11.48	400	400	326	0	2.21	23.04	364	278	191	173	4.43	66.46
13	9,874	9,873	3,237	2,361	63.16	26.66	1,485	1,485	535	47	6.46	18.13	400	400	326	0	2.06	21.44	364	278	190	167	4.40	65.97
14	9,874	9,873	3,567	2,468	67.09	28.31	1,485	1,485	251	5	1.88	5.28	400	400	312	0	2.05	21.37	364	278	190	181	4.42	66.21
15	9,874	9,873	3,579	2,879	77.31	32.62	1,485	1,485	421	68	4.23	11.86	400	400	293	0	1.94	20.23	364	278	198	171	4.37	65.57
16	9,874	9,873	3,600	3,004	77.94	32.89	1,485	1,485	316	0	1.58	4.42	400	400	297	0	2.01	20.98	364	278	182	146	3.93	58.90
17	9,874	9,873	3,733	2,959	77.55	32.73	1,485	1,485	482	0	2.55	7.15	400	400	308	0	1.92	20.02	364	278	203	140	4.10	61.49
18	9,874	9,873	3,791	2,598	72.79	30.72	1,485	1,485	417	22	3.64	10.21	400	400	287	0	1.87	19.48	364	278	201	167	4.38	65.67

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
19	9,874	9,873	3,804	1,656	60.26	25.43	1,485	1,485	665	14	6.93	19.45	400	400	285	0	1.96	20.43	364	278	207	179	4.49	67.28
20	9,874	9,873	3,475	1,295	50.19	21.18	1,485	1,485	785	50	8.65	24.28	400	400	323	0	2.18	22.73	364	278	203	179	4.40	65.97
21	9,874	9,873	3,731	1,220	48.56	20.49	1,485	1,485	1,080	424	17.66	49.54	400	400	319	0	2.09	21.74	364	278	205	181	4.44	66.51
22	9,874	9,873	3,288	1,182	42.16	17.79	1,485	1,485	1,147	408	16.92	47.47	400	400	313	0	1.99	20.78	364	278	204	174	4.43	66.33
23	9,874	9,873	2,518	1,166	41.89	17.68	1,485	1,485	406	0	2.14	6.00	400	400	311	0	2.15	22.40	364	278	189	179	4.44	66.57
24	9,874	9,873	3,413	1,261	46.15	19.47	1,485	1,485	308	0	1.40	3.92	400	400	305	0	1.72	17.88	364	278	189	177	4.43	66.41
25	9,874	9,873	3,217	1,189	41.25	17.41	1,485	1,485	830	37	7.66	21.50	400	400	287	0	1.93	20.11	364	278	188	143	4.39	65.79
26	9,874	9,873	2,889	1,350	44.17	18.64	1,485	1,485	829	105	9.09	25.49	400	400	309	0	2.04	21.24	364	278	193	176	4.39	65.86
27	9,874	9,873	3,193	1,002	43.67	18.43	1,485	1,485	1,062	367	20.37	57.14	400	400	290	0	2.03	21.12	364	278	190	178	4.42	66.19
28	9,874	9,873	3,162	1,303	31.34	13.23	1,485	1,485	825	0	6.57	18.45	400	400	300	0	1.78	18.51	364	278	198	112	3.97	59.50
Total	9,874	9,873	-	-	1,478.32	22.28	1,485	1,485	-	-	167.93	16.83	2,490	2,305	-	-	54.70	3.53	364	278	-	-	122.11	65.37

March , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	2,221	1,196	38.24	16.14	1,485	1,485	440	0	2.06	5.78	400	400	303	0	2.06	21.51	364	278	192	181	4.44	66.53
2	9,874	9,873	2,655	1,118	38.31	16.17	1,485	1,485	564	50	5.82	16.32	400	400	151	0	1.00	10.37	364	278	191	173	4.40	65.96
3	9,874	9,873	2,738	1,171	38.90	16.42	1,485	1,485	667	3	5.33	14.97	400	400	329	0	2.32	24.15	364	278	191	175	4.40	66.01
4	9,874	9,873	2,574	1,120	38.50	16.25	1,485	1,485	209	0	0.81	2.26	400	400	321	0	2.29	23.83	364	278	192	179	4.47	66.93
5	9,874	9,873	2,357	1,014	38.19	16.12	1,485	1,485	689	1	2.65	7.44	400	400	308	0	2.00	20.79	364	278	191	173	4.45	66.76
6	9,874	9,873	2,524	735	35.34	14.92	1,485	1,485	956	305	12.43	34.88	400	400	242	0	1.42	14.74	364	278	189	181	4.44	66.56
7	9,874	9,873	3,186	1,159	44.93	18.96	1,485	1,485	718	94	7.64	21.43	400	400	317	0	2.04	21.28	364	278	189	176	4.42	66.22
8	9,874	9,873	3,215	1,384	46.17	19.48	1,785	1,485	1,110	6	12.44	34.91	400	400	322	0	2.25	23.42	364	278	188	181	4.42	66.26
9	9,874	9,873	3,216	1,365	47.51	20.05	1,785	1,485	333	0	2.93	8.23	400	400	307	0	2.07	21.52	364	278	196	110	4.43	66.40
10	9,874	9,873	3,096	1,380	43.63	18.41	1,785	1,485	173	8	2.10	5.89	400	400	305	0	2.10	21.92	364	278	190	131	3.96	59.36
11	9,874	9,873	2,767	1,329	43.56	18.38	1,785	1,485	204	2	2.03	5.69	400	400	301	0	2.14	22.26	364	278	189	178	4.43	66.36
12	9,874	9,873	3,194	1,355	45.19	19.07	1,785	1,485	676	4	5.87	16.47	400	400	312	0	2.16	22.45	364	278	189	179	4.41	66.09
13	9,874	9,873	3,338	1,607	50.33	21.24	1,785	1,485	772	47	6.69	18.77	400	400	287	0	2.04	21.25	364	278	188	167	4.39	65.77
14	9,874	9,873	3,706	1,567	53.35	22.51	1,785	1,485	861	208	11.82	33.16	400	400	303	0	2.16	22.52	364	278	188	166	4.40	65.97
15	9,874	9,873	4,094	1,595	56.79	23.96	1,785	1,485	730	147	9.56	26.83	400	400	300	0	2.16	22.46	364	278	195	169	4.33	64.88
16	9,874	9,873	3,873	1,777	59.47	25.10	1,785	1,485	882	80	9.80	27.49	400	400	300	0	2.15	22.37	364	278	192	149	4.33	64.84
17	9,874	9,873	4,052	2,102	68.58	28.94	1,785	1,485	706	174	10.17	28.53	400	400	308	0	2.25	23.39	364	278	189	164	4.39	65.80
18	9,874	9,873	3,846	1,820	65.33	27.57	1,785	1,485	963	251	13.95	39.15	400	400	310	0	2.23	23.26	364	278	189	176	4.37	65.48
19	9,874	9,873	4,456	2,555	78.62	33.18	1,785	1,485	1,064	363	14.23	39.93	400	400	300	0	2.02	21.01	364	278	187	172	4.31	64.59
20	9,874	9,873	4,219	2,489	82.91	34.99	1,785	1,485	1,105	152	14.08	39.49	400	400	279	0	1.90	19.76	364	278	182	141	4.01	60.16
21	9,874	9,873	4,029	2,038	68.60	28.95	1,785	1,485	752	58	8.98	25.20	400	400	266	0	1.87	19.47	364	278	187	142	4.30	64.40
22	9,874	9,873	3,376	1,706	60.30	25.45	1,785	1,485	959	147	11.23	31.51	400	400	280	0	1.92	20.03	364	278	187	174	4.32	64.76
23	9,874	9,873	3,769	1,873	58.64	24.75	1,785	1,485	1,096	500	18.43	51.71	400	400	309	0	2.24	23.34	364	278	188	148	4.36	65.39
24	9,874	9,873	4,105	1,846	60.33	25.46	1,785	1,485	760	91	7.96	22.34	400	400	302	0	2.12	22.10	364	278	197	174	4.39	65.78
25	9,874	9,873	4,067	1,653	60.37	25.48	1,785	1,485	333	18	2.67	7.49	400	400	278	0	1.98	20.61	364	278	188	176	4.39	65.80
26	9,874	9,873	3,614	2,082	64.09	27.04	1,785	1,485	491	0	3.61	10.12	400	400	304	0	2.21	22.98	364	278	190	165	4.31	64.63
27	9,874	9,873	4,148	1,921	62.15	26.23	1,785	1,485	1,141	146	15.58	43.73	400	400	307	0	2.22	23.08	364	278	187	155	4.17	62.44
28	9,874	9,873	3,551	2,099	65.78	27.76	1,835	1,485	902	366	16.03	44.97	400	400	294	0	2.14	22.28	364	278	150	115	3.38	50.63
29	9,874	9,873	4,142	1,863	67.60	28.53	1,835	1,485	1,057	319	15.53	43.58	400	400	302	0	2.18	22.76	364	278	178	111	3.69	55.31
30	9,874	9,873	3,734	2,346	68.62	28.96	1,835	1,485	744	17	5.95	16.69	400	400	299	0	2.15	22.44	364	278	186	119	3.57	53.55
31	9,874	9,873	3,501	2,301	64.51	27.22	1,835	1,485	671	9	5.42	15.22	400	400	310	0	2.24	23.38	364	278	168	151	3.80	57.02
Total	9,874	9,873	-	-	1,714.84	23.35	1,835	1,835	-	-	263.80	19.32	400	400	-	-	64.01	21.51	364	278	-	-	131.88	63.76

April , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	9,874	9,873	3,591	2,291	65.14	27.49	1,835	1,835	789	1	4.65	10.57	400	400	301	0	2.19	22.81	364	278	170	126	3.54	52.99
2	9,874	9,873	3,947	2,290	70.41	29.71	1,835	1,835	910	108	9.75	22.14	400	400	308	0	2.30	23.92	364	278	155	136	3.62	54.29
3	9,874	9,873	4,059	2,259	72.12	30.44	1,835	1,835	1,013	98	10.08	22.89	400	400	313	0	2.26	23.49	364	278	159	134	3.71	55.68
4	9,892	9,873	4,449	2,104	72.67	30.67	1,835	1,835	859	56	7.47	16.96	400	400	284	0	2.04	21.30	364	278	161	148	3.76	56.40
5	9,892	9,891	4,690	2,447	71.44	30.09	1,835	1,835	1,019	50	7.78	17.68	400	400	296	0	2.16	22.47	364	278	169	138	3.86	57.86
6	9,892	9,891	4,534	1,963	69.41	29.24	1,835	1,835	1,214	203	12.55	28.49	400	400	292	0	2.16	22.47	364	278	174	170	4.16	62.29
7	9,892	9,891	4,152	2,277	74.31	31.30	1,835	1,835	1,174	165	15.55	35.31	400	400	296	0	2.14	22.34	364	278	177	172	4.18	62.72
8	9,892	9,891	4,556	2,311	79.06	33.30	1,835	1,835	1,317	604	23.71	53.84	400	400	283	0	2.06	21.47	364	278	178	39	3.92	58.69
9	9,892	9,891	4,636	2,358	82.07	34.57	1,835	1,835	1,222	185	12.31	27.96	400	400	293	0	2.11	22.01	364	278	166	158	3.89	58.37
10	9,892	9,891	4,582	2,354	83.75	35.28	1,835	1,835	1,042	58	9.66	21.93	400	400	295	0	2.12	22.07	364	278	167	140	3.94	59.03
11	9,892	9,891	4,762	2,354	84.63	35.65	1,835	1,835	1,219	259	15.94	36.19	400	400	270	0	1.80	18.80	364	278	167	164	3.98	59.70
12	9,892	9,891	4,785	2,517	85.94	36.20	1,835	1,835	1,395	427	20.15	45.76	400	400	302	0	2.20	22.90	364	278	167	150	3.99	59.82
13	9,892	9,891	4,883	2,460	87.48	36.85	1,835	1,835	1,078	349	17.40	39.51	500	500	362	0	2.65	22.05	364	278	167	91	3.61	54.06
14	9,892	9,891	4,585	2,800	83.49	35.17	1,835	1,835	1,286	230	15.37	34.90	500	500	366	0	2.79	23.24	364	278	148	146	3.54	53.02
15	9,892	9,891	4,380	2,981	84.21	35.47	1,835	1,835	1,331	190	16.22	36.82	500	500	367	0	2.83	23.61	364	278	192	146	4.08	61.18
16	9,892	9,891	4,597	2,365	81.65	34.39	1,835	1,835	1,468	558	22.85	51.89	500	500	354	0	2.73	22.76	364	278	194	171	4.50	67.49
17	10,612	10,611	4,734	2,522	83.09	32.62	1,835	1,835	1,420	491	22.76	51.67	500	500	352	0	2.68	22.35	364	278	202	168	4.44	66.59
18	10,612	10,611	4,640	2,279	81.39	31.96	1,835	1,835	1,270	343	16.62	37.75	500	500	317	0	2.35	19.55	364	278	202	147	4.35	65.18
19	10,612	10,611	4,794	2,581	82.54	32.41	1,835	1,835	1,194	155	13.14	29.85	500	500	354	0	2.57	21.42	364	278	194	146	4.23	63.45
20	10,612	10,071	4,986	2,444	88.18	36.48	1,835	1,835	1,167	188	11.69	26.55	500	500	322	0	2.49	20.77	364	278	148	99	3.39	50.82
21	10,612	10,071	4,864	2,615	90.84	37.58	1,835	1,835	1,258	75	11.85	26.90	500	500	340	0	2.48	20.65	364	278	148	137	3.53	52.84
22	10,612	10,071	4,835	2,817	90.57	37.47	1,835	1,835	1,250	304	15.57	35.35	500	500	360	0	2.82	23.51	364	278	149	134	3.55	53.23
23	10,612	10,071	4,565	2,539	83.91	34.71	1,835	1,835	1,306	120	11.43	25.95	500	500	345	0	2.67	22.21	364	278	149	136	3.55	53.15
24	10,612	10,071	4,039	2,143	76.01	31.45	1,835	1,835	1,380	126	15.16	34.42	500	500	347	0	2.43	20.28	364	278	148	129	3.49	52.25
25	10,612	10,071	4,457	2,394	77.55	32.08	1,835	1,835	1,506	497	19.71	44.77	500	500	332	0	2.51	20.91	364	278	148	140	3.51	52.64
26	10,612	10,071	4,567	2,267	78.23	32.37	1,835	1,835	1,496	276	18.94	43.00	500	500	355	0	2.76	23.00	364	278	148	138	3.51	52.54
27	10,612	10,071	4,494	2,292	77.18	31.93	1,835	1,835	1,059	159	12.39	28.13	500	500	350	0	2.77	23.05	364	278	148	103	3.14	47.04
28	10,612	10,071	4,660	2,035	81.01	33.52	1,835	1,835	1,526	480	23.42	53.17	500	500	363	0	2.83	23.57	364	278	166	117	3.46	51.91
29	10,612	10,071	4,687	2,559	84.56	34.98	1,835	1,835	1,432	277	20.08	45.58	500	500	360	0	2.86	23.81	364	278	167	135	3.72	55.79
30	10,612	10,071	4,887	2,792	91.73	37.95	1,835	1,835	1,529	397	17.70	40.18	500	500	353	0	2.83	23.60	364	278	162	124	3.57	53.48
Total	10,612	10,071	-	-	2,414.56	33.30	1,835	1,835	-	-	451.90	34.20	500	500	-	-	73.58	20.44	364	278	-	-	113.72	56.82

May , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	10,612	10,071	5,185	3,421	99.99	41.37	1,835	1,835	1,457	577	21.61	49.06	500	500	352	0	2.82	23.54	364	278	164	122	3.34	50.11
2	10,612	10,071	5,258	3,565	106.25	43.96	1,835	1,835	1,609	1,005	32.34	73.43	500	500	344	0	2.60	21.68	364	278	138	90	3.09	46.27
3	10,612	10,071	5,327	4,019	115.24	47.68	1,835	1,835	1,615	1,035	31.77	72.14	500	500	359	0	2.77	23.11	364	278	138	108	3.16	47.30
4	10,612	10,071	5,359	3,826	116.67	48.27	1,835	1,835	1,217	30	13.43	30.49	500	500	336	0	2.47	20.62	364	278	139	110	2.94	44.06
5	10,612	10,071	5,524	3,842	116.32	48.12	1,835	1,835	875	105	9.12	20.71	500	500	352	0	2.73	22.76	364	278	139	73	3.14	47.13
6	10,612	10,071	5,534	4,201	117.37	48.56	1,835	1,835	1,404	330	17.36	39.41	500	500	349	0	2.61	21.79	364	278	142	118	3.28	49.22
7	10,612	10,071	5,446	4,156	115.88	47.94	1,835	1,835	1,183	585	19.44	44.14	500	500	355	0	2.75	22.91	364	278	139	119	3.18	47.63
8	10,612	10,071	5,580	4,480	119.35	49.38	1,835	1,835	1,483	435	22.20	50.42	500	500	351	0	2.68	22.32	364	278	165	117	3.24	48.50
9	10,612	10,071	5,562	4,393	119.28	49.35	1,835	1,835	1,370	584	23.80	54.04	500	500	360	0	2.83	23.58	364	278	208	142	3.87	58.07
10	10,612	10,071	5,522	4,290	120.88	50.01	1,835	1,835	785	137	12.83	29.14	500	500	350	0	2.73	22.76	364	278	167	118	3.89	58.30
11	10,612	10,071	5,594	4,294	122.16	50.54	1,835	1,835	803	167	9.06	20.58	500	500	331	0	2.59	21.60	364	278	167	155	3.91	58.60
12	10,612	10,071	5,605	4,321	121.83	50.40	1,835	1,835	1,025	304	14.13	32.08	500	500	358	0	2.67	22.21	364	278	166	132	3.79	56.79
13	10,612	10,071	5,578	4,416	121.17	50.13	1,835	1,835	1,084	257	12.11	27.49	500	500	358	0	2.91	24.29	364	278	169	157	3.92	58.76
14	10,612	10,071	5,583	4,378	121.32	50.19	1,835	1,835	1,517	626	27.11	61.56	500	500	354	0	2.89	24.06	364	278	167	134	3.76	56.36
15	10,612	10,071	5,617	4,241	118.02	48.83	1,835	1,835	1,667	929	33.27	75.54	500	500	362	0	2.86	23.85	364	278	168	144	3.89	58.31
16	10,612	10,071	5,482	4,027	116.83	48.34	1,835	1,835	1,620	684	30.23	68.65	500	500	352	0	2.77	23.11	364	278	177	133	3.67	54.97
17	10,612	10,071	5,569	4,187	120.11	49.69	1,835	1,835	1,400	349	23.07	52.38	500	500	346	0	2.77	23.09	364	278	178	161	4.01	60.15
18	10,612	10,071	5,748	4,482	117.99	48.81	1,835	1,835	1,161	401	17.05	38.71	500	500	341	0	2.69	22.44	364	278	176	149	3.99	59.81

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
19	10,612	10,071	5,606	4,132	118.55	49.05	1,835	1,835	1,090	400	16.54	37.56	500	500	356	0	2.79	23.26	364	278	174	133	3.73	55.95
20	10,612	10,071	5,654	4,169	120.54	49.87	1,835	1,835	1,640	918	33.50	76.07	500	500	343	0	2.69	22.41	364	278	120	90	2.71	40.56
21	10,612	10,071	5,614	4,225	118.48	49.02	1,835	1,835	1,734	1,279	36.68	83.29	500	500	342	0	2.69	22.46	364	278	148	110	3.10	46.43
22	10,612	10,071	5,594	4,302	117.60	48.65	1,835	1,835	1,690	997	36.50	82.89	500	500	357	0	2.84	23.65	364	278	154	91	3.41	51.07
23	10,612	10,071	5,212	3,931	111.91	46.30	1,835	1,835	1,644	845	32.14	72.98	500	500	316	0	2.27	18.90	364	278	156	139	3.56	53.31
24	10,612	10,431	5,357	4,142	110.65	44.20	1,835	1,835	1,520	173	19.87	45.12	500	500	377	0	3.03	25.29	364	278	155	107	3.54	53.02
25	10,612	10,431	5,015	3,877	108.39	43.29	1,835	1,835	1,317	344	20.23	45.94	500	500	360	0	2.92	24.37	364	278	153	105	3.37	50.44
26	10,612	10,431	5,219	4,066	111.88	44.69	1,835	1,835	1,646	1,257	35.05	79.60	500	500	343	0	2.75	22.96	364	278	140	88	3.28	49.13
27	10,612	10,431	5,015	3,877	108.39	43.29	1,835	1,835	1,317	344	20.23	45.94	500	500	360	0	2.92	24.37	364	278	153	105	3.37	50.44
28	10,612	10,431	5,473	3,960	116.97	46.72	1,835	1,835	1,741	1,265	36.86	83.70	500	500	346	0	2.81	23.39	364	278	164	145	3.81	57.10
29	10,612	10,431	5,425	4,319	116.52	46.54	1,835	1,835	1,604	1,240	33.54	76.15	500	500	362	0	2.66	22.14	364	278	169	157	3.94	59.04
30	10,612	10,431	5,313	3,658	114.38	45.69	1,835	1,835	1,663	686	31.29	71.05	500	500	334	0	2.57	21.45	364	278	192	163	4.24	63.52
31	10,612	10,431	5,261	3,703	110.92	44.30	1,835	1,835	1,645	1,146	33.96	77.11	500	500	330	0	2.71	22.59	364	278	193	84	4.55	68.22
Total	10,612	10,431	-	-	3,591.85	46.28	1,835	1,835	-	-	756.32	55.40	500	500	-	-	84.84	22.81	364	278	-	-	110.66	53.50

June , 2022

Day	Hydel						Wind						Solar						Bagasse					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Load (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min			Inst.	Dep.	Max	Min		
1	10,612	10,431	4,945	3,743	105.10	41.98	1,835	1,835	1,681	1,022	32.30	73.34	500	500	351	0	2.77	23.11	364	278	193	169	4.42	66.23
2	10,612	10,431	4,855	3,954	104.25	41.64	1,835	1,835	1,494	724	26.57	60.34	500	500	349	0	2.85	23.75	364	278	183	133	4.26	63.89
3	10,612	10,431	4,707	3,671	100.86	40.29	1,835	1,835	1,702	836	26.94	61.16	500	500	359	0	2.97	24.77	364	278	189	157	4.19	62.85
4	10,612	10,431	4,700	3,673	100.08	39.97	1,835	1,835	1,648	967	33.13	75.23	500	500	350	0	2.89	24.05	364	278	189	150	3.18	47.63
5	10,612	10,431	4,775	3,364	100.59	40.18	1,835	1,835	1,675	801	32.33	73.42	500	500	338	0	2.84	23.64	364	278	187	174	4.33	64.96
6	10,612	10,431	4,962	3,725	103.67	41.41	1,835	1,835	1,676	826	30.17	68.49	500	500	348	0	2.86	23.81	364	278	228	162	4.46	66.77
7	10,612	10,431	5,155	3,464	106.61	42.58	1,835	1,835	1,756	1,254	36.42	82.69	500	500	361	0	2.91	24.29	364	278	182	151	4.24	63.55
8	10,612	10,431	5,065	3,679	104.24	41.64	1,835	1,835	1,759	1,545	39.42	89.51	500	500	358	0	2.86	23.82	364	278	182	160	4.05	60.73
9	10,612	10,431	5,407	4,011	108.66	43.40	1,835	1,835	1,739	1,357	38.62	87.69	500	500	359	0	2.91	24.26	364	278	184	162	4.20	63.02
10	10,612	10,431	5,331	4,019	111.73	44.63	1,835	1,835	1,662	941	32.95	74.82	500	500	352	0	2.83	23.55	364	278	184	152	4.26	63.83
11	10,612	10,431	5,120	3,100	107.63	42.99	1,835	1,835	1,553	800	30.40	69.03	500	500	338	0	2.66	22.16	364	278	187	136	3.94	59.00
12	10,612	10,431	4,970	3,792	105.07	41.97	1,835	1,835	1,328	666	21.75	49.40	500	500	325	0	2.57	21.44	364	278	183	147	4.18	62.72
13	10,612	10,431	5,169	3,735	104.81	41.87	1,835	1,835	1,120	225	14.04	31.88	500	500	334	0	2.63	21.95	364	278	182	174	4.33	64.93
14	10,612	10,431	5,225	3,860	106.38	42.49	1,835	1,835	1,444	134	15.14	34.37	500	500	339	0	2.71	22.58	364	278	182	176	4.30	64.42
15	10,612	10,431	5,269	3,751	109.78	43.85	1,835	1,835	1,713	803	32.28	73.30	500	500	344	0	2.78	23.16	364	278	181	124	3.69	55.34
16	10,612	10,431	5,271	3,466	106.93	42.71	1,835	1,835	1,736	1,525	39.10	88.78	500	500	341	0	2.66	22.16	364	278	139	118	3.21	48.18
17	10,612	10,431	5,464	4,128	115.26	46.04	1,835	1,835	1,724	1,269	37.63	85.45	500	500	307	0	2.11	17.60	364	278	138	130	3.27	49.00
18	10,612	10,431	5,644	4,158	115.72	46.22	1,835	1,835	1,512	764	29.33	66.60	500	500	343	0	2.38	19.87	364	278	137	114	3.12	46.72
19	10,612	10,431	5,338	3,938	112.35	44.88	1,835	1,835	1,570	706	29.85	67.77	500	500	393	0	2.41	20.06	364	278	137	106	3.19	47.87
20	10,612	10,431	5,267	3,562	106.99	42.74	1,835	1,835	1,738	1,360	38.66	87.78	500	500	374	0	2.07	17.25	364	278	136	107	3.04	45.56
21	10,612	10,431	5,714	3,627	112.41	44.90	1,835	1,835	1,665	336	32.11	72.91	500	500	355	0	1.82	15.19	364	278	135	78	3.13	46.88
22	10,612	10,431	5,807	4,224	126.52	50.54	1,835	1,835	339	6	3.11	7.07	500	500	350	0	2.60	21.70	364	278	136	115	3.19	47.87
23	10,612	10,431	5,720	4,310	125.41	50.09	1,835	1,835	1,109	46	10.30	23.38	500	500	359	0	2.94	24.48	364	278	139	131	3.22	48.26
24	10,612	10,431	5,716	4,102	119.59	47.77	1,835	1,835	1,287	88	12.01	27.27	500	500	363	0	3.02	25.17	364	278	136	131	3.20	47.93
25	10,612	10,431	5,638	4,511	122.24	48.83	1,835	1,835	1,338	613	22.22	50.45	500	500	369	0	3.08	25.66	364	278	136	129	3.20	47.94
26	10,612	10,431	5,761	4,688	125.76	50.23	1,835	1,835	1,081	232	15.39	34.94	500	500	364	0	3.02	25.19	364	278	135	121	3.23	48.35
27	10,612	10,431	5,628	4,694	124.10	49.57	1,835	1,835	896	95	13.12	29.78	500	500	343	0	2.78	23.13	364	278	134	101	2.99	44.78
28	10,612	10,431	5,794	4,811	125.35	50.07	1,835	1,835	1,218	164	14.02	31.85	500	500	338	0	2.79	23.25	364	278	120	100	2.80	42.03
29	10,612	10,431	5,698	4,774	125.20	50.01	1,835	1,835	1,717	517	31.28	71.03	500	500	343	0	2.70	22.52	364	278	123	106	2.82	42.26
30	10,612	10,431	5,881	4,774	125.44	50.10	1,835	1,835	1,767	1,429	39.04	88.65	500	500	338	0	2.66	22.18	364	278	132	113	2.92	43.82
Total	10,612	10,431	-	-	3,263.61	43.45	1,835	1,835	-	-	777.32	58.83	500	500	-	-	78.32	21.76	364	278	-	-	104.15	52.04

Table 98
Daily Generation Capacity (MW), Daily Generation (GWh) & Load Management

Days	July , 2021											August , 2021										
	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	37,261	33,566	22,206	20,207	513.82	63.78	2,557	56	752	0	3,365.00	37,261	33,566	22,150	19,209	500.55	62.13	2,378	43	0	0	2,421.00
2	37,261	33,566	22,697	19,131	512.82	63.66	2,527	44	0	0	2,571.00	37,261	33,566	22,518	19,014	505.22	62.72	2,363	43	0	0	2,406.00
3	37,261	33,566	23,182	19,037	497.94	61.81	2,809	5	0	0	2,814.00	37,261	33,566	23,355	19,918	523.51	64.99	2,493	43	0	73	2,609.00
4	37,261	33,566	21,818	18,142	488.91	60.69	3,079	5	0	0	3,084.00	37,261	33,566	23,380	19,395	515.81	64.03	2,177	48	0	0	2,225.00
5	37,261	33,566	23,316	18,512	508.90	63.17	2,720	5	0	0	2,725.00	37,261	33,566	23,473	20,520	531.28	65.95	2,389	47	0	102	2,538.00
6	37,261	33,566	23,840	20,615	539.72	67.00	2,557	5	278	118	2,958.00	37,261	33,566	22,515	17,193	478.13	59.35	2,190	6	0	0	2,196.00
7	37,261	33,566	23,868	21,333	551.08	68.41	2,566	50	0	0	2,616.00	37,261	33,566	23,202	19,999	523.19	64.95	2,383	44	0	868	3,295.00
8	37,261	33,566	24,100	21,022	555.33	68.94	2,575	46	457	107	3,185.00	37,261	33,566	22,081	18,762	504.92	62.68	2,090	47	0	0	2,137.00
9	37,261	33,566	24,303	20,811	549.59	68.22	2,387	5	0	222	2,614.00	37,261	33,566	23,050	19,283	511.88	63.54	2,325	45	0	0	2,370.00
10	37,261	33,566	23,101	20,984	534.29	66.32	2,549	43	1,688	25	4,305.00	37,261	33,566	23,998	19,555	529.82	65.77	2,110	46	0	0	2,156.00
11	37,261	33,566	22,778	19,807	511.33	63.47	2,632	46	0	0	2,678.00	37,261	33,566	24,467	20,203	540.08	67.04	1,971	44	0	80	2,095.00
12	37,261	33,566	21,859	16,958	457.23	56.76	2,361	47	0	0	2,408.00	37,261	33,566	24,564	20,945	549.55	68.22	2,054	47	0	50	2,151.00
13	37,261	33,566	22,346	16,563	473.80	58.81	2,520	43	0	0	2,563.00	37,261	33,566	24,190	20,704	540.08	67.04	2,091	50	0	0	2,141.00
14	37,261	33,566	21,416	16,988	473.83	58.82	2,417	43	0	0	2,460.00	37,261	33,566	22,168	19,010	504.70	62.65	1,722	47	0	0	1,769.00
15	37,261	33,566	22,925	18,348	505.22	62.71	2,666	48	0	0	2,714.00	37,261	33,566	21,971	17,555	481.29	59.75	1,847	46	0	15	1,908.00
16	37,261	33,566	22,523	19,292	511.87	63.54	2,579	9	2,118	0	4,706.00	37,261	33,566	23,936	19,207	521.72	64.76	2,053	49	0	0	2,102.00
17	37,261	33,566	22,951	20,349	522.30	64.83	2,440	98	2,718	0	5,256.00	37,261	33,566	24,346	20,156	542.84	67.39	1,903	48	0	0	1,951.00
18	37,261	33,566	23,199	21,157	535.58	66.48	1,797	1,403	547	46	3,793.00	37,261	33,566	23,575	20,595	533.52	66.23	1,745	47	0	0	1,792.00
19	37,261	33,566	22,555	19,628	511.57	63.50	2,390	5	0	0	2,395.00	37,261	33,566	22,505	17,921	492.55	61.14	1,641	41	0	0	1,682.00
20	37,261	33,566	19,895	15,670	426.91	52.99	1,621	8	0	0	1,629.00	37,261	33,566	23,309	18,434	500.34	62.11	2,315	49	0	0	2,364.00
21	37,261	33,566	19,815	15,062	416.12	51.65	1,244	8	0	0	1,252.00	37,261	33,566	23,076	18,879	505.38	62.74	2,336	53	0	0	2,389.00
22	37,261	33,566	21,177	17,607	460.79	57.20	1,226	9	0	0	1,235.00	37,261	33,566	22,435	18,938	501.35	62.23	2,283	46	0	0	2,329.00
23	37,261	33,566	21,714	18,562	485.34	60.25	1,930	8	0	0	1,938.00	37,261	33,566	23,856	19,358	526.84	65.40	2,508	46	0	0	2,554.00
24	37,261	33,566	22,994	19,470	513.50	63.74	1,852	8	0	40	1,900.00	37,261	33,666	24,356	20,571	546.59	67.65	2,559	47	0	0	2,606.00
25	37,261	33,566	23,847	20,973	532.96	66.16	1,960	48	0	200	2,208.00	37,261	33,666	24,407	20,564	549.85	68.05	2,531	50	0	0	2,581.00
26	37,261	33,566	23,551	21,079	540.09	67.04	2,471	44	0	0	2,515.00	37,261	33,666	24,312	20,472	550.28	68.11	2,416	47	0	0	2,463.00
27	37,261	33,566	22,806	20,142	520.73	64.64	2,335	45	0	0	2,380.00	37,261	33,666	23,904	20,373	532.34	65.89	2,704	3	0	0	2,707.00
28	37,261	33,566	21,879	18,417	485.63	60.28	2,366	47	0	0	2,413.00	37,261	33,666	22,802	19,390	516.38	63.91	2,411	51	0	0	2,462.00
29	37,261	33,566	22,207	17,181	483.01	59.96	2,294	43	0	0	2,337.00	37,261	33,666	22,101	19,303	496.98	61.51	2,376	48	0	0	2,424.00
30	37,261	33,566	22,353	18,634	503.62	62.52	2,555	43	0	0	2,598.00	37,261	33,666	21,823	18,625	485.08	60.04	2,323	33	0	0	2,356.00
31	37,261	33,566	21,980	18,465	491.04	60.95	2,296	46	0	0	2,342.00	37,361	33,666	21,053	15,703	456.42	56.49	2,637	49	0	0	2,686.00

Days	September , 2021											October , 2021										
	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	37,361	33,666	21,784	17,868	483.52	59.84	2,236	45	0	114	2,395.00	37,361	33,816	20,174	17,359	456.77	56.28	2,569	46	0	0	2,615.00
2	37,361	33,666	22,435	18,563	499.62	61.84	2,448	47	0	0	2,495.00	37,361	33,816	19,935	14,598	433.54	53.42	2,443	43	0	0	2,486.00
3	37,361	33,666	21,324	17,825	478.12	59.18	2,411	8	0	0	2,419.00	37,361	33,816	20,015	15,968	439.51	54.15	2,513	46	0	0	2,559.00
4	37,361	33,666	21,854	17,336	476.30	58.95	2,506	41	0	0	2,547.00	37,361	33,816	19,836	15,956	433.88	53.46	2,422	47	0	0	2,469.00
5	37,361	33,666	22,420	18,257	497.65	61.59	2,456	46	0	0	2,502.00	37,361	33,816	20,001	15,352	426.56	52.56	2,419	5	0	0	2,424.00
6	37,361	33,816	23,422	19,221	525.66	64.77	2,467	44	0	0	2,511.00	37,361	33,816	20,000	16,365	438.46	54.02	2,284	46	0	0	2,330.00
7	37,361	33,816	23,246	20,032	530.73	65.39	2,502	42	0	0	2,544.00	37,361	33,816	18,563	15,961	415.12	51.15	2,467	7	2,719	0	5,193.00
8	37,361	33,816	21,884	18,464	479.46	59.08	2,697	44	0	0	2,741.00	37,361	33,816	19,390	15,062	414.85	51.12	2,506	57	0	0	2,563.00
9	37,361	33,816	20,157	17,185	456.09	56.20	2,425	46	0	0	2,471.00	37,361	33,816	19,635	15,855	435.54	53.67	2,237	45	0	0	2,282.00
10	37,361	33,816	19,092	16,289	422.21	52.02	2,362	9	0	0	2,371.00	37,361	33,816	18,097	15,144	407.40	50.20	2,527	39	0	0	2,566.00
11	37,361	33,816	17,787	14,703	401.28	49.44	2,260	46	0	0	2,306.00	37,361	33,816	18,137	13,737	383.03	47.20	2,365	41	0	0	2,406.00
12	37,361	33,816	18,163	14,492	391.77	48.27	2,275	46	0	0	2,321.00	37,361	33,816	18,360	14,228	389.92	48.04	2,056	44	0	0	2,100.00
13	37,361	33,816	20,379	15,445	438.05	53.97	2,540	41	0	0	2,581.00	37,361	33,816	17,495	14,220	384.13	47.33	2,163	41	0	0	2,204.00
14	37,361	33,816	21,236	17,369	468.67	57.75	2,601	43	0	0	2,644.00	37,361	33,816	17,245	13,725	371.56	45.78	2,312	39	0	0	2,351.00
15	37,361	33,816	22,090	17,698	489.44	60.31	2,471	46	0	0	2,517.00	37,361	33,816	16,286	13,195	356.77	43.96	2,345	0	0	0	2,345.00
16	37,361	33,816	22,469	17,720	494.93	60.98	2,549	46	0	0	2,595.00	37,361	33,816	16,759	13,095	360.37	44.40	2,279	22	0	0	2,301.00
17	37,361	33,816	21,666	18,068	489.94	60.37	2,529	4	0	0	2,533.00	37,361	33,816	16,079	13,223	353.93	43.61	2,067	46	0	0	2,113.00
18	37,361	33,816	22,194	18,090	493.67	60.83	2,496	48	0	0	2,544.00	37,361	33,816	16,914	12,700	349.77	43.10	2,041	39	0	0	2,080.00
19	37,361	33,816	22,353	18,490	493.79	60.84	2,496	47	0	0	2,543.00	37,361	33,816	15,155	12,577	333.61	41.11	1,860	43	0	0	1,903.00

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
20	37,361	33,816	22,368	18,937	501.86	61.84	2,454	44	0	0	2,498.00	37,361	33,816	16,131	11,682	332.60	40.98	2,077	39	921	0	3,037.00
21	37,361	33,816	20,978	16,335	449.95	55.44	2,478	48	0	0	2,526.00	37,361	33,816	16,518	12,697	343.96	42.38	2,357	41	0	0	2,398.00
22	37,361	33,816	19,684	15,616	430.93	53.10	2,461	47	0	0	2,508.00	37,361	33,816	14,825	12,737	334.12	41.17	2,829	0	0	0	2,829.00
23	37,361	33,816	19,124	15,224	417.33	51.42	2,347	47	0	0	2,394.00	37,361	33,816	14,505	11,679	314.97	38.81	2,298	39	0	0	2,337.00
24	37,361	33,816	19,075	15,630	416.00	51.26	2,475	47	0	0	2,522.00	37,361	33,816	13,680	10,554	291.36	35.90	2,216	39	0	0	2,255.00
25	37,361	33,816	20,382	15,877	442.12	54.48	2,403	47	0	0	2,450.00	37,361	33,816	14,510	9,754	290.53	35.80	2,210	39	0	0	2,249.00
26	37,361	33,816	20,592	16,705	445.72	54.92	2,396	47	0	0	2,443.00	37,361	33,816	14,552	10,217	297.08	36.60	2,418	40	0	0	2,458.00
27	37,361	33,816	21,171	17,847	471.37	58.08	2,325	45	0	0	2,370.00	37,361	33,816	14,723	10,322	297.35	36.64	2,471	39	0	0	2,510.00
28	37,361	33,816	21,260	17,734	476.98	58.77	2,435	47	0	0	2,482.00	37,361	33,816	14,491	10,383	300.15	36.98	2,512	39	0	0	2,551.00
29	37,361	33,816	21,716	17,717	479.34	59.06	2,612	48	0	0	2,660.00	37,361	33,816	13,802	10,458	296.80	36.57	2,560	0	0	0	2,560.00
30	37,361	33,816	20,715	18,319	473.44	58.34	2,835	49	0	0	2,884.00	37,361	33,816	14,397	10,328	297.44	36.65	2,501	39	0	0	2,540.00
												37,361	33,816	13,979	10,161	292.03	35.98	2,312	39	0	0	2,351.00

November , 2021 | **December, 2021**

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	37,361	33,816	14,380	10,124	298.19	36.74	2,312	39	0	0	2,351.00	38,021	34,467	14,056	9,002	286.12	34.59	2,252	24	0	0	2,276.00
2	37,361	33,816	14,408	9,893	293.48	36.16	2,080	39	0	0	2,119.00	38,021	34,467	14,088	9,151	286.85	34.68	2,145	33	0	0	2,178.00
3	37,361	33,816	14,446	10,036	295.36	36.39	2,061	0	0	0	2,061.00	38,021	34,467	13,633	9,155	278.91	33.72	2,261	0	0	0	2,261.00
4	37,361	33,816	14,377	10,000	292.95	36.10	2,204	39	0	0	2,243.00	38,021	34,467	13,798	8,774	280.26	33.88	2,172	33	0	0	2,205.00
5	37,361	33,816	13,686	10,014	288.13	35.50	2,319	0	0	0	2,319.00	38,021	34,467	13,135	8,697	269.94	32.63	2,205	33	0	51	2,289.00
6	37,361	33,816	14,204	9,817	290.48	35.79	2,266	28	0	0	2,294.00	38,021	34,467	14,020	8,655	278.90	33.72	2,588	29	0	0	2,617.00
7	37,361	33,816	13,367	9,710	285.09	35.13	2,307	0	0	0	2,307.00	38,021	34,467	14,167	9,070	283.20	34.24	2,530	0	0	0	2,530.00
8	37,361	33,816	14,280	9,639	286.52	35.30	2,142	39	0	0	2,181.00	38,021	34,467	14,260	8,849	281.22	34.00	2,495	14	0	0	2,509.00
9	37,361	33,816	14,200	10,061	293.93	36.22	2,089	39	0	0	2,128.00	38,021	34,467	14,097	8,904	279.89	33.84	2,610	0	0	0	2,610.00
10	37,361	33,816	14,325	9,925	294.29	36.26	2,185	39	0	0	2,224.00	38,021	34,467	13,775	8,770	278.45	33.66	2,277	0	0	0	2,277.00
11	37,361	33,816	14,130	9,924	291.20	35.88	2,430	0	0	0	2,430.00	38,021	34,467	13,798	8,594	275.57	33.31	2,540	0	0	0	2,540.00
12	37,361	33,816	13,186	9,629	282.36	34.79	2,368	1	0	0	2,369.00	38,021	34,467	13,364	8,629	269.24	32.55	2,266	14	0	0	2,280.00
13	37,361	33,816	13,749	9,399	281.10	34.64	2,195	39	0	0	2,234.00	38,021	34,467	13,913	8,309	272.33	32.92	2,346	14	0	0	2,360.00
14	37,361	33,816	13,088	9,296	274.00	33.76	2,440	0	0	0	2,440.00	38,021	34,467	14,117	8,625	276.71	33.45	2,366	14	0	60	2,440.00
15	37,361	33,816	13,983	9,216	279.24	34.41	2,527	0	0	0	2,527.00	38,021	34,467	14,255	7,892	268.19	32.42	2,484	14	0	0	2,498.00
16	37,361	33,816	13,873	9,268	280.68	34.58	2,453	0	0	0	2,453.00	38,021	34,467	14,617	7,392	270.55	32.71	2,296	14	0	0	2,310.00
17	37,361	33,816	13,836	9,171	279.91	34.49	2,372	0	0	0	2,372.00	38,021	34,467	14,310	8,330	282.86	34.19	2,415	0	0	0	2,415.00
18	37,361	33,816	13,905	9,037	280.62	34.58	2,441	0	0	0	2,441.00	38,021	34,467	15,028	8,899	297.47	35.96	2,209	14	0	0	2,223.00
19	37,361	33,816	13,097	8,952	274.69	33.85	2,256	2	0	0	2,258.00	38,021	34,467	15,174	9,796	305.35	36.91	1,688	17	0	0	1,705.00
20	37,361	33,816	13,644	8,348	273.64	33.72	2,408	0	0	0	2,408.00	38,021	34,467	15,098	8,877	295.96	35.78	2,379	14	0	0	2,393.00
21	37,361	33,816	13,081	8,770	270.19	33.29	2,544	39	0	0	2,583.00	38,021	34,467	15,073	9,234	300.16	36.29	2,510	14	0	0	2,524.00
22	37,361	33,816	13,810	8,554	270.75	33.36	2,323	39	0	0	2,362.00	38,021	34,467	15,075	9,052	299.53	36.21	2,591	14	0	0	2,605.00
23	37,361	33,816	13,965	8,814	275.66	33.97	2,484	39	0	0	2,523.00	38,021	34,467	14,878	9,437	299.62	36.22	2,514	14	0	0	2,528.00
24	37,361	33,816	14,025	9,026	278.84	34.36	2,263	33	0	0	2,296.00	38,021	34,467	14,388	9,191	294.86	35.65	2,586	0	0	0	2,586.00
25	37,361	33,816	14,060	8,877	277.66	34.21	2,584	0	0	0	2,584.00	38,021	34,467	14,415	9,161	287.01	34.70	2,604	14	0	0	2,618.00
26	37,361	33,816	13,374	8,962	277.73	34.22	2,367	0	0	0	2,367.00	38,021	34,467	13,965	8,351	275.25	33.27	2,279	14	0	0	2,293.00
27	37,361	33,861	13,725	8,823	277.31	34.12	2,538	0	0	0	2,538.00	38,021	34,467	14,715	8,342	283.87	34.32	2,505	14	0	0	2,519.00
28	37,361	33,861	13,311	8,928	272.63	33.55	2,332	33	0	0	2,365.00	38,021	34,467	15,220	8,845	291.58	35.25	2,299	14	0	0	2,313.00
29	37,361	33,861	14,003	8,665	276.23	33.99	2,412	29	0	0	2,441.00	38,021	34,467	15,250	9,385	300.86	36.37	2,339	11	0	0	2,350.00
30	37,361	33,816	20,715	18,319	473.44	58.34	2,835	49	0	0	2,884.00	38,021	34,467	15,043	9,426	300.65	36.35	2,262	11	0	0	2,273.00
												38,021	34,467	14,537	9,335	293.35	35.46	2,865	0	0	0	2,865.00

January , 2022

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total
1	38,021	34,467	14,717	9,008	294.71	35.63	2,768	1	0	0	2,769.00
2	38,021	34,467	13,893	9,260	284.82	34.43	2,410	14	0	0	2,424.00
3	38,021	34,467	14,093	8,784	287.53	34.76	2,709	14	0	0	2,723.00
4	38,021	34,467	13,982	8,135	275.03	33.25	2,649	11	0	0	2,660.00
5	38,021	34,467	13,316	6,838	241.86	29.24	2,077	0	0	0	2,077.00
6	38,021	34,467	13,933	8,489	283.22	34.24	2,862	0	0	0	2,862.00
7	38,021	34,467	12,828	8,071	258.94	31.30	2,471	2	0	0	2,473.00
8	38,021	34,467	13,951	7,806	268.05	32.40	2,579	14	0	0	2,593.00
9	38,021	34,467	13,660	8,613	270.02	32.64	2,473	14	0	0	2,487.00
10	38,021	34,467	14,394	8,470	280.01	33.85	2,675	14	0	0	2,689.00
11	38,021	34,467	14,460	8,971	284.66	34.41	2,261	14	0	0	2,275.00
12	38,021	34,467	14,740	9,144	286.42	34.62	2,259	14	0	0	2,273.00
13	38,021	34,467	14,785	9,175	291.67	35.26	2,328	14	0	0	2,342.00
14	38,021	34,467	14,085	9,398	290.14	35.07	2,314	0	0	0	2,314.00
15	38,021	34,467	14,687	9,048	293.61	35.49	2,403	14	0	0	2,417.00
16	38,021	34,467	13,960	9,106	284.52	34.40	2,218	14	0	0	2,232.00
17	38,021	34,467	14,994	8,943	292.82	35.40	2,427	14	0	0	2,441.00
18	38,021	34,467	14,893	9,070	292.26	35.33	2,335	14	0	0	2,349.00
19	38,021	34,467	14,953	9,429	297.84	36.01	2,352	14	0	0	2,366.00
20	38,021	34,467	14,782	9,323	293.93	35.53	2,366	14	0	0	2,380.00
21	38,021	34,467	14,349	9,320	293.08	35.43	2,771	0	0	0	2,771.00
22	38,021	34,467	13,973	8,408	277.53	33.55	2,406	14	0	0	2,420.00
23	38,021	34,467	14,110	8,581	279.27	33.76	2,719	14	0	0	2,733.00
24	38,021	34,467	14,915	8,599	289.78	35.03	2,618	14	0	0	2,632.00
25	38,021	34,467	14,881	9,040	295.00	35.66	2,521	14	0	0	2,535.00
26	38,021	34,467	14,974	9,256	294.36	35.58	2,614	14	0	0	2,628.00
27	38,021	34,467	14,765	9,387	291.45	35.23	2,571	14	0	0	2,585.00
28	38,021	34,467	14,219	9,270	292.59	35.37	2,394	0	0	0	2,394.00
29	38,021	34,467	14,405	8,743	286.46	34.63	2,407	0	0	0	2,407.00
30	38,021	34,467	13,670	8,868	279.04	33.73	2,462	0	0	0	2,462.00
31	38,021	34,467	14,405	8,570	284.50	34.39	2,368	14	0	0	2,382.00

February, 2022

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	38,021	34,467	14,730	9,446	297.80	36.00	2,581	14	0	0	2,595.00
2	38,021	34,467	14,706	9,448	301.21	36.41	2,544	14	0	0	2,558.00
3	38,171	34,617	14,893	8,902	295.00	35.51	2,430	14	0	0	2,444.00
4	38,171	34,617	14,647	9,324	297.58	35.82	2,269	0	0	0	2,269.00
5	38,171	34,617	14,706	9,244	291.67	35.11	2,325	14	0	0	2,339.00
6	38,171	34,617	14,376	9,072	284.01	34.19	2,241	14	0	0	2,255.00
7	38,171	34,617	14,839	8,960	292.73	35.24	2,098	14	0	0	2,112.00
8	38,171	34,617	14,796	8,989	294.87	35.49	2,176	14	0	0	2,190.00
9	38,171	34,617	14,922	9,079	295.96	35.62	2,249	14	0	0	2,263.00
10	38,171	34,617	14,795	9,496	296.58	35.70	2,518	14	0	0	2,532.00
11	38,171	34,617	14,281	9,235	294.06	35.39	2,556	0	0	0	2,556.00
12	38,171	34,617	14,616	9,329	291.03	35.03	2,082	14	0	0	2,096.00
13	38,171	34,617	14,175	9,154	286.06	34.43	2,147	0	0	0	2,147.00
14	38,171	34,617	14,431	9,153	292.67	35.23	2,123	14	0	0	2,137.00
15	38,171	34,617	14,473	9,454	291.58	35.10	2,214	14	0	0	2,228.00
16	38,171	34,617	14,530	9,496	290.89	35.01	2,496	14	0	0	2,510.00
17	38,171	34,617	14,409	9,400	289.06	34.79	2,445	14	0	0	2,459.00
18	38,171	34,617	13,910	9,319	286.21	34.45	2,222	0	0	0	2,222.00
19	38,171	34,617	14,198	8,825	286.60	34.50	2,207	14	0	0	2,221.00
20	38,171	34,617	13,643	9,103	277.47	33.40	2,080	14	0	0	2,094.00
21	38,171	34,617	14,391	8,980	285.29	34.34	2,288	14	0	0	2,302.00
22	38,171	34,617	13,440	8,958	276.83	33.32	2,439	14	0	0	2,453.00
23	36,573	34,617	14,259	8,727	283.25	34.09	2,404	14	0	0	2,418.00
24	36,573	34,617	14,381	9,127	287.61	34.62	2,294	14	0	0	2,308.00
25	36,573	34,617	14,108	9,138	284.91	34.29	2,758	0	0	0	2,758.00
26	36,573	34,617	13,786	8,156	273.25	32.89	2,635	0	0	0	2,635.00
27	36,573	34,617	13,372	9,066	280.13	33.72	1,808	565	0	0	2,373.00
28	36,573	34,617	14,006	8,526	245.46	29.54	2,235	14	0	64	2,313.00

March , 2022

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total
1	36,573	34,617	14,057	9,280	288.63	34.74	2,245	14	0	94	2,353.00
2	36,573	34,617	13,726	9,100	281.02	33.83	2,252	14	0	0	2,266.00
3	36,573	34,590	13,616	9,030	280.03	33.73	2,157	14	0	0	2,171.00
4	36,573	34,590	13,825	9,258	282.08	33.98	2,157	0	0	0	2,157.00
5	36,573	34,590	14,003	9,381	289.13	34.83	2,211	14	0	0	2,225.00
6	37,718	35,649	13,476	9,581	282.45	33.01	2,484	14	0	0	2,498.00
7	37,718	35,649	13,916	8,978	281.25	32.87	2,153	14	0	0	2,167.00
8	38,018	35,949	14,317	9,587	293.63	34.03	2,370	14	0	150	2,534.00
9	38,018	35,949	14,613	9,617	299.55	34.72	2,274	14	0	0	2,288.00
10	38,018	35,949	14,895	10,177	303.73	35.20	2,248	14	0	0	2,262.00
11	38,018	35,949	14,739	10,557	311.18	36.07	2,280	0	0	0	2,280.00
12	38,018	35,949	15,152	10,460	315.81	36.60	2,147	14	0	0	2,161.00
13	38,018	35,949	15,416	11,324	325.45	37.72	2,226	14	0	0	2,240.00
14	38,018	35,949	16,334	11,836	338.20	39.20	2,342	14	0	0	2,356.00
15	38,018	35,949	16,934	12,487	354.14	41.05	2,454	0	464	0	2,918.00
16	38,018	35,949	17,486	13,289	368.30	42.69	2,314	14	0	0	2,328.00
17	38,018	35,949	17,748	13,743	375.15	43.48	2,145	17	0	0	2,162.00
18	38,018	35,949	17,206	14,197	377.95	43.81	2,004	5	0	0	2,009.00
19	38,018	35,949	17,135	12,900	359.82	41.70	2,160	5	0	0	2,165.00
20	38,018	35,949	17,157	14,063	371.66	43.08	2,067	9	0	0	2,076.00
21	38,018	35,949	17,616	14,130	378.46	43.87	2,231	19	0	0	2,250.00

April, 2022

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	38,068	35,999	18,599	14,733	392.13	45.39	2,105	5	0	0	2,110.00
2	38,068	35,999	19,405	15,178	408.36	47.27	1,738	20	0	0	1,758.00
3	38,068	35,999	19,813	14,255	413.64	47.88	745	26	0	0	771.00
4	38,086	35,999	20,239	15,178	428.72	49.62	1,681	18	0	0	1,699.00
5	38,086	36,017	19,608	15,148	419.38	48.52	1,152	183	1,146	0	2,481.00
6	38,086	36,017	20,992	15,576	440.82	51.00	1,137	18	0	0	1,155.00
7	38,086	36,017	21,115	15,746	447.94	51.82	1,372	15	0	0	1,387.00
8	38,086	36,017	20,101	16,018	438.77	50.76	1,967	23	80	0	2,070.00
9	38,086	36,017	18,796	15,320	414.29	47.93	1,836	186	2,081	0	4,103.00
10	38,086	36,017	19,960	16,176	427.41	49.45	1,837	188	1,061	0	3,086.00
11	38,086	36,017	20,294	16,066	431.18	49.88	1,914	187	1,373	0	3,474.00
12	38,086	36,017	19,905	16,160	432.55	50.04	2,096	188	512	0	2,796.00
13	38,186	36,117	20,081	16,362	434.73	50.15	1,939	186	1,494	0	3,619.00
14	38,186	36,117	19,711	17,017	438.04	50.53	2,000	186	88	0	2,274.00
15	38,186	36,117	19,654	16,561	433.09	49.96	1,752	81	249	0	2,082.00
16	38,186	36,117	20,705	16,790	439.50	50.70	2,393	82	1,002	0	3,477.00
17	38,906	36,837	21,005	16,906	440.61	49.84	1,903	82	58	0	2,043.00
18	38,906	36,837	20,640	16,418	439.74	49.74	2,277	80	573	0	2,930.00
19	38,906	36,837	20,955	16,982	437.00	49.43	1,995	81	623	0	2,699.00
20	38,893	36,039	20,695	16,209	432.71	50.03	2,073	82	496	0	2,651.00
21	38,893	36,039	19,329	16,169	423.98	49.02	1,716	81	0	0	1,797.00

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
22	38,018	35,949	15,903	14,007	359.77	41.70	2,278	0	1,687	0	3,965.00	38,893	36,039	19,782	15,489	421.45	48.73	2,153	80	0	0	2,233.00
23	38,018	35,949	16,955	14,185	373.58	43.30	2,187	14	0	0	2,201.00	38,893	36,039	20,579	16,250	432.05	49.95	1,859	83	398	0	2,340.00
24	38,018	35,949	17,124	13,939	368.92	42.76	2,266	20	234	0	2,520.00	38,893	36,039	19,979	16,425	432.42	49.99	2,150	81	0	0	2,231.00
25	38,018	35,949	16,744	14,229	373.70	43.31	2,250	17	0	0	2,267.00	38,893	36,039	20,054	16,729	433.09	50.07	1,864	80	1,658	0	3,602.00
26	38,018	35,949	17,318	13,668	371.77	43.09	2,163	16	0	0	2,179.00	38,893	36,039	20,910	16,421	436.63	50.48	2,120	136	1,639	0	3,895.00
27	38,018	35,949	17,213	13,569	368.12	42.67	2,099	20	0	0	2,119.00	38,893	36,039	20,393	16,736	434.39	50.22	2,088	189	3,152	0	5,429.00
28	38,068	35,999	16,752	14,174	370.63	42.90	2,369	14	370	0	2,753.00	38,893	36,039	20,758	16,401	435.55	50.36	2,134	236	2,352	0	4,722.00
29	38,068	35,999	16,747	14,284	380.58	44.05	2,610	14	1,307	0	3,931.00	38,893	36,039	20,252	17,142	446.51	51.62	2,307	199	2,099	0	4,605.00
30	38,068	35,999	15,592	13,866	352.49	40.80	2,398	14	3,014	0	5,426.00	38,893	36,039	20,318	16,876	441.74	51.07	2,415	88	2,506	0	5,009.00
31	38,068	35,999	16,553	13,006	345.41	39.98	2,092	122	2,813	0	5,027.00											

May, 2022 | **June, 2022**

Days	Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)					Cap. (MW)		Load (MW)		Gen. (GWH)	Energy %	Load Management (MW)				
	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Transf.	Total	Inst.	Dep.	Max	Min		W.r.t Dep. Cap	DISCOs Const.	Furnaces	Gen.	NTDC+ Wapda Tranf.	Total
1	38,893	36,039	22,467	18,575	492.10	56.89	1,879	75	816	20	2,790.00	40,156	37,662	19,832	17,646	449.15	49.69	2,397	9	4,669	0	7,075.00
2	38,893	36,039	21,518	19,044	487.66	56.38	1,900	53	0	40	1,993.00	40,156	37,662	19,912	17,928	460.93	50.99	2,373	10	4,678	0	7,061.00
3	38,893	36,039	19,425	16,615	439.81	50.85	1,666	53	0	0	1,719.00	40,156	37,662	20,327	18,652	465.41	51.49	2,857	6	2,870	0	5,733.00
4	38,893	36,039	17,915	15,087	395.82	45.76	1,748	53	0	35	1,836.00	40,156	37,662	20,225	18,762	465.39	51.49	2,660	10	3,961	0	6,631.00
5	38,893	36,039	18,870	15,877	414.13	47.88	1,836	53	0	0	1,889.00	40,156	37,662	21,175	18,794	477.66	52.85	2,389	11	3,026	0	5,426.00
6	38,893	36,039	19,750	14,792	417.77	48.30	2,468	12	0	0	2,480.00	40,156	37,662	21,456	18,943	484.33	53.58	2,492	11	4,550	0	7,053.00
7	38,893	36,039	20,409	16,671	453.02	52.38	2,519	12	0	230	2,761.00	40,156	37,662	22,010	19,556	501.04	55.43	2,628	9	3,198	0	5,835.00
8	38,893	36,039	21,671	17,803	472.33	54.61	2,550	12	0	20	2,582.00	38,086	36,017	20,101	16,018	438.77	50.76	1,967	23	80	0	2,070.00
9	38,893	36,039	22,314	18,719	495.19	57.25	2,720	12	0	0	2,732.00	38,086	36,017	18,796	15,320	414.29	47.93	1,836	186	2,081	0	4,103.00
10	38,893	36,039	22,440	18,030	498.45	57.63	2,692	12	0	0	2,704.00	40,156	37,662	22,005	20,182	507.34	56.13	2,623	10	2,667	0	5,300.00
11	38,893	36,039	22,248	19,635	503.82	58.25	2,447	12	1,411	0	3,870.00	40,156	37,662	21,459	17,861	489.32	54.14	3,315	5	3,488	0	6,808.00
12	38,893	36,039	22,529	20,128	513.64	59.39	2,479	13	1,118	0	3,610.00	40,156	37,662	21,069	18,556	476.30	52.70	2,640	5	1,863	0	4,508.00
13	38,893	36,039	22,131	20,482	512.84	59.29	2,911	6	28	430	3,375.00	40,156	37,662	21,124	19,043	482.98	53.43	2,815	10	3,842	0	6,667.00
14	38,893	36,039	23,074	20,548	522.95	60.46	2,412	9	1,066	0	3,487.00	40,156	37,662	21,759	18,772	481.30	53.25	2,656	11	4,298	0	6,965.00
15	38,893	36,039	22,434	20,005	515.12	59.56	2,437	10	460	0	2,907.00	40,156	37,662	21,535	19,576	498.13	55.11	3,090	10	4,048	0	7,148.00
16	38,893	36,039	22,372	20,529	514.69	59.51	2,464	7	1,354	0	3,825.00	40,156	37,662	22,305	15,543	499.48	55.26	2,793	10	1,861	130	4,794.00
17	38,893	36,039	21,844	19,617	498.20	57.60	2,966	4	1,063	0	4,033.00	40,156	37,662	19,987	16,009	434.04	48.02	3,109	11	0	70	3,190.00
18	38,893	36,039	20,415	18,710	466.03	53.88	2,365	9	3,960	0	6,334.00	40,156	37,662	19,476	16,172	421.55	46.64	2,870	10	893	60	3,833.00
19	38,893	36,039	20,700	18,037	461.01	53.30	2,444	10	2,895	0	5,349.00	40,156	37,662	18,556	14,326	408.44	45.19	2,959	9	617	150	3,735.00
20	38,893	36,039	21,066	18,343	471.19	54.48	2,315	5	1,449	0	3,769.00	40,156	37,662	18,867	13,959	408.46	45.19	2,556	10	1,168	80	3,814.00
21	38,893	36,039	22,035	19,482	495.33	57.27	2,358	9	902	0	3,269.00	40,156	37,662	16,015	13,664	356.12	39.40	2,539	9	0	80	2,628.00
22	38,893	36,039	21,048	17,856	484.24	55.99	2,552	8	0	0	2,560.00	40,156	37,662	17,272	12,252	362.53	40.11	2,634	10	0	80	2,724.00
23	38,893	36,039	20,221	16,740	447.40	51.73	2,033	9	0	0	2,042.00	40,156	37,662	17,803	14,731	398.40	44.08	2,451	11	1,893	110	4,465.00
24	38,893	36,399	20,394	16,749	449.25	51.43	2,563	10	630	0	3,203.00	40,156	37,662	19,279	15,645	420.83	46.56	2,724	9	1,693	0	4,426.00
25	38,893	36,399	20,002	17,054	447.71	51.25	2,259	9	1,646	0	3,914.00	40,156	37,662	19,945	17,377	448.92	49.67	2,376	9	3,056	0	5,441.00
26	38,893	36,399	20,460	18,653	467.12	53.47	2,393	9	3,136	0	5,538.00	40,156	37,662	20,782	18,217	471.78	52.19	2,679	10	1,535	0	4,224.00
27	38,893	36,399	20,002	17,054	447.71	51.25	2,259	9	1,646	0	3,914.00	40,156	37,662	21,363	19,453	491.99	54.43	2,904	9	4,436	0	7,349.00
28	38,893	36,399	20,682	18,569	468.06	53.58	2,630	8	2,874	0	5,512.00	40,156	37,662	21,412	20,046	490.97	54.32	2,451	10	5,662	0	8,123.00
29	40,156	37,662	20,184	18,482	463.41	51.27	2,175	7	914	0	3,096.00	40,156	37,662	21,906	20,209	506.36	56.02	2,567	11	5,360	0	7,938.00
30	40,156	37,662	20,207	17,916	451.46	49.95	2,227	9	2,626	0	4,862.00	40,156	37,662	21,771	20,092	505.90	55.97	2,715	11	3,511	0	6,237.00
31	40,156	37,662	20,043	18,053	459.19	50.80	2,547	9	3,218	0	5,774.00											

Table 99
Sector wise Daily Generation Capacity (MW), Daily Energy Generation (GWh) and % age Plant Utilization

July , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	1,517	1,474	37.12	38.53	1	17,116	15,655	11,729	10,877	272.20	72.45	1	2,490	2,305	2,285	2,276	54.94	99.32
2	5,782	4,014	1,525	1,015	35.75	37.11	2	17,116	15,655	12,191	9,728	274.39	73.03	2	2,490	2,305	2,281	2,274	54.54	98.59
3	5,782	4,014	1,363	1,044	30.70	31.86	3	17,116	15,655	13,103	10,019	276.11	73.49	3	2,490	2,305	2,255	1,997	49.60	89.65
4	5,782	4,014	1,367	1,260	32.16	33.38	4	17,116	15,655	12,131	9,159	264.23	70.32	4	2,490	2,305	2,019	2,009	48.11	86.96
5	5,782	4,014	1,359	1,203	32.69	33.93	5	17,116	15,655	13,472	9,466	285.01	75.86	5	2,490	2,305	2,271	2,013	49.99	90.36
6	5,782	4,014	1,410	1,281	32.66	33.90	6	17,116	15,655	13,629	11,974	308.89	82.21	6	2,490	2,305	2,276	2,270	54.50	98.51
7	5,782	4,014	1,487	1,399	35.42	36.76	7	17,116	15,655	13,519	11,755	312.98	83.30	7	2,490	2,305	2,275	2,270	54.39	98.32
8	5,782	4,014	1,519	1,404	35.69	37.04	8	17,116	15,655	13,519	12,013	313.20	83.36	8	2,490	2,305	2,277	2,268	54.37	98.27
9	5,782	4,014	1,545	1,255	36.72	38.12	9	17,116	15,655	13,409	11,111	303.61	80.81	9	2,490	2,305	2,277	2,173	53.73	97.12
10	5,782	4,014	1,372	1,231	33.27	34.54	10	17,116	15,655	12,993	12,037	298.19	79.36	10	2,490	2,305	2,278	2,263	54.38	98.31
11	5,782	4,014	1,373	1,173	32.18	33.40	11	17,116	15,655	12,573	11,183	286.52	76.26	11	2,490	2,305	2,276	2,172	54.07	97.74
12	5,782	4,014	1,241	961	27.16	28.19	12	17,116	15,655	12,820	8,906	245.05	65.22	12	2,490	2,305	2,283	2,140	53.08	95.95
13	5,782	4,014	1,140	943	25.56	26.53	13	17,116	15,655	12,434	7,367	245.77	65.41	13	2,490	2,305	2,283	2,270	54.54	98.60
14	5,782	4,014	1,130	941	25.02	25.97	14	17,116	15,655	11,737	8,085	232.63	61.91	14	2,490	2,305	2,286	2,276	54.82	99.10
15	5,782	4,014	1,126	945	25.44	26.41	15	17,116	15,655	11,548	8,565	245.80	65.42	15	2,490	2,305	2,285	2,273	54.76	98.99
16	5,782	4,014	1,136	1,105	26.89	27.91	16	17,116	15,655	11,290	9,897	258.20	68.72	16	2,490	2,305	2,281	2,276	54.56	98.63
17	5,782	4,014	1,265	1,094	26.92	27.95	17	17,116	15,655	11,653	10,277	262.91	69.97	17	2,490	2,305	2,281	2,266	54.73	98.92
18	5,782	4,014	1,368	1,271	32.56	33.80	18	17,116	15,655	11,261	10,269	256.94	68.39	18	2,490	2,305	2,274	2,221	54.09	97.77
19	5,782	4,014	1,409	1,040	30.98	32.15	19	17,116	15,655	11,166	8,319	243.42	64.79	19	2,490	2,305	2,259	2,246	54.20	97.97
20	5,782	4,014	1,043	676	18.48	19.18	20	17,116	15,655	8,081	5,359	160.71	42.77	20	2,490	2,305	2,276	2,085	53.00	95.80
21	5,782	4,014	759	385	15.77	16.37	21	17,116	15,655	8,183	5,375	158.54	42.19	21	2,490	2,305	2,272	2,084	52.68	95.22
22	5,782	4,014	1,024	740	19.51	20.25	22	17,116	15,655	9,725	7,259	205.78	54.77	22	2,490	2,305	2,276	2,247	54.44	98.41
23	5,782	4,014	1,029	852	22.56	23.42	23	17,116	15,655	10,966	8,594	234.40	62.39	23	2,490	2,305	2,277	2,270	54.45	98.42
24	5,782	4,014	1,000	852	22.13	22.97	24	17,116	15,655	11,610	10,058	257.85	68.63	24	2,490	2,305	2,278	2,272	54.61	98.72
25	5,782	4,014	1,042	844	21.99	22.83	25	17,116	15,655	11,731	10,431	266.72	70.99	25	2,490	2,305	2,280	2,268	54.50	98.51
26	5,782	4,014	1,214	901	26.08	27.07	26	17,116	15,655	11,860	10,146	267.05	71.08	26	2,490	2,305	2,279	2,266	54.67	98.82
27	5,782	4,014	1,220	956	27.23	28.26	27	17,116	15,655	11,013	8,876	240.96	64.13	27	2,490	2,305	2,281	2,245	54.47	98.46
28	5,782	4,014	1,022	753	22.30	23.15	28	17,116	15,655	9,217	6,767	197.44	52.55	28	2,490	2,305	2,281	2,274	54.67	98.83
29	5,782	4,014	1,021	828	22.06	22.90	29	17,116	15,655	9,753	6,601	201.47	53.62	29	2,490	2,305	2,283	2,271	54.44	98.41
30	5,782	4,014	1,011	831	21.95	22.78	30	17,116	15,655	9,820	7,668	216.26	57.56	30	2,490	2,305	2,283	2,277	55.23	99.84
31	5,782	4,014	1,001	828	21.33	22.14	31	17,116	15,655	9,488	7,041	202.42	53.87	31	2,490	2,305	2,283	2,013	51.05	92.27
Total	**5,782**	**4,014**	**-**	**-**	**856.29**	**28.67**	**Total**	**17,116**	**15,655**	**-**	**-**	**7,795.63**	**66.93**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,665.59**	**97.12**

August , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	1,035	828	21.07	21.87	1	17,116	15,655	9,558	8,130	213.36	56.79	1	2,490	2,305	2,176	2,014	50.84	91.89
2	5,782	4,014	1,069	848	23.33	24.22	2	17,116	15,655	10,422	7,320	216.78	57.70	2	2,490	2,305	2,177	2,165	52.02	94.03
3	5,782	4,014	1,023	973	23.83	24.73	3	17,116	15,655	10,876	8,530	235.98	62.81	3	2,490	2,305	2,205	2,045	51.68	93.41
4	5,782	4,014	1,016	828	22.94	23.81	4	17,116	15,655	10,891	7,725	226.57	60.30	4	2,490	2,305	2,213	2,174	52.75	95.36
5	5,782	4,014	1,016	752	22.84	23.70	5	17,116	15,655	11,037	9,449	247.07	65.76	5	2,490	2,305	2,211	2,194	52.94	95.69
6	5,782	4,014	1,009	646	20.80	21.59	6	17,116	15,655	10,706	5,828	198.67	52.88	6	2,490	2,305	2,210	2,205	52.93	95.68
7	5,782	4,014	1,017	520	22.23	23.07	7	17,116	15,655	11,650	10,180	262.09	69.76	7	2,490	2,305	2,211	2,204	53.25	96.25
8	5,782	4,014	1,012	479	20.43	21.20	8	17,116	15,655	11,627	8,930	259.65	69.11	8	2,490	2,305	2,212	2,207	53.22	96.20
9	5,782	4,014	968	934	22.80	23.66	9	17,116	15,655	11,193	9,291	247.62	65.90	9	2,490	2,305	2,213	2,203	52.82	95.49
10	5,782	4,014	920	745	19.40	20.14	10	17,116	15,655	11,534	8,725	249.64	66.44	10	2,490	2,305	2,210	2,192	53.56	96.81
11	5,782	4,014	965	675	18.87	19.59	11	17,116	15,655	11,525	9,570	255.36	67.96	11	2,490	2,305	2,211	2,195	51.95	93.91
12	5,782	4,014	954	699	20.39	21.17	12	17,116	15,655	12,075	9,978	263.03	70.01	12	2,490	2,305	2,214	2,192	52.94	95.70
13	5,782	4,014	1,061	854	23.88	24.79	13	17,116	15,655	11,609	9,454	252.73	67.26	13	2,490	2,305	2,213	2,195	52.87	95.58
14	5,782	4,014	1,068	833	22.31	23.16	14	17,116	15,655	10,405	7,993	215.86	57.45	14	2,490	2,305	2,211	2,205	52.99	95.78
15	5,782	4,014	1,077	830	21.59	22.41	15	17,116	15,655	9,842	7,896	213.44	56.81	15	2,490	2,305	2,211	2,205	53.02	95.84
16	5,782	4,014	1,019	854	22.70	23.57	16	17,116	15,655	12,420	8,850	259.91	69.18	16	2,490	2,305	2,211	2,198	53.17	96.12
17	5,782	4,014	1,163	854	24.88	25.82	17	17,116	15,655	12,353	9,724	280.19	74.57	17	2,490	2,305	2,211	2,205	53.14	96.05

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
18	5,782	4,014	1,167	1,109	27.63	28.68	18	17,116	15,655	11,435	8,497	244.04	64.95	18	2,490	2,305	2,211	2,177	52.77	95.40
19	5,782	4,014	1,162	882	24.57	25.50	19	17,116	15,655	10,016	6,346	197.21	52.49	19	2,490	2,305	2,211	2,161	52.79	95.43
20	5,782	4,014	1,152	926	24.77	25.71	20	17,116	15,655	11,633	7,380	222.99	59.35	20	2,490	2,305	2,211	2,204	53.10	95.98
21	5,782	4,014	1,161	942	24.92	25.86	21	17,116	15,655	11,975	9,465	257.97	68.66	21	2,490	2,305	2,212	2,206	53.06	95.91
22	5,782	4,014	1,055	851	23.24	24.12	22	17,116	15,655	11,801	9,559	263.33	70.09	22	2,490	2,305	2,212	2,203	53.13	96.04
23	5,782	4,014	921	849	20.77	21.56	23	17,116	15,655	11,565	10,023	262.68	69.91	23	2,490	2,305	2,210	2,195	52.68	95.23
24	5,782	4,014	923	918	21.90	22.74	24	17,116	15,655	12,050	10,242	267.20	71.12	24	2,490	2,305	2,208	2,187	52.89	95.60
25	5,782	4,014	1,005	852	22.94	23.81	25	17,116	15,655	11,717	10,152	264.59	70.42	25	2,490	2,305	2,209	2,185	52.72	95.29
26	5,782	4,014	1,019	923	23.16	24.04	26	17,116	15,655	11,501	8,723	250.65	66.71	26	2,490	2,305	2,207	2,191	52.70	95.27
27	5,782	4,014	1,018	821	23.17	24.05	27	17,116	15,655	11,124	8,684	243.63	64.84	27	2,490	2,305	2,209	2,200	52.92	95.65
28	5,782	4,014	969	800	21.55	22.37	28	17,116	15,655	10,809	8,772	238.48	63.47	28	2,490	2,305	2,211	2,205	53.01	95.83
29	5,782	4,014	870	797	19.78	20.53	29	17,116	15,655	10,146	8,086	220.69	58.74	29	2,490	2,305	2,212	2,204	52.90	95.62
30	5,782	4,014	1,027	855	21.61	22.43	30	17,116	15,655	10,841	7,866	232.25	61.81	30	2,490	2,305	2,210	2,205	53.03	95.86
31	5,782	4,014	856	510	18.49	19.19	31	17,116	15,655	10,629	7,291	220.05	58.57	31	2,490	2,305	2,211	2,205	53.07	95.92
Total	**5,782**	**4,014**	**-**	**-**	**692.80**	**23.20**	**Total**	**17,116**	**15,655**	**-**	**-**	**7,483.68**	**64.25**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,636.82**	**95.45**

September , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	678	509	14.40	14.94	1	17,116	15,655	11,414	8,651	247.85	65.97	1	2,490	2,305	2,210	1,169	44.77	80.93
2	5,782	4,014	757	655	16.51	17.14	2	17,116	15,655	11,673	8,632	252.60	67.23	2	2,490	2,305	1,169	1,164	28.04	50.68
3	5,782	4,014	795	593	17.62	18.28	3	17,116	15,655	10,925	7,858	230.31	61.30	3	2,490	2,305	1,169	1,169	28.06	50.72
4	5,782	4,014	792	684	17.90	18.58	4	17,116	15,655	11,364	7,454	230.14	61.25	4	2,490	2,305	1,169	1,169	28.06	50.72
5	5,782	4,014	785	684	18.10	18.79	5	17,116	15,655	11,788	9,171	251.04	66.82	5	2,490	2,305	1,169	1,169	28.06	50.72
6	5,782	4,014	826	685	18.34	19.04	6	17,116	15,655	12,649	9,887	278.69	74.17	6	2,490	2,305	1,169	1,094	27.67	50.02
7	5,782	4,014	830	635	18.33	19.02	7	17,116	15,655	12,453	10,965	280.55	74.67	7	2,490	2,305	1,964	923	31.64	57.20
8	5,782	4,014	736	664	16.92	17.56	8	17,116	15,655	10,564	8,030	217.00	57.76	8	2,490	2,305	1,964	1,957	47.03	85.02
9	5,782	4,014	726	601	16.23	16.84	9	17,116	15,655	8,999	7,042	195.19	51.95	9	2,490	2,305	1,969	1,957	47.87	86.52
10	5,782	4,014	918	466	17.60	18.26	10	17,116	15,655	8,795	6,234	168.94	44.96	10	2,490	2,305	1,972	1,967	47.19	85.30
11	5,782	4,014	659	430	12.83	13.32	11	17,116	15,655	6,932	5,754	154.18	41.04	11	2,490	2,305	1,971	1,966	47.21	85.33
12	5,782	4,014	659	449	14.22	14.76	12	17,116	15,655	6,678	5,253	136.63	36.36	12	2,490	2,305	1,970	1,618	42.56	76.94
13	5,782	4,014	894	599	18.03	18.72	13	17,116	15,655	9,105	5,978	190.82	50.79	13	2,490	2,305	1,970	1,614	45.95	83.06
14	5,782	4,014	764	753	18.02	18.71	14	17,116	15,655	9,930	8,097	218.71	58.21	14	2,490	2,305	1,969	1,853	45.33	81.94
15	5,782	4,014	866	753	18.87	19.59	15	17,116	15,655	10,821	9,470	241.67	64.32	15	2,490	2,305	1,972	1,804	46.32	83.74
16	5,782	4,014	921	757	19.58	20.33	16	17,116	15,655	12,070	10,553	272.95	72.65	16	2,490	2,305	1,971	1,828	46.49	84.04
17	5,782	4,014	1,075	813	22.86	23.73	17	17,116	15,655	11,415	9,010	249.30	66.35	17	2,490	2,305	1,970	1,965	47.12	85.17
18	5,782	4,014	1,095	997	26.24	27.24	18	17,116	15,655	10,243	8,665	229.61	61.11	18	2,490	2,305	1,970	1,963	47.34	85.57
19	5,782	4,014	1,083	911	24.17	25.09	19	17,116	15,655	10,442	7,873	220.38	58.65	19	2,490	2,305	1,971	1,871	46.33	83.75
20	5,782	4,014	1,131	959	25.41	26.37	20	17,116	15,655	10,671	8,427	232.89	61.99	20	2,490	2,305	1,972	1,961	47.06	85.07
21	5,782	4,014	1,139	677	22.14	22.98	21	17,116	15,655	10,684	6,137	203.89	54.27	21	2,490	2,305	1,971	1,966	47.53	85.92
22	5,782	4,014	872	756	18.61	19.32	22	17,116	15,655	9,026	7,417	200.72	53.42	22	2,490	2,305	1,971	1,966	47.10	85.14
23	5,782	4,014	871	641	18.26	18.96	23	17,116	15,655	8,540	6,795	184.98	49.23	23	2,490	2,305	1,972	1,965	47.24	85.39
24	5,782	4,014	872	752	18.45	19.15	24	17,116	15,655	8,740	6,764	190.06	50.59	24	2,490	2,305	1,971	1,691	43.89	79.33
25	5,782	4,014	878	711	19.21	19.93	25	17,116	15,655	10,789	8,759	226.71	60.34	25	2,490	2,305	1,978	1,966	47.35	85.59
26	5,782	4,014	840	552	17.63	18.30	26	17,116	15,655	11,311	9,035	248.95	66.26	26	2,490	2,305	1,972	1,966	47.13	85.19
27	5,782	4,014	881	851	20.49	21.27	27	17,116	15,655	11,242	9,660	253.07	67.35	27	2,490	2,305	1,970	1,963	47.20	85.32
28	5,782	4,014	871	759	19.68	20.42	28	17,116	15,655	10,964	9,984	256.19	68.19	28	2,490	2,305	1,966	1,958	47.16	85.25
29	5,782	4,014	875	762	19.77	20.52	29	17,116	15,655	10,602	9,017	242.00	64.41	29	2,490	2,305	1,961	1,956	47.00	84.97
30	5,782	4,014	876	761	20.12	20.88	30	17,116	15,655	10,546	8,922	241.62	64.31	30	2,490	2,305	1,965	1,765	44.98	81.31
Total	**5,782**	**4,014**	**-**	**-**	**566.54**	**19.60**	**Total**	**17,116**	**15,655**	**-**	**-**	**6,747.61**	**59.86**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,286.65**	**77.53**

October , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	880	853	20.56	21.34	1	17,116	15,655	10,745	9,972	248.11	66.03	1	2,490	2,305	1,963	1,950	47.26	85.44
2	5,782	4,014	874	755	19.76	20.51	2	17,116	15,655	10,525	8,016	231.08	61.50	2	2,490	2,305	1,962	1,955	47.06	85.06
3	5,782	4,014	865	756	19.37	20.11	3	17,116	15,655	9,514	8,964	224.42	59.73	3	2,490	2,305	1,964	1,954	46.99	84.94
4	5,782	4,014	873	755	19.89	20.65	4	17,116	15,655	9,785	7,550	213.88	56.93	4	2,490	2,305	1,961	1,955	47.00	84.97
5	5,782	4,014	885	757	19.84	20.59	5	17,116	15,655	10,607	7,604	230.80	61.43	5	2,490	2,305	1,961	1,956	46.90	84.78
6	5,782	4,014	880	762	20.48	21.26	6	17,116	15,655	11,468	10,221	257.30	68.48	6	2,490	2,305	1,965	1,957	47.03	85.02
7	5,782	4,014	880	486	16.93	17.57	7	17,116	15,655	10,793	9,380	249.90	66.51	7	2,490	2,305	1,967	929	35.43	64.04
8	5,782	4,014	1,236	690	23.16	24.04	8	17,116	15,655	11,045	10,564	258.29	68.74	8	2,490	2,305	1,859	929	29.91	54.07
9	5,782	4,014	1,177	1,047	26.94	27.96	9	17,116	15,655	11,010	9,442	250.85	66.76	9	2,490	2,305	1,965	1,857	45.78	82.75
10	5,782	4,014	1,127	988	26.68	27.70	10	17,116	15,655	10,699	8,688	233.16	62.06	10	2,490	2,305	1,966	1,962	46.67	84.37
11	5,782	4,014	1,024	685	22.37	23.22	11	17,116	15,655	10,115	7,463	215.06	57.24	11	2,490	2,305	1,968	1,962	47.14	85.21
12	5,782	4,014	731	667	16.87	17.51	12	17,116	15,655	10,081	7,952	219.11	58.32	12	2,490	2,305	1,967	1,959	47.43	85.74
13	5,782	4,014	737	732	17.72	18.40	13	17,116	15,655	10,542	8,026	232.61	61.91	13	2,490	2,305	1,962	1,953	46.84	84.68
14	5,782	4,014	844	733	18.45	19.15	14	17,116	15,655	10,328	6,816	218.36	58.12	14	2,490	2,305	1,957	1,948	46.66	84.35
15	5,782	4,014	841	730	18.73	19.44	15	17,116	15,655	9,855	7,337	216.45	57.61	15	2,490	2,305	1,961	1,954	46.85	84.69
16	5,782	4,014	859	701	18.83	19.54	16	17,116	15,655	9,898	7,155	216.33	57.58	16	2,490	2,305	1,967	1,959	47.20	85.31
17	5,782	4,014	843	725	18.25	18.94	17	17,116	15,655	9,898	7,885	217.32	57.84	17	2,490	2,305	1,971	1,962	47.26	85.43
18	5,782	4,014	851	500	17.31	17.96	18	17,116	15,655	9,387	6,328	199.76	53.17	18	2,490	2,305	1,973	1,966	47.20	85.33
19	5,782	4,014	716	706	17.32	17.97	19	17,116	15,655	8,855	7,299	199.80	53.18	19	2,490	2,305	1,971	1,967	47.09	85.12
20	5,782	4,014	1,003	710	19.53	20.27	20	17,116	15,655	9,973	6,904	213.10	56.72	20	2,490	2,305	929	929	22.30	40.30
21	5,782	4,014	1,013	983	23.96	24.87	21	17,116	15,655	9,957	7,818	207.85	55.32	21	2,490	2,305	1,962	929	39.73	71.81
22	5,782	4,014	1,021	632	22.23	23.07	22	17,116	15,655	8,278	6,704	177.50	47.24	22	2,490	2,305	1,963	1,956	47.99	86.75
23	5,782	4,014	648	344	14.25	14.79	23	17,116	15,655	8,980	6,124	185.00	49.24	23	2,490	2,305	1,970	1,957	45.91	82.99
24	5,782	4,014	650	344	13.08	13.58	24	17,116	15,655	7,856	4,976	166.65	44.35	24	2,490	2,305	1,973	1,965	47.26	85.43
25	5,782	4,014	652	345	12.12	12.58	25	17,116	15,655	7,785	3,690	148.69	39.57	25	2,490	2,305	1,972	1,966	47.13	85.19
26	5,782	4,014	655	345	13.29	13.79	26	17,116	15,655	7,901	4,168	161.77	43.06	26	2,490	2,305	1,972	1,966	47.28	85.47
27	5,782	4,014	652	343	13.23	13.73	27	17,116	15,655	8,374	5,460	172.82	46.00	27	2,490	2,305	1,973	1,967	46.95	84.88
28	5,782	4,014	652	341	12.61	13.09	28	17,116	15,655	8,026	6,004	175.33	46.66	28	2,490	2,305	1,973	1,915	47.55	85.95
29	5,782	4,014	637	281	10.47	10.86	29	17,116	15,655	8,116	5,456	170.10	45.27	29	2,490	2,305	1,884	1,878	44.98	81.30
30	5,782	4,014	286	101	5.14	5.34	30	17,116	15,655	8,297	5,466	169.06	45.00	30	2,490	2,305	1,974	1,881	46.32	83.73
31	5,782	4,014	112	96	2.54	2.64	31	17,116	15,655	7,925	4,418	164.71	43.84	31	2,490	2,305	1,975	1,965	47.25	85.41
Total	**5,782**	**4,014**	**-**	**-**	**541.91**	**18.15**	**Total**	**17,116**	**15,655**	**-**	**-**	**6,445.17**	**55.34**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,394.34**	**81.31**

November , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	646	95	10.82	11.23	1	17,116	15,655	6,897	3,394	139.55	37.14	1	2,490	2,305	2,143	1,964	49.39	89.28
2	5,782	4,014	635	240	11.47	11.91	2	17,116	15,655	6,913	4,393	140.93	37.51	2	2,490	2,305	2,164	1,817	49.42	89.34
3	5,782	4,014	609	382	11.79	12.24	3	17,116	15,655	6,326	3,776	131.00	34.87	3	2,490	2,305	2,111	2,095	50.45	91.20
4	5,782	4,014	388	377	9.16	9.51	4	17,116	15,655	6,372	3,791	132.36	35.23	4	2,490	2,305	2,114	2,029	50.47	91.23
5	5,782	4,014	904	379	13.58	14.09	5	17,116	15,655	6,412	3,554	130.43	34.71	5	2,490	2,305	2,138	2,127	51.16	92.47
6	5,782	4,014	388	380	9.20	9.54	6	17,116	15,655	6,491	3,974	130.93	34.85	6	2,490	2,305	2,136	2,128	51.20	92.55
7	5,782	4,014	386	378	9.20	9.55	7	17,116	15,655	6,250	3,862	126.05	33.55	7	2,490	2,305	2,134	2,126	51.70	93.45
8	5,782	4,014	389	300	9.04	9.39	8	17,116	15,655	6,295	3,841	124.82	33.22	8	2,490	2,305	2,131	2,102	50.51	91.31
9	5,782	4,014	388	300	8.86	9.19	9	17,116	15,655	6,329	3,439	128.84	34.29	9	2,490	2,305	2,106	1,908	49.76	89.95
10	5,782	4,014	389	300	8.67	9.00	10	17,116	15,655	5,591	3,781	123.91	32.98	10	2,490	2,305	2,111	2,103	50.67	91.60
11	5,782	4,014	389	0	7.31	7.59	11	17,116	15,655	6,207	4,354	130.74	34.80	11	2,490	2,305	2,112	2,105	50.51	91.30
12	5,782	4,014	389	0	6.48	6.72	12	17,116	15,655	5,912	3,616	115.46	30.73	12	2,490	2,305	2,111	2,107	50.63	91.52
13	5,782	4,014	369	155	7.48	7.76	13	17,116	15,655	5,737	3,648	115.26	30.68	13	2,490	2,305	2,111	1,960	50.79	91.80
14	5,782	4,014	371	280	8.14	8.45	14	17,116	15,655	5,367	3,576	110.51	29.41	14	2,490	2,305	2,112	1,938	49.56	89.60
15	5,782	4,014	385	280	7.81	8.11	15	17,116	15,655	5,587	3,552	107.38	28.58	15	2,490	2,305	2,111	1,971	49.64	89.73
16	5,782	4,014	393	300	8.73	9.06	16	17,116	15,655	5,645	3,554	109.20	29.06	16	2,490	2,305	2,112	2,106	50.61	91.49
17	5,782	4,014	396	300	8.57	8.89	17	17,116	15,655	5,460	3,453	106.95	28.46	17	2,490	2,305	2,110	1,927	48.21	87.15
18	5,782	4,014	390	0	3.92	4.07	18	17,116	15,655	5,661	3,452	112.60	29.97	18	2,490	2,305	2,113	2,107	50.56	91.40

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
19	5,782	4,014	273	100	4.54	4.72	19	17,116	15,655	5,458	3,419	107.19	28.53	19	2,490	2,305	2,114	1,986	51.37	92.86
20	5,782	4,014	403	100	4.88	5.06	20	17,116	15,655	5,451	3,426	111.09	29.57	20	2,490	2,305	2,113	1,909	48.22	87.17
21	5,782	4,014	402	100	4.91	5.10	21	17,116	15,655	4,792	3,458	97.62	25.98	21	2,490	2,305	2,113	1,917	50.46	91.22
22	5,782	4,014	341	101	6.10	6.33	22	17,116	15,655	6,099	3,463	113.59	30.23	22	2,490	2,305	2,113	1,968	48.65	87.94
23	5,782	4,014	122	100	2.82	2.92	23	17,116	15,655	5,657	4,061	122.45	32.59	23	2,490	2,305	2,114	1,968	49.77	89.97
24	5,782	4,014	122	99	2.81	2.92	24	17,116	15,655	6,241	3,987	131.40	34.97	24	2,490	2,305	2,113	2,106	50.62	91.50
25	5,782	4,014	349	100	4.06	4.21	25	17,116	15,655	6,251	4,137	134.68	35.84	25	2,490	2,305	2,112	1,927	48.86	88.33
26	5,782	4,014	510	120	7.20	7.48	26	17,116	15,655	6,297	3,527	127.16	33.84	26	2,490	2,305	2,111	1,756	46.77	84.55
27	5,782	4,014	519	380	11.67	12.11	27	17,116	15,655	6,302	3,530	126.70	33.72	27	2,490	2,305	1,935	1,685	44.50	80.44
28	5,782	4,014	525	339	11.28	11.70	28	17,116	15,655	5,492	3,432	107.92	28.72	28	2,490	2,305	1,936	1,777	45.78	82.76
29	5,782	4,014	513	380	11.29	11.72	29	17,116	15,655	5,730	3,433	106.77	28.42	29	2,490	2,305	2,114	1,930	49.35	89.22
30	5,782	4,014	513	380	11.45	11.88	30	17,776	16,261	5,808	3,688	113.28	29.03	30	2,490	2,305	2,116	2,110	50.55	91.38
Total	**5,782**	**4,014**	**-**	**-**	**243.21**	**8.42**	**Total**	**17,116**	**15,655**	**-**	**-**	**3,616.78**	**32.09**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,490.15**	**89.79**

December , 2021

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	514	300	11.40	11.83	1	17,776	16,261	5,982	3,786	123.93	31.76	1	2,490	2,305	2,115	2,111	50.68	91.61
2	5,782	4,014	520	300	11.40	11.84	2	17,776	16,261	6,103	3,785	122.57	31.41	2	2,490	2,305	2,116	2,111	50.64	91.55
3	5,782	4,014	515	400	11.54	11.98	3	17,776	16,261	6,285	3,666	121.30	31.08	3	2,490	2,305	2,116	1,921	50.40	91.10
4	5,782	4,014	521	400	11.86	12.31	4	17,776	16,261	6,317	3,667	127.34	32.63	4	2,490	2,305	2,118	1,911	49.64	89.73
5	5,782	4,014	519	400	11.70	12.14	5	17,776	16,261	6,287	3,769	125.66	32.20	5	2,490	2,305	2,116	2,111	50.65	91.55
6	5,782	4,014	517	380	11.35	11.78	6	17,776	16,261	6,450	3,770	125.54	32.17	6	2,490	2,305	2,117	2,109	50.73	91.70
7	5,782	4,014	518	380	11.66	12.11	7	17,776	16,261	6,311	3,767	127.51	32.67	7	2,490	2,305	2,117	2,110	50.68	91.61
8	5,782	4,014	521	379	11.77	12.22	8	17,776	16,261	6,730	3,834	131.20	33.62	8	2,490	2,305	2,116	2,014	50.11	90.57
9	5,782	4,014	521	280	9.71	10.08	9	17,776	16,261	6,511	4,113	132.44	33.94	9	2,490	2,305	2,117	1,971	49.87	90.15
10	5,782	4,014	526	280	10.42	10.82	10	17,776	16,261	6,932	3,600	121.88	31.23	10	2,490	2,305	2,126	2,109	50.80	91.83
11	5,782	4,014	521	379	11.62	12.06	11	17,776	16,261	6,500	3,628	130.24	33.37	11	2,490	2,305	2,125	2,120	50.97	92.13
12	5,782	4,014	521	321	11.17	11.59	12	17,776	16,261	6,578	3,622	126.78	32.49	12	2,490	2,305	2,127	2,120	50.93	92.06
13	5,782	4,014	522	379	11.49	11.92	13	17,776	16,261	7,082	3,618	126.99	32.54	13	2,490	2,305	2,127	2,121	50.88	91.98
14	5,782	4,014	524	394	11.40	11.83	14	17,776	16,261	6,853	4,376	137.43	35.21	14	2,490	2,305	2,128	2,116	50.97	92.14
15	5,782	4,014	530	300	10.46	10.86	15	17,776	16,261	7,216	4,000	132.57	33.97	15	2,490	2,305	2,126	1,702	49.26	89.05
16	5,782	4,014	526	300	10.31	10.70	16	17,776	16,261	6,964	3,719	129.22	33.11	16	2,490	2,305	2,123	1,605	46.61	84.25
17	5,782	4,014	528	400	11.99	12.45	17	17,776	16,261	7,129	3,823	138.36	35.45	17	2,490	2,305	2,127	2,116	50.89	91.99
18	5,782	4,014	516	123	8.61	8.94	18	17,776	16,261	8,628	4,334	163.49	41.89	18	2,490	2,305	2,124	2,094	50.70	91.64
19	5,782	4,014	513	511	12.31	12.77	19	17,776	16,261	8,733	5,627	177.98	45.60	19	2,490	2,305	2,115	2,111	50.83	91.87
20	5,782	4,014	514	401	11.76	12.21	20	17,776	16,261	8,541	5,184	170.34	43.65	20	2,490	2,305	2,112	1,718	48.74	88.11
21	5,782	4,014	513	490	12.21	12.68	21	17,776	16,261	8,633	5,216	174.89	44.81	21	2,490	2,305	2,111	2,094	50.44	91.18
22	5,782	4,014	514	120	12.08	12.53	22	17,776	16,261	8,591	5,251	178.33	45.70	22	2,490	2,305	2,105	2,094	50.28	90.88
23	5,782	4,014	513	512	12.35	12.82	23	17,776	16,261	9,070	5,319	182.12	46.67	23	2,490	2,305	2,105	2,094	50.44	91.19
24	5,782	4,014	513	420	12.21	12.67	24	17,776	16,261	9,530	5,601	194.97	49.96	24	2,490	2,305	2,105	1,053	50.27	90.87
25	5,782	4,014	513	482	12.34	12.81	25	17,776	16,261	9,824	5,580	198.27	50.80	25	2,490	2,305	2,096	2,085	50.18	90.70
26	5,782	4,014	514	512	12.32	12.79	26	17,776	16,261	10,088	5,250	195.75	50.16	26	2,490	2,305	2,090	1,713	43.13	77.96
27	5,782	4,014	515	380	12.05	12.51	27	17,776	16,261	10,147	4,699	187.94	48.16	27	2,490	2,305	2,269	2,084	53.59	96.88
28	5,782	4,014	515	400	12.10	12.56	28	17,776	16,261	10,234	4,696	188.10	48.20	28	2,490	2,305	2,264	2,259	54.16	97.91
29	5,782	4,014	515	295	12.14	12.60	29	17,776	16,261	10,245	5,078	198.40	50.84	29	2,490	2,305	2,266	1,954	51.30	92.73
30	5,782	4,014	515	492	12.34	12.81	30	17,776	16,261	10,286	5,700	203.29	52.09	30	2,490	2,305	1,956	1,950	47.01	84.98
31	5,782	4,014	514	492	12.32	12.79	31	17,776	16,261	10,016	5,070	184.43	47.26	31	2,490	2,305	1,950	1,945	46.71	84.43
Total	**5,782**	**4,014**	**-**	**-**	**358.39**	**12.00**	**Total**	**17,776**	**16,261**	**-**	**-**	**4,779.26**	**39.50**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,552.46**	**90.53**

January , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	513	397	12.00	12.46	1	17,776	16,261	10,695	5,235	204.44	52.38	1	2,490	2,305	1,877	1,675	40.96	74.04
2	5,782	4,014	512	511	12.29	12.76	2	17,776	16,261	9,933	5,665	193.22	49.51	2	2,490	2,305	1,752	1,684	40.83	73.81
3	5,782	4,014	511	397	12.09	12.55	3	17,776	16,261	10,440	4,621	194.80	49.91	3	2,490	2,305	1,993	1,756	47.02	84.99
4	5,782	4,014	511	397	12.07	12.53	4	17,776	16,261	10,290	4,451	189.52	48.56	4	2,490	2,305	1,993	1,986	47.59	86.03
5	5,782	4,014	511	396	12.16	12.62	5	17,776	16,261	9,940	3,813	164.89	42.25	5	2,490	2,305	1,991	1,773	45.88	82.93
6	5,782	4,014	512	491	12.27	12.73	6	17,776	16,261	10,298	5,140	197.76	50.67	6	2,490	2,305	1,991	1,986	47.84	86.48
7	5,782	4,014	511	396	11.75	12.19	7	17,776	16,261	9,352	4,842	174.41	44.69	7	2,490	2,305	1,993	1,791	47.13	85.20
8	5,782	4,014	513	275	10.73	11.14	8	17,776	16,261	9,946	4,886	188.35	48.26	8	2,490	2,305	1,993	1,792	46.60	84.23
9	5,782	4,014	509	329	11.54	11.98	9	17,776	16,261	9,564	5,245	183.93	47.13	9	2,490	2,305	1,993	1,988	48.12	86.99
10	5,782	4,014	511	263	10.98	11.40	10	17,776	16,261	10,850	5,459	201.34	51.59	10	2,490	2,305	2,006	1,989	47.15	85.22
11	5,782	4,014	512	505	12.21	12.68	11	17,776	16,261	10,782	5,425	200.26	51.31	11	2,490	2,305	2,004	1,997	48.20	87.12
12	5,782	4,014	512	506	12.26	12.73	12	17,776	16,261	10,780	5,960	205.82	52.74	12	2,490	2,305	2,006	1,998	47.59	86.02
13	5,782	4,014	508	506	12.18	12.64	13	17,776	16,261	10,890	5,978	209.09	53.58	13	2,490	2,305	2,005	1,997	48.26	87.23
14	5,782	4,014	508	506	12.19	12.65	14	17,776	16,261	10,052	5,786	204.16	52.31	14	2,490	2,305	2,012	1,998	48.11	86.97
15	5,782	4,014	508	503	12.18	12.64	15	17,776	16,261	10,722	5,215	201.74	51.69	15	2,490	2,305	2,013	2,009	48.16	87.05
16	5,782	4,014	507	505	12.19	12.65	16	17,776	16,261	9,717	5,238	191.33	49.03	16	2,490	2,305	2,012	2,000	48.14	87.02
17	5,782	4,014	507	277	11.64	12.08	17	17,776	16,261	11,176	4,926	206.23	52.84	17	2,490	2,305	2,018	2,009	48.33	87.36
18	5,782	4,014	507	506	12.15	12.62	18	17,776	16,261	10,787	5,198	209.77	53.75	18	2,490	2,305	2,020	1,710	45.46	82.18
19	5,782	4,014	506	500	12.11	12.57	19	17,776	16,261	10,806	6,406	216.08	55.37	19	2,490	2,305	1,717	1,710	41.27	74.60
20	5,782	4,014	510	501	12.13	12.60	20	17,776	16,261	11,104	6,106	218.12	55.89	20	2,490	2,305	1,715	1,713	41.04	74.18
21	5,782	4,014	510	378	11.18	11.60	21	17,776	16,261	11,070	6,198	206.58	52.93	21	2,490	2,305	1,925	1,711	42.35	76.55
22	5,782	4,014	561	506	12.59	13.06	22	17,776	16,261	10,248	4,737	192.53	49.33	22	2,490	2,305	2,022	1,923	47.69	86.20
23	5,782	4,014	507	504	12.15	12.61	23	17,776	16,261	10,480	4,971	196.92	50.46	23	2,490	2,305	2,022	1,890	47.55	85.95
24	5,782	4,014	507	506	12.19	12.65	24	17,776	16,261	10,823	5,172	207.81	53.25	24	2,490	2,305	2,023	2,014	48.13	87.00
25	5,782	4,014	558	506	12.34	12.81	25	17,776	16,261	11,620	6,914	233.58	59.85	25	2,490	2,305	1,215	939	23.25	42.04
26	5,782	4,014	507	506	12.19	12.66	26	17,776	16,261	11,208	6,539	225.89	57.88	26	2,490	2,305	939	939	22.54	40.74
27	5,782	4,014	507	506	12.19	12.65	27	17,776	16,261	10,531	7,147	222.35	56.97	27	2,490	2,305	939	939	22.54	40.74
28	5,782	4,014	568	506	12.17	12.63	28	17,776	16,261	10,466	6,764	220.00	56.37	28	2,490	2,305	939	939	22.54	40.74
29	5,782	4,014	507	501	12.14	12.60	29	17,776	16,261	10,145	6,391	214.79	55.04	29	2,490	2,305	939	939	22.54	40.74
30	5,782	4,014	507	501	12.11	12.57	30	17,776	16,261	9,951	6,174	200.98	51.50	30	2,490	2,305	939	939	22.54	40.74
31	5,782	4,014	506	492	12.03	12.49	31	17,776	16,261	10,195	6,052	210.10	53.83	31	2,490	2,305	939	939	22.54	40.74
Total	**5,782**	**4,014**	**-**	**-**	**372.40**	**12.47**	**Total**	**17,776**	**16,261**	**-**	**-**	**6,286.80**	**51.96**	**Total**	**2,490**	**2,305**	**-**	**-**	**1,267.83**	**73.93**

February , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	5,782	4,014	506	497	12.04	12.50	1	17,776	16,261	11,166	6,881	223.17	57.18	1	2,490	2,305	939	939	22.54	40.74
2	5,782	4,014	506	493	12.04	12.50	2	17,776	16,261	10,210	6,722	211.32	54.15	2	2,490	2,305	1,158	939	25.47	46.04
3	5,782	4,014	506	415	11.99	12.45	3	17,776	16,261	9,921	5,684	200.85	51.46	3	2,490	2,305	1,162	1,162	27.89	50.41
4	5,782	4,014	506	501	12.08	12.54	4	17,776	16,261	9,314	6,241	200.17	51.29	4	2,490	2,305	1,248	1,162	28.51	51.53
5	5,782	4,014	505	386	11.41	11.84	5	17,776	16,261	9,172	6,520	195.47	50.09	5	2,490	2,305	1,248	1,248	29.95	54.14
6	5,782	4,014	390	383	9.31	9.67	6	17,776	16,261	8,937	5,958	185.40	47.51	6	2,490	2,305	1,248	1,248	29.95	54.14
7	5,782	4,014	390	0	5.36	5.56	7	17,776	16,261	9,677	5,955	197.69	50.65	7	2,490	2,305	1,251	1,248	29.96	54.15
8	5,782	4,014	275	110	5.96	6.19	8	17,776	16,261	9,449	5,919	196.51	50.35	8	2,490	2,305	1,256	1,248	30.04	54.30
9	5,782	4,014	275	140	6.34	6.59	9	17,776	16,261	9,640	5,731	197.44	50.59	9	2,490	2,305	1,256	1,106	29.82	53.91
10	5,782	4,014	275	200	6.40	6.64	10	17,776	16,261	9,848	5,279	190.13	48.72	10	2,490	2,305	1,256	1,256	30.14	54.49
11	5,782	4,014	275	90	6.06	6.29	11	17,776	16,261	9,618	5,175	186.30	47.74	11	2,490	2,305	1,256	1,252	30.12	54.44
12	5,782	4,014	270	60	5.39	5.59	12	17,776	16,261	9,042	4,876	180.52	46.25	12	2,490	2,305	1,252	1,251	30.04	54.29
13	5,782	4,014	400	198	6.75	7.00	13	17,776	16,261	8,963	4,596	173.29	44.40	13	2,490	2,305	1,251	1,246	29.94	54.13
14	5,782	4,014	400	299	9.15	9.49	14	17,776	16,261	9,086	4,665	178.60	45.76	14	2,490	2,305	1,244	1,036	29.49	53.30
15	5,782	4,014	498	186	8.44	8.76	15	17,776	16,261	8,753	4,545	167.20	42.84	15	2,490	2,305	1,244	1,008	28.09	50.78
16	5,782	4,014	503	230	9.61	9.97	16	17,776	16,261	8,986	4,551	168.02	43.05	16	2,490	2,305	1,238	1,072	27.79	50.23
17	5,782	4,014	231	190	5.39	5.60	17	17,776	16,261	8,617	4,584	167.97	43.04	17	2,490	2,305	1,235	1,232	29.57	53.45
18	5,782	4,014	231	190	5.40	5.60	18	17,776	16,261	8,697	4,624	168.64	43.21	18	2,490	2,305	1,230	1,226	29.50	53.33

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
19	5,782	4,014	231	190	5.39	5.59	19	17,776	16,261	8,443	5,171	173.29	44.40	19	2,490	2,305	1,857	1,226	34.27	61.95
20	5,782	4,014	231	189	5.35	5.55	20	17,776	16,261	8,292	4,884	159.06	40.76	20	2,490	2,305	2,135	1,855	47.64	86.12
21	5,782	4,014	231	189	5.32	5.52	21	17,776	16,261	7,732	4,775	157.80	40.43	21	2,490	2,305	2,160	1,753	49.44	89.37
22	5,782	4,014	231	188	5.24	5.43	22	17,776	16,261	7,741	5,001	154.38	39.56	22	2,490	2,305	2,276	1,915	51.72	93.49
23	4,651	4,014	231	128	5.17	5.37	23	17,309	16,261	9,086	5,082	174.90	44.82	23	2,490	2,305	2,274	1,896	52.55	94.99
24	4,651	4,014	231	98	4.94	5.12	24	17,309	16,261	8,432	4,957	174.73	44.77	24	2,490	2,305	2,262	2,256	54.26	98.08
25	4,651	4,014	231	0	3.20	3.32	25	17,309	16,261	8,990	4,893	173.21	44.38	25	2,490	2,305	2,259	1,985	53.28	96.31
26	4,651	4,014	128	0	2.31	2.40	26	17,309	16,261	8,077	4,440	159.21	40.79	26	2,490	2,305	2,245	1,903	52.05	94.08
27	4,651	4,014	231	0	2.89	3.00	27	17,309	16,261	7,662	4,562	154.64	39.62	27	2,490	2,305	2,240	1,959	52.13	94.23
28	4,651	4,014	232	0	3.75	3.89	28	17,309	16,261	8,255	4,307	169.76	43.50	28	2,490	2,305	2,235	1,961	28.29	51.14
Total	**5,782**	**4,014**	**-**	**-**	**192.66**	**7.14**	**Total**	**17,776**	**16,261**	**-**	**-**	**5,039.65**	**46.12**	**Total**	**2,490**	**2,305**	**-**	**-**	**994.42**	**64.20**

March , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	4,651	4,014	235	232	5.67	5.88	1	17,309	16,261	9,018	5,301	182.82	46.85	1	2,490	2,305	2,235	2,221	53.35	96.43
2	4,651	4,014	234	192	5.47	5.68	2	17,309	16,261	8,428	5,076	172.94	44.31	2	2,490	2,305	2,237	2,015	53.08	95.96
3	4,651	4,014	620	193	8.34	8.65	3	17,309	16,234	8,217	5,081	169.13	43.41	3	2,490	2,305	2,224	1,917	51.60	93.27
4	4,651	4,014	628	600	14.90	15.47	4	17,309	16,234	8,328	5,056	167.78	43.06	4	2,490	2,305	2,227	2,217	53.34	96.41
5	4,651	4,014	624	613	14.88	15.45	5	17,309	16,234	8,699	5,185	177.06	45.44	5	2,490	2,305	2,177	2,049	49.91	90.21
6	4,651	4,014	624	510	14.08	14.61	6	17,309	16,234	8,153	5,059	162.68	41.75	6	3,635	3,364	2,240	2,182	52.06	64.48
7	4,651	4,014	584	194	10.20	10.59	7	17,309	16,234	7,638	4,610	158.32	40.63	7	3,635	3,364	2,299	2,019	53.70	66.51
8	4,651	4,014	620	490	14.16	14.70	8	17,309	16,234	7,793	4,336	158.38	40.65	8	3,635	3,364	2,360	2,307	55.80	69.11
9	4,651	4,014	615	576	14.57	15.12	9	17,309	16,234	8,440	5,088	176.10	45.20	9	3,635	3,364	2,279	2,084	51.93	64.32
10	4,651	4,014	612	608	14.68	15.24	10	17,309	16,234	8,933	5,748	186.10	47.76	10	3,635	3,364	2,203	2,077	51.16	63.37
11	4,651	4,014	614	606	14.64	15.20	11	17,309	16,234	9,301	5,893	194.76	49.99	11	3,635	3,364	2,207	1,972	49.63	61.47
12	4,651	4,014	610	600	14.42	14.97	12	17,309	16,234	8,890	5,832	192.73	49.47	12	3,635	3,364	2,259	1,974	51.03	63.21
13	4,651	4,014	603	563	14.08	14.61	13	17,309	16,234	9,413	6,111	194.52	49.93	13	3,635	3,364	2,248	1,917	53.41	66.15
14	4,651	4,014	599	588	14.21	14.75	14	17,309	16,234	9,893	6,520	206.08	52.89	14	3,635	3,364	1,977	1,918	46.17	57.19
15	4,651	4,014	599	584	14.16	14.70	15	17,309	16,234	9,901	7,465	218.69	56.13	15	3,635	3,364	1,977	1,971	48.45	60.01
16	4,651	4,014	646	583	14.45	15.00	16	17,309	16,234	10,508	8,175	230.83	59.24	16	3,635	3,364	1,976	1,970	47.28	58.56
17	4,651	4,014	1,110	684	23.88	24.78	17	17,309	16,234	10,162	7,989	218.32	56.04	17	3,635	3,364	2,117	1,965	47.56	58.91
18	4,651	4,014	921	583	15.82	16.42	18	17,309	16,234	10,437	7,219	225.84	57.97	18	3,635	3,364	2,114	2,103	50.41	62.44
19	4,651	4,014	594	575	14.06	14.60	19	17,309	16,234	9,596	6,518	193.97	49.79	19	3,635	3,364	2,265	2,106	52.61	65.16
20	4,651	4,014	596	582	14.14	14.68	20	17,309	16,234	9,728	6,348	201.77	51.79	20	3,635	3,364	2,255	2,206	52.85	65.46
21	4,651	4,014	598	591	14.29	14.84	21	17,309	16,234	10,336	7,837	227.78	58.46	21	3,635	3,364	2,255	1,858	52.63	65.19
22	4,651	4,014	599	595	14.37	14.92	22	17,309	16,234	10,107	8,596	221.77	56.92	22	3,635	3,364	1,975	1,797	45.87	56.81
23	4,651	4,014	602	594	14.37	14.91	23	17,309	16,234	10,161	8,620	224.14	57.53	23	3,635	3,364	2,257	1,971	51.40	63.66
24	4,651	4,014	944	594	15.66	16.26	24	17,309	16,234	10,057	8,250	224.83	57.71	24	3,635	3,364	2,280	2,136	53.62	66.41
25	4,651	4,014	953	599	20.81	21.60	25	17,309	16,234	9,913	8,738	226.53	58.14	25	3,635	3,364	2,706	2,217	56.95	70.54
26	4,651	4,014	610	509	14.20	14.74	26	17,309	16,234	9,910	8,089	220.93	56.70	26	3,635	3,364	2,720	2,419	62.44	77.33
27	4,651	4,014	613	599	14.53	15.08	27	17,309	16,234	9,013	7,633	204.57	52.51	27	3,635	3,364	2,727	2,681	64.90	80.38
28	4,651	4,014	612	600	14.45	15.00	28	17,309	16,234	9,728	7,578	211.59	54.31	28	3,635	3,364	2,971	1,967	57.27	70.93
29	4,651	4,014	660	456	13.90	14.43	29	17,309	16,234	10,277	8,830	236.11	60.60	29	3,635	3,364	1,970	926	41.56	51.48
30	4,651	4,014	720	491	15.64	16.24	30	17,309	16,234	10,333	9,322	241.54	61.99	30	3,635	3,364	648	625	15.02	18.60
31	4,651	4,014	556	480	13.04	13.53	31	17,309	16,234	9,553	8,845	219.74	56.40	31	3,635	3,364	2,957	679	36.65	45.39
Total	**4,651**	**4,014**	**-**	**-**	**436.09**	**14.60**	**Total**	**17,309**	**16,234**	**-**	**-**	**6,248.37**	**51.73**	**Total**	**3,635**	**3,364**	**-**	**-**	**1,563.60**	**62.47**

April , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	4,651	4,014	846	578	17.21	17.86	1	17,309	16,234	10,783	8,606	227.34	58.35	1	3,635	3,364	3,039	2,970	72.07	89.27
2	4,651	4,014	1,074	858	24.38	25.31	2	17,309	16,234	11,058	8,054	229.07	58.79	2	3,635	3,364	3,018	2,473	68.83	85.25
3	4,651	4,014	975	782	22.14	22.98	3	17,309	16,234	11,605	7,925	234.88	60.28	3	3,635	3,364	3,021	2,466	68.45	84.78
4	4,651	4,014	1,053	823	22.69	23.55	4	17,309	16,234	11,554	8,470	248.93	63.89	4	3,635	3,364	3,011	2,928	71.16	88.13
5	4,651	4,014	1,400	956	27.52	28.56	5	17,309	16,234	11,329	9,203	252.03	64.69	5	3,635	3,364	3,087	2,054	54.59	67.61
6	4,651	4,014	1,637	1,286	35.70	37.05	6	17,309	16,234	11,193	9,128	254.87	65.42	6	3,635	3,364	3,224	2,143	61.98	76.77
7	4,651	4,014	1,714	1,371	36.38	37.76	7	17,309	16,234	11,191	8,288	237.66	61.00	7	3,635	3,364	3,316	3,213	77.71	96.26
8	4,651	4,014	1,577	907	29.89	31.03	8	17,309	16,234	10,112	7,953	222.94	57.22	8	3,635	3,364	3,325	2,771	77.19	95.61
9	4,651	4,014	1,008	784	21.62	22.44	9	17,309	16,234	10,583	8,679	231.27	59.36	9	3,635	3,364	3,315	2,270	61.01	75.57
10	4,651	4,014	1,077	794	21.59	22.40	10	17,309	16,234	10,576	8,889	231.87	59.51	10	3,635	3,364	3,321	2,285	74.48	92.25
11	4,651	4,014	992	552	15.44	16.03	11	17,309	16,234	10,619	9,201	235.10	60.34	11	3,635	3,364	3,323	2,766	74.29	92.01
12	4,651	4,014	564	536	13.58	14.10	12	17,309	16,234	10,506	8,900	232.41	59.65	12	3,635	3,364	3,314	2,764	74.28	92.01
13	4,651	4,014	569	540	13.63	14.14	13	17,309	16,234	10,690	8,814	235.27	60.38	13	3,635	3,364	3,310	2,760	74.70	92.53
14	4,651	4,014	564	553	13.70	14.22	14	17,309	16,234	10,520	9,493	239.91	61.58	14	3,635	3,364	3,306	3,296	79.24	98.15
15	4,651	4,014	665	555	13.88	14.41	15	17,309	16,234	10,631	8,278	232.51	59.68	15	3,635	3,364	3,341	3,299	79.37	98.31
16	4,651	4,014	737	654	15.47	16.06	16	17,309	16,234	11,128	8,671	233.51	59.93	16	3,635	3,364	3,338	3,299	78.78	97.58
17	4,651	4,014	852	481	16.67	17.30	17	17,309	16,234	11,224	8,435	231.42	59.40	17	3,635	3,364	3,308	3,301	79.46	98.41
18	4,651	4,014	828	680	17.21	17.86	18	17,309	16,234	11,082	9,080	238.53	61.22	18	3,635	3,364	3,317	3,300	79.29	98.21
19	4,651	4,014	837	814	18.86	19.57	19	17,309	16,234	11,256	9,134	236.67	60.74	19	3,635	3,364	3,312	3,300	78.99	97.84
20	4,651	4,014	839	719	18.86	19.57	20	17,296	15,995	10,984	8,462	228.61	59.55	20	3,635	3,345	3,314	3,299	79.49	99.02
21	4,651	4,014	843	732	18.17	18.86	21	17,296	15,995	10,305	8,265	217.69	56.71	21	3,635	3,345	3,316	3,307	79.43	98.94
22	4,651	4,014	848	827	19.50	20.24	22	17,296	15,995	10,545	6,999	212.36	55.32	22	3,635	3,345	3,316	2,971	77.08	96.01
23	4,651	4,014	851	837	19.45	20.19	23	17,296	15,995	11,270	8,498	232.23	60.50	23	3,635	3,345	3,316	3,106	78.81	98.17
24	4,651	4,014	852	833	19.24	19.97	24	17,296	15,995	10,877	8,837	236.64	61.64	24	3,635	3,345	3,316	3,306	79.45	98.96
25	4,651	4,014	850	750	18.83	19.54	25	17,296	15,995	10,645	8,892	231.83	60.39	25	3,635	3,345	3,316	3,305	79.14	98.58
26	4,651	4,014	850	829	19.10	19.83	26	17,296	15,995	11,202	8,903	234.44	61.07	26	3,635	3,345	3,316	3,306	79.66	99.23
27	4,651	4,014	847	828	19.02	19.74	27	17,296	15,995	11,267	9,361	240.70	62.70	27	3,635	3,345	3,318	3,308	79.19	98.65
28	4,651	4,014	840	830	19.03	19.76	28	17,296	15,995	10,548	8,588	226.29	58.95	28	3,635	3,345	3,318	3,305	79.50	99.03
29	4,651	4,014	842	361	16.26	16.88	29	17,296	15,995	11,087	9,268	239.77	62.46	29	3,635	3,345	3,318	3,305	79.27	98.74
30	4,651	4,014	819	810	18.62	19.32	30	17,296	15,995	10,493	8,536	227.83	59.35	30	3,635	3,345	3,316	3,036	79.47	98.98
Total	**4,651**	**4,014**	**-**	**-**	**603.63**	**20.89**	**Total**	**17,296**	**15,995**	**-**	**-**	**7,014.58**	**60.91**	**Total**	**3,635**	**3,345**	**-**	**-**	**2,256.36**	**93.69**

May , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	4,651	4,014	1,152	816	21.70	22.52	1	17,296	15,995	12,086	9,715	263.64	68.68	1	3,635	3,345	3,313	3,164	78.99	98.40
2	4,651	4,014	1,146	1,061	24.74	25.68	2	17,296	15,995	11,385	8,850	239.52	62.39	2	3,635	3,345	3,307	3,278	79.12	98.56
3	4,651	4,014	1,074	640	20.76	21.55	3	17,296	15,995	8,932	6,188	187.82	48.93	3	3,635	3,345	3,291	3,144	78.28	97.51
4	4,651	4,014	948	479	16.18	16.79	4	17,296	15,995	7,706	6,061	168.25	43.83	4	3,635	3,345	3,272	2,978	75.87	94.51
5	4,651	4,014	953	873	21.34	22.15	5	17,296	15,995	9,291	6,757	186.02	48.46	5	3,635	3,345	3,257	2,988	75.46	93.99
6	4,651	4,014	836	339	13.23	13.73	6	17,296	15,995	9,401	6,171	189.54	49.38	6	3,635	3,345	3,243	2,782	74.37	92.64
7	4,651	4,014	1,198	838	23.33	24.22	7	17,296	15,995	9,649	7,427	210.90	54.94	7	3,635	3,345	3,239	3,220	77.54	96.59
8	4,651	4,014	1,169	977	24.19	25.11	8	17,296	15,995	11,000	8,249	223.41	58.20	8	3,635	3,345	3,221	3,213	77.26	96.24
9	4,651	4,014	1,188	733	19.19	19.92	9	17,296	15,995	11,186	9,121	249.44	64.98	9	3,635	3,345	3,268	3,191	76.77	95.63
10	4,651	4,014	967	733	19.70	20.45	10	17,296	15,995	12,750	9,641	281.18	73.25	10	3,635	3,345	3,193	2,278	56.91	70.89
11	4,651	4,014	970	783	19.95	20.70	11	17,296	15,995	12,833	11,548	292.53	76.20	11	3,635	3,345	2,283	2,132	53.61	66.78
12	4,651	4,014	946	714	18.42	19.12	12	17,296	15,995	12,966	11,799	298.37	77.72	12	3,635	3,345	2,283	2,270	54.44	67.81
13	4,651	4,014	1,308	813	26.40	27.40	13	17,296	15,995	12,542	11,199	291.87	76.03	13	3,635	3,345	2,285	2,273	54.46	67.84
14	4,651	4,014	1,316	1,038	26.60	27.61	14	17,296	15,995	12,624	11,442	286.30	74.58	14	3,635	3,345	2,285	2,278	54.96	68.46
15	4,651	4,014	1,346	1,038	26.13	27.12	15	17,296	15,995	12,349	9,984	276.67	72.07	15	3,635	3,345	2,284	2,277	54.28	67.61
16	4,651	4,014	1,224	1,040	26.49	27.50	16	17,296	15,995	12,229	10,639	280.67	73.11	16	3,635	3,345	2,285	2,144	54.03	67.30
17	4,651	4,014	1,226	1,038	26.10	27.09	17	17,296	15,995	11,931	9,556	267.36	69.65	17	3,635	3,345	2,286	2,266	54.78	68.24
18	4,651	4,014	1,205	1,041	26.02	27.01	18	17,296	15,995	10,615	9,203	243.71	63.49	18	3,635	3,345	2,289	2,264	54.58	67.99
19	4,651	4,014	1,294	1,087	28.21	29.28	19	17,296	15,995	10,810	9,261	236.58	61.63	19	3,635	3,345	2,286	2,270	54.61	68.02
20	4,651	4,014	1,225	1,036	27.35	28.39	20	17,296	15,995	10,253	8,953	229.29	59.73	20	3,635	3,345	2,286	2,280	55.11	68.65

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
21	4,651	4,014	1,220	1,039	25.24	26.20	21	17,296	15,995	11,144	9,440	254.80	66.37	21	3,635	3,345	2,286	2,274	54.34	67.69
22	4,651	4,014	1,310	1,039	25.49	26.45	22	17,296	15,995	10,846	7,511	243.92	63.54	22	3,635	3,345	2,286	2,280	54.49	67.87
23	4,651	4,014	1,324	1,032	27.30	28.33	23	17,296	15,995	10,590	7,290	215.49	56.14	23	3,635	3,345	2,287	2,277	54.74	68.18
24	4,651	4,014	1,335	1,132	27.74	28.79	24	17,296	15,995	10,706	8,143	229.61	59.81	24	3,635	3,345	2,286	2,280	54.81	68.27
25	4,651	4,014	1,336	836	27.56	28.60	25	17,296	15,995	10,254	8,460	230.57	60.06	25	3,635	3,345	2,285	2,279	54.69	68.12
26	4,651	4,014	1,299	1,041	25.45	26.41	26	17,296	15,995	10,335	9,225	232.23	60.49	26	3,635	3,345	2,284	2,273	56.48	70.35
27	4,651	4,014	1,336	836	27.56	28.60	27	17,296	15,995	10,254	8,460	230.57	60.06	27	3,635	3,345	2,285	2,279	54.69	68.12
28	4,651	4,014	1,319	1,033	25.21	26.16	28	17,296	15,995	10,247	8,740	227.75	59.33	28	3,635	3,345	2,286	2,277	54.66	68.09
29	4,651	4,014	1,328	1,138	28.91	30.01	29	18,559	17,258	9,845	8,206	223.75	54.02	29	3,635	3,345	2,284	2,131	54.10	67.39
30	4,651	4,014	1,335	942	29.00	30.10	30	18,559	17,258	9,808	8,011	215.25	51.97	30	3,635	3,345	2,282	2,271	54.72	68.16
31	4,651	4,014	1,327	1,123	27.21	28.24	31	18,559	17,258	9,813	8,701	225.02	54.33	31	3,635	3,345	2,286	2,277	54.82	68.29
Total	**4,651**	**4,014**	**-**	**-**	**752.70**	**25.20**	**Total**	**17,296**	**17,258**	**-**	**-**	**7,432.03**	**57.88**	**Total**	**3,635**	**3,345**	**-**	**-**	**1,897.97**	**76.26**

June , 2022

Day	GENCOs						Day	IPPS Thermal						Day	Nuclear					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap		Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min				Installed	Dependable	Max	Min				Installed	Dependable	Max	Min		
1	4,651	4,014	1,139	974	26.60	27.61	1	18,559	17,258	10,329	8,784	223.10	53.86	1	3,635	3,345	2,284	2,278	54.85	68.33
2	4,651	4,014	1,332	1,133	28.56	29.65	2	18,559	17,258	11,420	9,650	252.47	60.95	2	3,635	3,345	2,283	1,239	41.97	52.27
3	4,651	4,014	1,315	802	25.66	26.63	3	18,559	17,258	12,145	10,845	275.05	66.41	3	3,635	3,345	1,241	1,238	29.74	37.04
4	4,651	4,014	1,328	1,019	29.20	30.31	4	18,559	17,258	11,459	10,550	267.21	64.51	4	3,635	3,345	1,239	1,238	29.72	37.02
5	4,651	4,014	1,337	1,155	30.27	31.42	5	18,559	17,258	12,249	10,315	277.54	67.01	5	3,635	3,345	1,239	1,234	29.69	36.99
6	4,651	4,014	1,335	1,159	30.11	31.25	6	18,559	17,258	12,472	11,391	283.11	68.35	6	3,635	3,345	1,237	1,231	29.67	36.96
7	4,651	4,014	1,638	1,097	32.35	33.58	7	18,559	17,258	12,364	11,576	288.14	69.57	7	3,635	3,345	1,239	1,232	29.63	36.91
8	4,651	4,014	1,612	1,426	38.17	39.61	8	18,559	17,258	12,334	11,481	288.18	69.58	8	3,635	3,345	1,240	1,230	29.62	36.90
9	4,651	4,014	1,561	1,339	36.37	37.75	9	18,559	17,258	12,309	11,266	288.18	69.58	9	3,635	3,345	1,239	1,232	29.63	36.90
10	4,651	4,014	1,694	1,406	38.42	39.88	10	18,559	17,258	12,544	11,386	287.22	69.34	10	3,635	3,345	1,235	1,232	29.51	36.76
11	4,651	4,014	1,732	1,391	40.00	41.52	11	18,559	17,258	12,252	9,290	274.78	66.34	11	3,635	3,345	1,237	1,224	29.61	36.88
12	4,651	4,014	1,751	1,333	41.15	42.71	12	18,559	17,258	12,480	10,577	277.76	67.06	12	3,635	3,345	1,236	923	23.82	29.66
13	4,651	4,014	1,735	1,550	41.88	43.47	13	18,559	17,258	12,385	11,025	289.05	69.79	13	3,635	3,345	1,236	916	26.24	32.68
14	4,651	4,014	1,837	1,498	42.54	44.16	14	18,559	17,258	12,351	11,038	280.54	67.73	14	3,635	3,345	1,238	1,233	29.68	36.97
15	4,651	4,014	1,772	1,571	41.56	43.13	15	18,559	17,258	12,067	11,174	278.29	67.19	15	3,635	3,345	1,241	1,233	29.74	37.04
16	4,651	4,014	1,750	1,162	39.00	40.48	16	18,559	17,258	11,654	7,148	261.68	63.18	16	3,635	3,345	2,332	1,239	46.86	58.37
17	4,651	4,014	1,475	909	26.39	27.39	17	18,559	17,258	9,669	6,675	196.17	47.36	17	3,635	3,345	2,285	1,982	52.87	65.86
18	4,651	4,014	1,348	1,070	27.77	28.82	18	18,559	17,258	9,315	7,007	188.39	45.48	18	3,635	3,345	2,286	2,281	54.84	68.31
19	4,651	4,014	1,346	924	27.77	28.82	19	18,559	17,258	8,062	5,937	178.23	43.03	19	3,635	3,345	2,288	2,280	54.65	68.07
20	4,651	4,014	1,343	682	28.31	29.38	20	18,559	17,258	8,518	4,920	174.77	42.19	20	3,635	3,345	2,287	2,069	54.61	68.02
21	4,651	4,014	976	487	18.36	19.06	21	18,559	17,258	6,360	4,714	136.99	33.07	21	3,635	3,345	2,284	1,860	51.14	63.70
22	4,651	4,014	1,346	487	22.42	23.27	22	18,559	17,258	7,677	4,778	154.53	37.31	22	3,635	3,345	2,287	1,893	49.99	62.27
23	4,651	4,014	1,336	1,164	29.62	30.75	23	18,559	17,258	8,244	5,707	172.02	41.53	23	3,635	3,345	2,287	2,282	54.89	68.37
24	4,651	4,014	1,337	992	27.68	28.74	24	18,559	17,258	9,069	7,480	200.59	48.43	24	3,635	3,345	2,288	2,282	54.74	68.18
25	4,651	4,014	1,357	953	27.20	28.23	25	18,559	17,258	10,286	8,174	216.27	52.21	25	3,635	3,345	2,286	2,281	54.71	68.15
26	4,651	4,014	1,549	903	30.09	31.23	26	18,559	17,258	10,608	9,226	239.56	57.84	26	3,635	3,345	2,287	1,241	54.73	68.17
27	4,651	4,014	1,683	1,442	37.55	38.97	27	18,559	17,258	11,189	9,728	256.74	61.99	27	3,635	3,345	2,287	2,276	54.72	68.17
28	4,651	4,014	1,697	1,460	38.54	40.00	28	18,559	17,258	11,110	10,020	255.19	61.61	28	3,635	3,345	2,283	2,052	52.27	65.11
29	4,651	4,014	1,712	1,480	39.40	40.90	29	18,559	17,258	10,867	9,684	252.04	60.85	29	3,635	3,345	2,278	2,052	52.92	65.92
30	4,651	4,014	1,715	1,437	38.18	39.63	30	18,559	17,258	10,762	9,286	243.22	58.72	30	3,635	3,345	2,278	2,270	54.43	67.81
Total	**4,651**	**4,014**	**-**	**-**	**981.10**	**33.95**	**Total**	**18,559**	**17,258**	**-**	**-**	**7,257.01**	**58.40**	**Total**	**3,635**	**3,345**	**-**	**-**	**1,271.46**	**52.79**

Table 100
Summry of Generation Capacity (MW), Daily Energy Generation (GWh) and % age Plant Utilization

July , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % W.r.t Dep. Cap
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,873	11,591	7,071	4,815	149.6	53.76	25,388	21,974	15,530	14,627	364.26	69.07
2	11,873	11,591	7,081	4,886	148.1	53.25	25,388	21,974	15,998	13,017	364.68	69.15
3	11,873	11,591	7,037	4,276	141.5	50.88	25,388	21,974	16,720	13,060	356.40	67.58
4	11,873	11,591	7,140	4,258	144.4	51.91	25,388	21,974	15,516	12,428	344.50	65.32
5	11,873	11,591	6,987	4,461	141.2	50.76	25,388	21,974	17,102	12,682	367.68	69.72
6	11,873	11,591	6,956	4,555	143.7	51.64	25,388	21,974	17,314	15,525	396.05	75.10
7	11,873	11,591	6,987	4,756	148.3	53.30	25,388	21,974	17,280	15,425	402.79	76.37
8	11,873	11,591	7,100	4,926	152.1	54.67	25,388	21,974	17,315	15,685	403.25	76.46
9	11,873	11,591	7,612	5,237	155.5	55.91	25,388	21,974	17,231	14,539	394.06	74.72
10	11,873	11,591	7,327	4,683	148.4	53.36	25,388	21,974	16,643	15,531	385.85	73.16
11	11,873	11,591	7,112	4,733	138.6	49.80	25,388	21,974	16,222	14,527	372.77	70.68
12	11,873	11,591	6,612	4,686	131.6	47.29	25,388	21,974	16,344	12,007	325.28	61.68
13	11,873	11,591	7,371	4,856	147.9	53.17	25,388	21,974	15,857	10,580	325.88	61.79
14	11,873	11,591	8,320	4,360	161.4	58.00	25,388	21,974	15,153	11,302	312.48	59.25
15	11,873	11,591	8,861	6,107	179.2	64.42	25,388	21,974	14,958	11,783	326.01	61.82
16	11,873	11,591	8,569	5,898	172.2	61.91	25,388	21,974	14,706	13,277	339.65	64.40
17	11,873	11,591	8,690	6,135	177.7	63.89	25,388	21,974	15,199	13,637	344.56	65.33
18	11,873	11,591	9,059	6,382	192.0	69.01	25,388	21,974	14,903	13,762	343.59	65.15
19	11,873	11,591	9,042	6,050	183.0	65.77	25,388	21,974	14,834	11,606	328.60	62.31
20	11,873	11,591	9,237	6,304	194.7	69.99	25,388	21,974	11,401	8,120	232.19	44.03
21	11,873	11,591	9,116	6,383	189.1	67.99	25,388	21,974	11,214	7,844	226.98	43.04
22	11,873	11,591	8,804	5,381	181.1	65.09	25,388	21,974	13,025	10,246	279.73	53.04
23	11,873	11,591	8,878	5,429	173.9	62.52	25,388	21,974	14,272	11,716	311.41	59.05
24	11,873	11,591	8,919	6,116	178.9	64.31	25,388	21,974	14,888	13,182	334.59	63.44
25	11,873	11,591	9,363	6,540	189.7	68.21	25,388	21,974	15,053	13,543	343.21	65.08
26	11,873	11,591	9,171	6,619	192.3	69.12	25,388	21,974	15,353	13,313	347.80	65.95
27	11,873	11,591	9,565	6,865	198.1	71.20	25,388	21,974	14,514	12,077	322.66	61.18
28	11,873	11,591	9,912	7,317	211.2	75.93	25,388	21,974	12,520	9,795	274.41	52.03
29	11,873	11,591	9,767	7,317	205.0	73.70	25,388	21,974	13,057	9,701	277.98	52.71
30	11,873	11,591	9,613	7,755	210.2	75.55	25,388	21,974	13,114	10,776	293.44	55.64
31	11,873	11,591	9,926	7,978	216.2	77.73	25,388	21,974	12,772	9,882	274.79	52.10
Total	**2,483**	**2,202**	**-**	**-**	**5,297.0**	**323.32**	**25,388**	**21,974**	**-**	**-**	**10,317.5**	**63.11**

August , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,873	11,591	9,870	7,681	215.3	77.39	25,388	21,974	12,770	10,973	285.26	54.09
2	11,873	11,591	9,847	8,010	213.1	76.60	25,388	21,974	13,668	10,333	292.13	55.39
3	11,873	11,591	9,742	7,644	212.0	76.22	25,388	21,974	14,104	11,549	311.48	59.06
4	11,873	11,591	9,960	7,890	213.5	76.76	25,388	21,974	14,120	10,728	302.26	57.31
5	11,873	11,591	9,674	7,179	208.4	74.93	25,388	21,974	14,264	12,395	322.84	61.22
6	11,873	11,591	9,616	7,367	205.7	73.95	25,388	21,974	13,925	8,680	272.40	51.65
7	11,873	11,591	9,152	6,027	185.6	66.73	25,388	21,974	14,878	12,904	337.56	64.01
8	11,873	11,591	8,517	5,454	171.6	61.69	25,388	21,974	14,851	11,616	333.30	63.20
9	11,873	11,591	10,192	5,502	188.6	67.81	25,388	21,974	14,374	12,427	323.24	61.29
10	11,873	11,591	9,842	6,671	207.2	74.49	25,388	21,974	14,664	11,662	322.59	61.17
11	11,873	11,591	10,281	7,232	213.9	76.89	25,388	21,974	14,701	12,440	326.18	61.85
12	11,873	11,591	10,199	7,331	213.2	76.63	25,388	21,974	15,243	12,869	336.37	63.78
13	11,873	11,591	10,112	7,799	210.6	75.70	25,388	21,974	14,883	12,502	329.49	62.48
14	11,873	11,591	9,966	7,705	213.5	76.76	26,701	24,503	12,383	8,156	245.78	41.79
15	11,873	11,591	9,977	5,927	193.2	69.46	25,388	21,974	13,129	10,931	288.05	54.62
16	11,873	11,591	9,173	5,883	185.9	66.84	25,388	21,974	15,650	11,902	335.79	63.67
17	11,873	11,591	9,706	5,717	184.6	66.37	25,388	21,974	15,727	12,783	358.20	67.92
18	11,873	11,591	9,982	7,030	209.1	75.15	25,388	21,974	14,813	11,783	324.44	61.52
19	11,873	11,591	10,028	7,474	218.0	78.36	25,388	21,974	13,389	9,388	274.57	52.06
20	11,873	11,591	9,960	5,529	199.5	71.70	25,388	21,974	14,996	10,509	300.86	57.05
21	11,873	11,591	8,636	4,877	169.4	60.90	25,388	21,974	15,348	12,613	335.95	63.70
22	11,873	11,591	9,123	4,700	161.7	58.11	25,388	21,974	15,068	12,613	339.70	64.41
23	11,873	11,591	9,779	5,260	190.7	68.56	25,388	21,974	14,696	13,067	336.13	63.73
24	11,873	11,691	9,652	6,406	204.6	72.92	25,388	21,974	15,181	13,347	341.99	64.85
25	11,873	11,691	10,060	7,212	209.6	74.70	25,388	21,974	14,931	13,189	340.25	64.52
26	11,873	11,691	10,138	7,867	223.8	79.75	25,388	21,974	14,727	11,837	326.51	61.91
27	11,873	11,691	9,834	7,662	212.6	75.78	25,388	21,974	14,351	11,705	319.71	60.62
28	11,873	11,691	9,780	7,256	203.3	72.47	25,388	21,974	13,989	11,777	313.04	59.36
29	11,873	11,691	9,473	7,704	203.6	72.57	25,388	21,974	13,228	11,088	293.36	55.63
30	11,873	11,691	9,021	6,011	178.2	63.50	25,388	21,974	14,078	10,926	306.89	58.19
31	11,973	11,691	8,388	5,592	164.8	58.74	25,388	21,974	13,696	10,006	291.61	55.29
Total	**2,583**	**2,302**	**-**	**-**	**6,185.2**	**361.14**	**25,388**	**21,974**	**-**	**-**	**9,767.9**	**59.75**

September , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,691	9,769	4,263	176.5	62.90	25,388	21,974	14,302	10,329	307.02	58.21
2	11,973	11,691	9,403	7,205	202.5	72.16	25,388	21,974	13,599	10,451	297.15	56.34
3	11,973	11,691	9,699	7,071	202.1	72.04	25,388	21,974	12,889	9,620	275.98	52.33
4	11,973	11,691	9,631	7,269	200.2	71.35	25,388	21,974	13,324	9,307	276.10	52.35
5	11,973	11,691	9,152	7,077	200.4	71.44	25,388	21,974	13,741	11,024	297.20	56.35
6	11,973	11,841	9,316	6,957	201.0	70.71	25,388	21,974	14,645	11,666	324.70	61.57
7	11,973	11,841	9,222	7,126	200.2	70.45	25,388	21,974	15,247	12,524	330.51	62.67
8	11,973	11,841	9,434	7,051	198.5	69.85	25,388	21,974	13,264	10,652	280.95	53.27
9	11,973	11,841	9,442	6,799	196.8	69.25	25,388	21,974	11,695	9,600	259.28	49.16
10	11,973	11,841	9,699	6,346	188.5	66.33	25,388	21,974	11,685	8,667	233.72	44.32
11	11,973	11,841	9,172	6,250	187.1	65.82	25,388	21,974	9,562	8,151	214.22	40.62
12	11,973	11,841	9,946	6,022	198.4	69.79	25,388	21,974	9,307	7,320	193.42	36.67
13	11,973	11,841	9,363	5,501	183.2	64.48	25,388	21,974	11,969	8,191	254.80	48.31
14	11,973	11,841	9,884	6,178	186.6	65.66	25,388	21,974	12,663	10,703	282.07	53.48
15	11,973	11,841	9,715	5,128	182.6	64.24	25,388	21,974	13,659	12,027	306.86	58.19
16	11,973	11,841	8,866	3,603	155.9	54.86	25,388	21,974	14,962	13,138	339.02	64.28
17	11,973	11,841	9,103	4,269	170.7	60.05	25,388	21,974	14,460	11,788	319.28	60.54
18	11,973	11,841	9,637	5,303	190.5	67.03	25,388	21,974	13,308	11,625	303.19	57.49
19	11,973	11,841	9,546	7,181	202.9	71.40	25,388	21,974	13,496	10,656	290.88	55.15
20	11,973	11,841	9,606	7,075	196.5	69.14	25,388	21,974	13,774	11,347	305.36	57.90
21	11,973	11,841	9,369	5,151	176.4	62.07	25,388	21,974	13,794	8,781	273.56	51.87
22	11,973	11,841	9,133	4,520	164.5	57.88	25,388	21,974	11,869	10,139	266.44	50.52
23	11,973	11,841	8,598	4,845	166.9	58.71	25,388	21,974	11,383	9,401	250.48	47.49
24	11,973	11,841	8,612	4,733	163.6	57.57	25,388	21,974	11,583	9,207	252.39	47.86
25	11,973	11,841	8,136	3,744	148.9	52.38	25,388	21,974	13,645	11,435	293.26	55.61
26	11,973	11,841	8,563	3,025	132.0	46.44	25,388	21,974	14,123	11,553	313.71	59.48
27	11,973	11,841	7,784	4,738	150.6	52.99	25,388	21,974	14,093	12,474	320.76	60.82
28	11,973	11,841	8,503	4,638	154.0	54.17	25,388	21,974	13,801	12,701	323.02	61.25
29	11,973	11,841	9,338	5,023	170.6	60.02	25,388	21,974	13,438	11,735	308.77	58.55
30	11,973	11,841	8,130	4,986	166.7	58.67	25,388	21,974	13,387	11,448	306.71	58.16
Total	**2,583**	**2,452**	**-**	**-**	**5,415**	**306.73**	**25,388**	**21,974**	**-**	**-**	**8,600.8**	**54.36**

October , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,841	7,373	3,692	140.8	49.56	25,388	21,974	13,588	12,774	315.93	59.90
2	11,973	11,841	7,039	3,813	135.6	47.73	25,388	21,974	13,361	10,726	297.90	56.49
3	11,973	11,841	8,384	3,698	148.7	52.33	25,388	21,974	12,343	11,674	290.78	55.14
4	11,973	11,841	8,085	3,766	153.1	53.87	25,388	21,974	12,619	10,260	280.78	53.24
5	11,973	11,841	7,352	3,217	129.0	45.40	25,388	21,974	13,453	10,317	297.54	56.42
6	11,973	11,841	6,148	2,966	113.6	39.99	25,388	21,974	14,313	12,940	324.81	61.59
7	11,973	11,841	6,400	2,954	112.9	39.71	25,388	21,974	13,640	10,795	302.26	57.31
8	11,973	11,841	6,202	2,573	103.5	36.42	25,388	21,974	14,140	12,182	311.36	59.04
9	11,973	11,841	6,177	2,254	112.0	39.40	25,388	21,974	14,152	12,346	323.56	61.35
10	11,973	11,841	5,707	2,334	100.8	35.48	25,388	21,974	13,791	11,638	306.52	58.12
11	11,973	11,841	6,128	2,093	98.4	34.63	25,388	21,974	13,107	10,110	284.57	53.96
12	11,973	11,841	6,347	2,719	106.5	37.48	25,388	21,974	12,779	10,578	283.42	53.74
13	11,973	11,841	5,328	2,008	86.9	30.59	25,388	21,974	13,241	10,710	297.18	56.35
14	11,973	11,841	5,519	1,854	88.1	31.00	25,388	21,974	13,129	9,497	283.47	53.75
15	11,973	11,841	4,777	1,696	74.7	26.30	25,388	21,974	12,657	10,020	282.03	53.48
16	11,973	11,841	4,680	1,988	78.0	27.45	25,388	21,974	12,724	9,815	282.36	53.54
17	11,973	11,841	4,974	1,668	71.1	25.02	25,388	21,974	12,712	10,572	282.82	53.63
18	11,973	11,841	5,464	1,904	85.5	30.09	25,388	21,974	12,211	8,794	264.27	50.11
19	11,973	11,841	4,989	1,676	69.4	24.42	25,388	21,974	11,543	9,973	264.21	50.10
20	11,973	11,841	5,210	1,679	77.7	27.33	25,388	21,974	11,905	8,543	254.93	48.34
21	11,973	11,841	5,047	1,631	72.4	25.48	25,388	21,974	12,933	9,730	271.54	51.49
22	11,973	11,841	5,606	2,042	86.4	30.40	25,388	21,974	11,262	9,292	247.72	46.97
23	11,973	11,841	4,658	1,848	69.5	24.45	25,388	21,974	11,598	8,425	245.15	46.48
24	11,973	11,841	4,101	1,225	64.4	22.65	25,388	21,974	10,479	7,285	226.99	43.04
25	11,973	11,841	5,197	1,378	82.6	29.06	25,388	21,974	10,409	6,001	207.94	39.43
26	11,973	11,841	4,591	1,898	74.7	26.30	25,388	21,974	10,528	6,479	222.34	42.16
27	11,973	11,841	4,204	1,605	64.3	22.64	25,388	21,974	10,999	7,770	233.01	44.18
28	11,973	11,841	4,348	1,762	64.7	22.76	25,388	21,974	10,652	8,260	235.48	44.65
29	11,973	11,841	5,538	1,774	71.3	25.07	25,388	21,974	10,637	7,615	225.55	42.77
30	11,973	11,841	4,365	1,862	76.9	27.06	25,388	21,974	10,557	7,448	220.52	41.81
31	11,973	11,841	5,321	1,609	77.5	27.28	25,388	21,974	10,012	6,479	214.50	40.67
Total	**2,583**	**2,452**	**-**	**-**	**2,891.27**	**158.49**	**25,388**	**21,974**	**-**	**-**	**8,381.4**	**51.27**

November , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,841	5,497	2,947	98.4	34.63	25,388	21,974	9,686	5,453	199.76	37.88
2	11,973	11,841	5,879	2,598	91.7	32.25	25,388	21,974	9,712	6,450	201.83	38.27
3	11,973	11,841	6,336	2,213	102.1	35.93	25,388	21,974	9,046	6,253	193.25	36.64
4	11,973	11,841	6,396	2,437	101.0	35.53	25,388	21,974	8,874	6,197	191.98	36.40
5	11,973	11,841	5,583	2,214	93.0	32.71	25,388	21,974	9,454	6,060	195.16	37.01
6	11,973	11,841	5,534	2,775	99.2	34.89	25,388	21,974	9,015	6,482	191.33	36.28
7	11,973	11,841	5,633	2,776	98.1	34.53	25,388	21,974	8,770	6,366	186.95	35.45
8	11,973	11,841	5,871	3,078	102.1	35.94	25,388	21,974	8,815	6,243	184.38	34.96
9	11,973	11,841	5,859	3,381	106.5	37.46	25,388	21,974	8,823	5,647	187.46	35.54
10	11,973	11,841	6,631	3,473	111.0	39.07	25,388	21,974	8,091	6,184	183.25	34.75
11	11,973	11,841	6,856	2,517	102.6	36.12	25,388	21,974	8,708	6,459	188.56	35.75
12	11,973	11,841	6,246	3,259	109.8	38.63	25,388	21,974	8,412	5,723	172.57	32.72
13	11,973	11,841	6,228	3,102	107.6	37.85	25,388	21,974	8,217	5,763	173.53	32.90
14	11,973	11,841	5,844	2,977	105.8	37.22	25,388	21,974	7,850	5,794	168.21	31.90
15	11,973	11,841	6,522	3,195	114.4	40.26	25,388	21,974	8,083	5,803	164.82	31.25
16	11,973	11,841	6,622	2,907	112.1	39.46	25,388	21,974	8,150	5,960	168.55	31.96
17	11,973	11,841	6,804	2,624	116.2	40.88	25,388	21,974	7,966	5,680	163.73	31.04
18	11,973	11,841	7,007	3,108	113.5	39.95	25,388	21,974	8,164	5,559	167.08	31.68
19	11,973	11,841	6,766	2,619	111.6	39.26	25,388	21,974	7,845	5,505	163.11	30.93
20	11,973	11,841	6,311	2,499	109.5	38.51	25,388	21,974	7,967	5,435	164.19	31.13
21	11,973	11,841	7,153	3,137	117.2	41.24	25,388	21,974	7,307	5,475	152.99	29.01
22	11,973	11,841	6,565	2,642	102.4	36.04	25,388	21,974	8,553	5,532	168.33	31.92
23	11,973	11,841	6,719	2,264	100.6	35.40	25,388	21,974	7,893	6,129	175.04	33.19
24	11,973	11,841	6,251	2,329	94.0	33.08	25,388	21,974	8,476	6,192	184.83	35.05
25	11,973	11,841	6,168	1,847	90.1	31.69	25,388	21,974	8,712	6,164	187.60	35.57
26	11,973	11,841	6,164	1,568	96.6	33.99	25,388	21,974	8,918	5,403	181.13	34.35
27	11,973	11,886	5,493	2,350	94.4	33.11	25,388	21,974	8,756	5,595	182.86	34.67
28	11,973	11,886	6,568	2,540	107.6	37.74	25,388	21,974	7,953	5,548	164.98	31.28
29	11,973	11,886	6,296	2,596	108.8	38.14	25,388	21,974	8,357	5,743	167.41	31.74
30	11,973	11,886	6,370	2,139	103.4	36.24	26,048	22,580	8,437	6,178	175.28	32.34
Total	**2,583**	**2,497**	**-**	**-**	**3,121.35**	**173.62**	**25,388**	**21,974**	**-**	**-**	**5,350.1**	**33.82**

December , 2021												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,886	6,231	1,947	100.1	35.09	26,048	22,580	8,611	6,197	186.01	34.32
2	11,973	11,886	6,143	2,275	102.2	35.83	26,048	22,580	8,739	6,196	184.62	34.07
3	11,973	11,886	5,923	1,962	95.7	33.54	26,048	22,580	8,916	5,987	183.23	33.81
4	11,973	11,886	5,764	1,926	91.4	32.05	26,048	22,580	8,956	5,978	188.84	34.85
5	11,973	11,886	5,042	1,593	81.9	28.72	26,048	22,580	8,922	6,280	188.00	34.69
6	11,973	11,886	6,216	1,404	91.3	32.00	26,048	22,580	9,084	6,259	187.62	34.62
7	11,973	11,886	6,208	1,871	93.4	32.73	26,048	22,580	8,946	6,257	189.84	35.03
8	11,973	11,886	5,574	1,731	88.1	30.90	26,048	22,580	9,367	6,227	193.07	35.63
9	11,973	11,886	5,822	1,768	87.9	30.80	26,048	22,580	9,149	6,364	192.03	35.43
10	11,973	11,886	6,233	2,039	95.4	33.42	26,048	22,580	9,584	5,989	183.10	33.79
11	11,973	11,886	5,493	1,459	82.7	29.01	26,048	22,580	9,146	6,127	192.82	35.58
12	11,973	11,886	5,264	1,521	80.4	28.17	26,048	22,580	9,226	6,063	188.88	34.85
13	11,973	11,886	4,910	1,710	83.0	29.08	26,048	22,580	9,730	6,118	189.36	34.94
14	11,973	11,886	5,180	1,304	76.9	26.96	26,048	22,580	9,505	6,886	199.79	36.87
15	11,973	11,886	4,707	1,330	75.9	26.60	26,048	22,580	9,872	6,002	192.29	35.48
16	11,973	11,886	5,582	1,706	84.4	29.59	26,048	22,580	9,613	5,624	186.13	34.35
17	11,973	11,886	5,279	1,562	81.6	28.61	26,048	22,580	9,784	6,339	201.25	37.13
18	11,973	11,886	4,885	1,300	74.7	26.18	26,048	22,580	11,268	6,551	222.80	41.11
19	11,973	11,886	4,474	1,165	64.2	22.52	26,048	22,580	11,361	8,249	241.11	44.49
20	11,973	11,886	4,338	1,284	65.1	22.82	26,048	22,580	11,167	7,303	230.85	42.60
21	11,973	11,886	4,325	1,171	62.6	21.95	26,048	22,580	11,257	7,800	237.54	43.83
22	11,973	11,886	4,444	1,217	58.8	20.63	26,048	22,580	11,210	7,465	240.68	44.41
23	11,973	11,886	3,677	1,232	54.7	19.18	26,048	22,580	11,688	7,925	244.92	45.19
24	11,973	11,886	2,756	741	37.4	13.11	26,048	22,580	12,148	7,074	257.45	47.51
25	11,973	11,886	2,370	689	26.2	9.19	26,048	22,580	12,433	8,147	260.79	48.12
26	11,973	11,886	2,303	664	24.0	8.43	26,048	22,580	12,692	7,475	251.21	46.35
27	11,973	11,886	2,651	674	30.3	10.62	26,048	22,580	12,931	7,163	253.58	46.79
28	11,973	11,886	2,816	777	37.2	13.05	26,048	22,580	13,013	7,355	254.36	46.94
29	11,973	11,886	3,550	767	39.0	13.68	26,048	22,580	13,026	7,327	261.84	48.32
30	11,973	11,886	3,297	700	38.0	13.32	26,048	22,580	12,757	8,142	262.64	48.46
31	11,973	11,886	3,614	1,243	49.9	17.49	26,048	22,580	12,480	7,507	243.45	44.92
Total	**2,583**	**2,497**	**-**	**-**	**2,154.57**	**115.98**	**26,048**	**22,580**	**-**	**-**	**6,690.1**	**39.82**

January , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,886	2,784	785	37.3	13.08	26,048	22,580	13,085	7,307	257.40	47.50
2	11,973	11,886	2,943	1,033	38.5	13.49	26,048	22,580	12,197	7,860	246.35	45.46
3	11,973	11,886	2,863	593	33.6	11.79	26,048	22,580	12,944	6,774	253.91	46.85
4	11,973	11,886	2,355	497	25.8	9.06	26,048	22,580	12,794	6,834	249.19	45.98
5	11,973	11,886	1,802	426	18.9	6.64	26,048	22,580	12,442	5,982	222.92	41.14
6	11,973	11,886	1,807	664	25.4	8.89	26,048	22,580	12,801	7,617	257.87	47.58
7	11,973	11,886	1,918	411	25.7	8.99	26,048	22,580	11,856	7,029	233.29	43.05
8	11,973	11,886	1,745	537	22.4	7.84	26,048	22,580	12,452	6,953	245.68	45.33
9	11,973	11,886	2,106	613	26.4	9.26	26,048	22,580	12,066	7,562	243.59	44.95
10	11,973	11,886	1,691	476	20.5	7.20	26,048	22,580	13,367	7,711	259.46	47.88
11	11,973	11,886	1,923	530	24.0	8.41	26,048	22,580	13,298	7,927	260.67	48.10
12	11,973	11,886	1,909	459	20.7	7.27	26,048	22,580	13,298	8,464	265.67	49.02
13	11,973	11,886	1,795	555	22.1	7.76	26,048	22,580	13,403	8,481	269.52	49.73
14	11,973	11,886	2,365	472	25.7	9.00	26,048	22,580	12,573	8,290	264.46	48.80
15	11,973	11,886	2,390	617	31.5	11.05	26,048	22,580	13,243	7,727	262.08	48.36
16	11,973	11,886	2,623	626	32.9	11.52	26,048	22,580	12,236	7,743	251.66	46.44
17	11,973	11,886	2,297	443	26.6	9.33	26,048	22,580	13,702	7,212	266.20	49.12
18	11,973	11,886	2,777	403	24.9	8.72	26,048	22,580	13,314	7,414	267.39	49.34
19	11,973	11,886	2,501	403	28.4	9.95	26,048	22,580	13,029	8,616	269.45	49.72
20	11,973	11,886	1,984	374	22.6	7.94	26,048	22,580	13,330	8,320	271.29	50.06
21	11,973	11,886	2,710	416	33.0	11.56	26,048	22,580	13,505	8,287	260.10	47.99
22	11,973	11,886	2,152	510	24.7	8.67	26,048	22,580	12,831	7,166	252.81	46.65
23	11,973	11,886	1,776	467	22.7	7.94	26,048	22,580	13,009	7,365	256.61	47.35
24	11,973	11,886	1,969	421	21.7	7.59	26,048	22,580	13,353	7,692	268.13	49.48
25	11,973	11,886	2,568	402	25.8	9.05	26,048	22,580	13,393	8,359	269.17	49.67
26	11,973	11,886	2,802	503	33.7	11.83	26,048	22,580	12,654	7,984	260.62	48.09
27	11,973	11,886	3,638	486	34.4	12.05	26,048	22,580	11,977	8,592	257.08	47.44
28	11,973	11,886	2,939	626	37.9	13.28	26,048	22,580	11,973	8,209	254.71	47.00
29	11,973	11,886	3,225	735	37.0	12.97	26,048	22,580	11,591	7,831	249.46	46.03
30	11,973	11,886	3,630	712	43.4	15.22	26,048	22,580	11,397	7,614	235.62	43.48
31	**11,973**	**11,886**	**3,307**	**799**	**39.8**	**13.96**	**26,048**	**22,580**	**11,640**	**7,483**	**244.67**	**45.15**
Total	**2,583**	**2,497**	**-**	**-**	**888.1**	**47.80**	**26,048**	**22,580**	**-**	**-**	**7,927.0**	**47.19**

February , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	11,973	11,886	2,966	660	40.1	14.04	26,048	22,580	12,611	8,317	257.74	47.56
2	11,973	11,886	4,298	957	52.4	18.36	26,048	22,580	11,874	8,154	248.84	45.92
3	12,123	12,036	4,134	929	54.3	18.79	26,048	22,580	11,589	7,261	240.73	44.42
4	12,123	12,036	4,377	877	56.8	19.67	26,048	22,580	11,068	7,904	240.76	44.43
5	12,123	12,036	4,284	806	54.8	18.98	26,048	22,580	10,925	8,154	236.83	43.70
6	12,123	12,036	4,942	1,391	59.3	20.55	26,048	22,580	10,575	7,589	224.66	41.46
7	12,123	12,036	4,386	1,200	59.7	20.68	26,048	22,580	11,318	7,203	233.01	43.00
8	12,123	12,036	4,352	1,134	62.4	21.59	26,048	22,580	10,980	7,277	232.51	42.90
9	12,123	12,036	4,539	1,387	62.4	21.58	26,048	22,580	11,171	6,977	233.61	43.11
10	12,123	12,036	3,899	2,259	69.9	24.20	26,048	22,580	11,379	6,735	226.67	41.83
11	12,123	12,036	3,860	2,549	71.6	24.78	26,048	22,580	11,149	6,517	222.47	41.05
12	12,123	12,036	4,387	2,577	75.1	25.99	26,048	22,580	10,564	6,187	215.94	39.85
13	12,123	12,036	4,288	2,575	76.1	26.34	26,048	22,580	10,614	6,040	209.98	38.75
14	12,123	12,036	4,320	2,654	75.4	26.11	26,048	22,580	10,730	6,000	217.23	40.08
15	12,123	12,036	4,491	3,118	87.8	30.41	26,048	22,580	10,495	5,739	203.73	37.59
16	12,123	12,036	4,395	3,150	85.5	29.59	26,048	22,580	10,727	5,853	205.42	37.91
17	12,123	12,036	4,726	3,099	86.1	29.81	26,048	22,580	10,083	6,006	202.93	37.45
18	12,123	12,036	4,696	2,787	82.7	28.62	26,048	22,580	10,158	6,040	203.53	37.56
19	12,123	12,036	4,961	1,849	73.6	25.49	26,048	22,580	10,531	6,587	212.95	39.29
20	12,123	12,036	4,786	1,524	65.4	22.65	26,048	22,580	10,658	6,928	212.05	39.13
21	12,123	12,036	5,335	1,825	72.7	25.18	26,048	22,580	10,123	6,717	212.55	39.22
22	12,123	12,036	4,952	1,764	65.5	22.67	26,048	22,580	10,248	7,104	211.34	39.00
23	12,123	12,036	3,424	1,345	50.6	17.52	24,450	22,580	11,591	7,106	232.62	42.92
24	12,123	12,036	4,215	1,438	53.7	18.59	24,450	22,580	10,926	7,311	233.92	43.16
25	12,123	12,036	4,522	1,369	55.2	19.12	24,450	22,580	11,480	6,878	229.68	42.38
26	12,123	12,036	4,220	1,631	59.7	20.66	24,450	22,580	10,450	6,343	213.56	39.41
27	12,123	12,036	4,735	1,547	70.5	24.40	24,450	22,580	10,133	6,521	209.65	38.69
28	12,123	12,036	4,485	1,415	43.7	15.11	24,450	22,580	10,722	6,268	201.80	37.24
Total	**4,823**	**4,552**	**-**	**-**	**1,823.1**	**59.60**	**24,450**	**22,580**	**-**	**-**	**6,226.7**	**41.04**

March , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	12,123	12,036	3,156	1,377	46.8	16.20	24,450	22,580	11,488	7,754	241.84	44.62
2	12,123	12,036	3,561	1,341	49.5	17.14	24,450	22,580	10,899	7,283	231.50	42.72
3	12,123	12,036	3,925	1,349	51.0	17.64	24,450	22,553	11,061	7,191	229.06	42.32
4	12,123	12,036	3,296	1,299	46.1	15.94	24,450	22,553	11,183	7,873	236.02	43.60
5	12,123	12,036	3,545	1,188	47.3	16.37	24,450	22,553	11,500	7,847	241.84	44.68
6	12,123	12,036	3,911	1,221	53.6	18.57	25,595	23,612	11,017	7,751	228.82	40.38
7	12,123	12,036	4,410	1,429	59.0	20.43	25,595	23,612	10,521	6,823	222.22	39.21
8	12,423	12,036	4,835	1,571	65.3	22.60	25,595	23,612	10,773	7,133	228.35	40.29
9	12,423	12,036	4,052	1,475	56.9	19.71	25,595	23,612	11,334	7,748	242.60	42.81
10	12,423	12,036	3,764	1,519	51.8	17.93	25,595	23,612	11,748	8,433	251.94	44.46
11	12,423	12,036	3,461	1,509	52.1	18.05	25,595	23,612	12,122	8,471	259.03	45.71
12	12,423	12,036	4,371	1,538	57.6	19.95	25,595	23,612	11,759	8,406	258.18	45.56
13	12,423	12,036	4,585	1,821	63.4	21.96	25,595	23,612	12,264	8,591	262.00	46.23
14	12,423	12,036	5,058	1,941	71.7	24.83	25,595	23,612	12,470	9,026	266.47	47.02
15	12,423	12,036	5,319	1,911	72.8	25.21	25,595	23,612	12,477	10,020	281.31	49.64
16	12,423	12,036	5,247	2,006	75.7	26.22	25,595	23,612	13,130	10,728	292.56	51.62
17	12,423	12,036	5,255	2,440	85.4	29.56	25,595	23,612	13,390	10,639	289.76	51.13
18	12,423	12,036	5,308	2,247	85.9	29.73	25,595	23,612	13,473	9,906	292.07	51.54
19	12,423	12,036	6,007	3,090	99.2	34.33	25,595	23,612	12,455	9,199	260.64	45.99
20	12,423	12,036	5,785	2,782	102.9	35.62	25,595	23,612	12,579	9,136	268.76	47.43
21	12,423	12,036	5,234	2,238	83.7	28.99	25,595	23,612	13,190	10,286	294.71	52.00
22	12,423	12,036	4,802	2,027	77.8	26.92	25,595	23,612	12,682	10,989	282.00	49.76
23	12,423	12,036	5,362	2,521	83.7	28.97	25,595	23,612	13,020	11,186	289.91	51.16
24	12,423	12,036	5,364	2,111	74.8	25.89	25,595	23,612	13,282	10,980	294.11	51.90
25	12,423	12,036	4,866	1,847	69.4	24.03	25,595	23,612	13,572	11,555	304.29	53.70
26	12,423	12,036	4,599	2,247	74.2	25.69	25,595	23,612	13,240	11,017	297.56	52.51
27	12,423	12,036	5,783	2,222	84.1	29.12	25,595	23,612	12,353	10,913	284.00	50.11
28	12,473	12,036	4,897	2,580	87.3	30.23	25,595	23,612	13,311	10,145	283.30	49.99
29	12,473	12,036	5,679	2,293	89.0	30.81	25,595	23,612	12,907	10,212	291.57	51.45
30	12,473	12,036	4,963	2,482	80.3	27.80	25,595	23,612	11,701	10,437	272.20	48.03
31	**12,473**	**12,036**	**4,650**	**2,461**	**76.0**	**26.30**	**25,595**	**23,612**	**13,066**	**10,004**	**269.42**	**47.54**
Total	**3,083**	**2,997**	**-**	**-**	**2,174.5**	**97.52**	**25,595**	**23,612**	**-**	**-**	**8,248.1**	**46.95**

April , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	12,473	12,386	4,851	2,418	75.5	25.40	25,595	23,612	14,667	12,153	316.62	55.87
2	12,473	12,386	5,320	2,534	86.1	28.96	25,595	23,612	15,149	11,385	322.28	56.87
3	12,473	12,386	5,544	2,491	88.2	29.66	25,595	23,612	15,601	11,173	325.47	57.43
4	12,491	12,386	5,753	2,308	85.9	28.91	25,595	23,612	15,619	12,221	342.77	60.49
5	12,491	12,404	6,174	2,635	85.2	28.63	25,595	23,612	15,816	12,213	334.14	58.96
6	12,491	12,404	6,214	2,336	88.3	29.65	25,595	23,612	16,055	12,558	352.55	62.21
7	12,491	12,404	5,799	2,614	96.2	32.31	25,595	23,612	16,222	12,872	351.76	62.07
8	12,491	12,404	6,334	2,954	108.7	36.53	25,595	23,612	15,014	11,631	330.03	58.24
9	12,491	12,404	6,317	2,701	100.4	33.72	25,595	23,612	14,906	11,733	313.90	55.39
10	12,491	12,404	6,086	2,552	99.5	33.41	25,595	23,612	14,975	11,968	327.94	57.87
11	12,491	12,404	6,418	2,777	106.4	35.73	25,595	23,612	14,935	12,519	324.82	57.32
12	12,491	12,404	6,649	3,094	112.3	37.72	25,595	23,612	14,384	12,200	320.27	56.52
13	12,591	12,504	6,490	2,900	111.1	37.03	25,595	23,612	14,569	12,114	323.59	57.10
14	12,591	12,504	6,385	3,176	105.2	35.05	25,595	23,612	14,391	13,343	332.85	58.73
15	12,591	12,504	6,270	3,317	107.3	35.77	25,595	23,612	14,638	12,132	325.75	57.48
16	12,591	12,504	6,613	3,094	111.7	37.23	25,595	23,612	15,203	12,624	327.77	57.84
17	13,311	13,224	6,708	3,181	113.0	35.59	25,595	23,612	15,384	12,217	327.54	57.80
18	13,311	13,224	6,429	2,769	104.7	32.99	25,595	23,612	15,227	13,060	335.03	59.12
19	13,311	13,224	6,536	2,882	102.5	32.29	25,595	23,612	15,405	13,248	334.52	59.03
20	13,311	12,684	6,623	2,731	105.8	34.74	25,582	23,354	15,138	12,481	326.96	58.33
21	13,311	12,684	6,610	2,827	108.7	35.70	25,582	23,354	14,464	12,304	315.29	56.25
22	13,311	12,684	6,594	3,255	112.5	36.96	25,582	23,354	14,709	10,797	308.94	55.12
23	13,311	12,684	6,365	2,795	101.6	33.36	25,582	23,354	15,437	12,441	330.50	58.96
24	13,311	12,684	5,914	2,398	97.1	31.89	25,582	23,354	15,045	12,976	335.33	59.83
25	13,311	12,684	6,443	3,031	103.3	33.93	25,582	23,354	14,811	12,946	329.80	58.84
26	13,311	12,684	6,566	2,681	103.4	33.98	25,582	23,354	15,369	13,038	333.20	59.45
27	13,311	12,684	6,051	2,554	95.5	31.36	25,582	23,354	15,432	13,498	338.91	60.46
28	13,311	12,684	6,715	2,632	110.7	36.37	25,582	23,354	14,706	12,723	324.83	57.95
29	13,311	12,684	6,646	2,971	111.2	36.53	25,582	23,354	15,247	12,934	335.29	59.82
30	13,311	12,684	6,931	3,313	115.8	38.05	25,582	23,354	14,627	12,381	325.91	58.15
Total	**3,903**	**3,277**	**-**	**-**	**3,053.8**	**129.43**	**25,582**	**23,354**	**-**	**-**	**9,874.6**	**58.73**

May , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	13,311	12,684	7,158	4,120	127.8	41.97	25,582	23,354	16,551	13,695	364.33	65.00
2	13,311	12,684	7,349	4,660	144.3	47.39	25,582	23,354	15,838	13,189	343.38	61.26
3	13,311	12,684	7,439	5,162	152.9	50.24	25,582	23,354	13,298	9,972	286.87	51.18
4	13,311	12,684	7,051	3,966	135.5	44.52	25,582	23,354	11,926	9,518	260.30	46.44
5	13,311	12,684	6,890	4,020	131.3	43.14	25,582	23,354	13,501	10,619	282.82	50.46
6	13,311	12,684	7,429	4,649	140.6	46.19	25,582	23,354	13,481	9,292	277.15	49.45
7	13,311	12,684	7,123	4,860	141.2	46.40	25,582	23,354	14,087	11,486	311.77	55.62
8	13,311	12,684	7,579	5,032	147.5	48.44	25,582	23,354	15,390	12,440	324.86	57.96
9	13,311	12,684	7,500	5,119	149.8	49.20	25,582	23,354	15,642	13,045	345.41	61.62
10	13,311	12,684	6,824	4,545	140.3	46.10	25,582	23,354	16,910	12,652	357.79	63.83
11	13,311	12,684	6,895	4,616	137.7	45.24	25,582	23,354	16,086	14,463	366.09	65.31
12	13,311	12,684	7,154	4,757	142.4	46.78	25,582	23,354	16,195	14,783	371.23	66.23
13	13,311	12,684	7,189	4,830	140.1	46.02	25,582	23,354	16,134	14,285	372.73	66.50
14	13,311	12,684	7,621	5,138	155.1	50.94	25,582	23,354	16,225	14,758	367.87	65.63
15	13,311	12,684	7,814	5,314	158.0	51.91	25,582	23,354	15,979	13,299	357.08	63.71
16	13,311	12,684	7,631	4,844	153.5	50.42	25,582	23,354	15,738	13,824	361.18	64.44
17	13,311	12,684	7,493	4,697	150.0	49.26	25,582	23,354	15,443	12,860	348.24	62.13
18	13,311	12,684	7,426	5,032	141.7	46.55	25,582	23,354	14,109	12,508	324.32	57.86
19	13,311	12,684	7,226	4,665	141.6	46.52	25,582	23,354	14,390	12,619	319.40	56.98
20	13,311	12,684	7,757	5,177	159.4	52.37	25,582	23,354	13,764	12,269	311.75	55.62
21	13,311	12,684	7,838	5,614	161.0	52.87	25,582	23,354	14,650	12,754	334.38	59.66
22	13,311	12,684	7,795	5,390	160.3	52.67	25,582	23,354	14,442	10,830	323.89	57.79
23	13,311	12,684	7,328	4,915	149.9	49.23	25,582	23,354	14,200	10,600	297.53	53.08
24	13,311	13,044	7,409	4,422	137.1	43.79	25,582	23,354	14,326	11,555	312.16	55.69
25	13,311	13,044	6,845	4,326	134.9	43.09	25,582	23,354	13,875	11,574	312.81	55.81
26	13,311	13,044	7,348	5,411	153.0	48.86	25,582	23,354	13,918	12,539	314.15	56.05
27	13,311	13,044	6,845	4,326	134.9	43.09	25,582	23,354	13,875	11,574	312.81	55.81
28	13,311	13,044	7,724	5,370	160.4	51.25	25,582	23,354	13,851	12,050	307.62	54.88
29	13,311	13,044	7,560	5,716	156.7	50.04	26,845	24,617	13,457	11,475	306.75	51.92
30	13,311	13,044	7,502	4,507	152.5	48.71	26,845	24,617	13,424	11,223	298.97	50.60
31	13,311	13,044	7,429	4,933	152.1	48.60	26,845	24,617	13,426	12,101	307.05	51.97
Total	**3,903**	**3,637**	**-**	**-**	**4,543.7**	**167.92**	**26,845**	**24,617**	**-**	**-**	**10,082.7**	**55.05**

June , 2022												
Day	VRE (Hydel + Wind + Solar +Bagasse						Thermal Power Plants (GENCOs + IPPs + Nuclear)					
	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"	Capacity (MW)		Load (MW)		Generation (GWh)	Energy % "W.r.t Dep. Cap"
	Installed	Dependable	Max	Min			Installed	Dependable	Max	Min		
1	13,311	13,044	7,170	4,934	144.6	46.19	26,845	24,617	13,752	12,036	304.55	51.55
2	13,311	13,044	6,881	4,811	137.9	44.06	26,845	24,617	15,035	12,021	322.99	54.67
3	13,311	13,044	6,957	4,664	135.0	43.11	26,845	24,617	14,701	12,885	330.44	55.93
4	13,311	13,044	6,887	4,790	139.3	44.49	26,845	24,617	14,026	12,807	326.12	55.20
5	13,311	13,044	6,975	4,339	140.1	44.75	26,845	24,617	14,825	12,704	337.50	57.12
6	13,311	13,044	7,214	4,713	141.1	45.08	26,845	24,617	15,045	13,782	342.89	58.04
7	13,311	13,044	7,454	4,869	150.2	47.97	26,845	24,617	15,241	13,904	350.12	59.26
8	13,311	13,044	7,364	5,384	150.6	48.10	26,845	24,617	15,187	14,137	355.97	60.25
9	13,311	13,044	7,689	5,530	154.4	49.32	26,845	24,617	15,109	13,837	354.17	59.95
10	13,311	13,044	7,529	5,112	151.8	48.48	26,845	24,617	15,473	14,024	355.15	60.11
11	13,311	13,044	7,198	4,036	144.6	46.20	26,845	24,617	15,221	11,905	344.38	58.29
12	13,311	13,044	6,806	4,605	133.6	42.67	26,845	24,617	15,467	12,833	342.73	58.01
13	13,311	13,044	6,805	4,134	125.8	40.19	26,845	24,617	15,356	13,491	357.16	60.45
14	13,311	13,044	7,190	4,170	128.5	41.06	26,845	24,617	15,425	13,769	352.76	59.71
15	13,311	13,044	7,507	4,678	148.5	47.44	26,845	24,617	15,080	13,977	349.59	59.17
16	13,311	13,044	7,487	5,109	151.9	48.52	26,845	24,617	15,736	9,549	347.55	58.82
17	13,311	13,044	7,633	5,527	158.3	50.56	26,845	24,617	13,430	9,566	275.43	46.62
18	13,311	13,044	7,636	5,036	150.5	48.09	26,845	24,617	12,949	10,357	271.00	45.87
19	13,311	13,044	7,438	4,750	147.8	47.21	26,845	24,617	11,696	9,141	260.64	44.12
20	13,311	13,044	7,515	5,029	150.8	48.16	26,845	24,617	12,148	7,670	257.68	43.61
21	13,311	13,044	7,869	4,041	149.5	47.74	26,845	24,617	9,620	7,061	206.49	34.95
22	13,311	13,044	6,632	4,345	135.4	43.26	26,845	24,617	11,310	7,158	226.94	38.41
23	13,311	13,044	7,327	4,487	141.9	45.32	26,845	24,617	11,867	9,153	256.53	43.42
24	13,311	13,044	7,502	4,321	137.8	44.02	26,845	24,617	12,694	10,754	283.01	47.90
25	13,311	13,044	7,481	5,253	150.7	48.15	26,845	24,617	13,929	11,408	298.18	50.47
26	13,311	13,044	7,341	5,041	147.4	47.08	26,845	24,617	14,444	11,370	324.38	54.90
27	13,311	13,044	7,001	4,890	143.0	45.67	26,845	24,617	15,160	13,446	349.01	59.07
28	13,311	13,044	7,470	5,075	145.0	46.31	26,845	24,617	15,090	13,532	346.00	58.56
29	13,311	13,044	7,881	5,397	162.0	51.75	26,845	24,617	14,857	13,215	344.35	58.28
30	13,311	13,044	8,118	6,316	170.1	54.32	26,845	24,617	14,755	12,994	335.83	56.84
Total	**3,903**	**3,637**	**-**	**-**	**4,368.0**	**166.80**	**26,845**	**24,617**	**-**	**-**	**9,509.6**	**53.65**

ACRONYMS AND ABBREVIATIONS

NEECA	National Energy Efficiency & Conservation Authority
AEDB	Alternative Energy Development Board
AJKHEB	Azad Jammu and Kashmir Hydel Electricity Board
AMRS	Automated Meter Reading System
BPC	Bulk Power Consumer
BQCCPP	Bin Qasim Combined Cycle Power Plant
BQTPS	Bin Qasim Thermal Power Station
BTPL	Bahira Town (Pvt.) Limited
CCI	Council of Common Interest
CCOE	Cabinet Committee on Energy
CCPP	Combined Cycle Power Plant
CDP	Common Delivery Point
CHASNUPP	Chashma Nuclear Power Plant
COD	Commercial Operation Date
CPGCL	Central Power Generation Company Limited
CPI	Consumer Price Index
CPP	Captive Power Plant
CPPA-G	Central Power Purchasing Agency-Guarantee Limited
CTBCM	Competitive Trading Bilateral Contract Market
DISCO	Distribution Company
DOP	Development of Power
ELR	Energy Loss Reduction
EMO	Economic Merit Order
EPP	Energy Purchase Price
EYB	Energy Year Book
FDI	Foreign Direct Investment
FESCO	Faisalabad Electric Supply Company Limited
FY	Financial Year
GDP	Gross Domestic Product
GENCO	Generation Company
GEPCO	Gujranwala Electric Power Company Limited
GOP	Government of Pakistan
GST	General Sales Tax
GTPS	Gas Thermal Power Station
GWh	Giga Watt per hour
HDIP	Hydrocarbon Development Institute of Pakistan
HESCO	Hyderabad Electric Supply Company Limited
HPP	Hydropower Project
HSE	Health, Safety and Environment
HVDC	High Voltage Direct Current
IA	Implementation Agreement
IBC	Integrated Business Centre
ICB	International Competitive Bidding
IESCO	Islamabad Electric Supply Company Limited
IGCEP	Integrated Generation Capacity Expansion Plan
IPP	Independent Power Producer
JPCL	Jamshoro Power Company Limited
KANUPP	Karachi Nuclear Power Plant
KCCPP	Korangi Combined Cycle Power Plant
KE	K-Electric Limited
KTGTPS	Korangi Town Gas Turbine Power Station
kV	Kilo Volt
KVA	Kilovolt Ampere
kWh	Kilowatt per hours
LD	Liquidated Damages

LESCO	Lahore Electric Supply Company Limited
LPGCL	Lakhra Power Generation Company Limited
MEPCO	Multan Electric Power Company Limited
MMBTU	Million British Thermal Unit
MMCFT	Million Cubic Feet
MTOE	Million Tonees of Oil Equivalent
MVA	Megavolt Ampere
MW	Megawatt
MWh	Megawatt per hour
MYT	Multi-year Tariff
n.a. & n.p.	Not available and not provided
NCPP	New Captive Power Plant
NEPRA	National Electric Power Regulatory Authority
NHP	Net Hydel Profit
NPCC	National Power Control Centre
NPGCL	Northern Power Generation Company Limited
NPMV	Non-Project Missed Volume
NTDC	National Transmission and Despatch Company Limited
O&M	Operation and Maintenance
PAEC	Pakistan Atomic Energy Commission
PEDO	Pakhtunkhwa Energy Development Organization
PEPCO	Pakistan Electric Power Company Limited
PESCO	Peshawar Electric Supply Company Limited
PLAC	Partial Loading Adjustment Charges
PMLTC	Pak Matiari Lahore Transmission Company Limited
PPA	Power Purchase Agreement
PPDB	Punjab Power Development Board
PPIB	Private Power and Infrastructure Board
QESCO	Quetta Electric Supply Company Limited
RFO	Residue Furnace Oil
RLNG	Regasified Liquefied Natural Gas
SCADA	Supervisory Control and Data Acquisition
SCARP	Salinity Control and Reclamation Project
SEPCO	Sukkur Electric Power Company Limited
SGTPS	Site Gas Turbine Power Station
SPP	Small Power Producer
STDC	Sindh Transmission and Dispatch Company Limited
STG	Secondary Transmission and Grid
SVC	Static Var Compensators
T&D	Transmission and Distribution
TESCO	Tribal Area Electricity Supply Company Limited
TOD	Time of Day
TOU	Time of Use
TPS	Thermal Power Station
TSEP	Transmission System Expansion Plan
WAPDA	Water and Power Development Authority

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